PANTERA

EXCERPTS FROM OUR BLOCKCHAIN LETTERS

DECENTRALIZED FINANCE (DEFI)

January 23, 2023

DEFI :: By Chia Jeng Yang, Investment Associate

"Structurally Safe DeFi" :: What Does Safe Mean?

Crypto has seen its share of criminally greedy actors. We can never eliminate criminally greedy actors, especially in finance, but what we can do is reduce their ability to succeed. In my view, there are three pillars for a Structurally Safer DeFi:

1. Programming and code as "the executor"
2. Traditional legal structures and regulations – law as "the guarantor"
3. Market expectations as "the filter"

Traditional legal structures and regulations should be seen as a good but incomplete means of safety and are merely a partial means to an end for Structurally Safer Finance. As decentralized technology, uncapturable by any single, centralized authority, DeFi operates outside of regulations. In order to succeed, DeFi must be able to protect user funds with only code – and in an increasingly adversarial, open global environment. Fortunately, there is no enforcement mechanism more structural than code.

Going into 2023, we should expect to see TradFi (traditional finance) best practices extend to DeFi, with better legal frameworks being helpful here. The founders of Cega understood how to backstop losses through structural and contractual backstops, exemplifying how their TradFi backgrounds have given them an edge in the DeFi world. Cega became a market leader in establishing counterparty risk management because of strong internal practices, such as requiring ISDA for every market maker. Code can try to be law, but law and code are not mutually exclusive.

As an industry, we have been focused on pillar1 (above), forgetting that TradFi has a deep history of taking advantage of pillar 2 and 3. Increased regulation will help lead to greater legal certainty, but we also know that regulatory capture and reliance is not the point of DeFi. If we want to create a balance and bring about a world with minimally viable regulatory scrutiny, our industry's ability to self-govern through a market expectation of minimally safe behaviors must exist.

What I mean by this is eschewing behaviors that would not otherwise have flown in traditional finance. As an example, undercollateralized lending did not fail because of some esoteric aspect of the blockchain. It failed because lenders were willing to take WhatsApp messages as proof of AUM. Similarly, treasury managers in TradFi have always had to consider counterparty risk for custodial services in ways that some CFOs have failed to do. We will also continue to see an increased emphasis of market-standard information provision for users of various DeFi protocols. Clearer communication of the risks that liquidity providers undertake for certain liquidity pools will go a long way to creating a fairer system that attracts less regulatory scrutiny.

The current debate for centralized exchanges over the use of blockchain-based proof-of-reserves and proof-of-liabilities is a great example of this. We, who comprise the market, need to set expectations for the minimally safe behaviors of counterparties we deal with. It may be the case that the market will expect fully audited exchanges as a base case for doing business with others.

In our view, CeFi's (centralized finance) ability to obfuscate their backend is only a short-term advantage, whereas infrastructure weaknesses and shortcuts give rise to long-term vulnerabilities. Part of why FTX failed was because Alameda had preferential accounts. Alameda was allowed to trade with no auto-liquidation mechanics when they were overleveraged. There are no backdoors or preferential treatment in

DeFi. Avoiding backdoor dealings and sweetheart deals is exactly what we've repeatedly pointed out as a core strength of DeFi.

This brings us to a key insight into how to think about DeFi moving forward. DeFi is a far more adversarial environment than CeFi and/or TradFi. This feature of the market has meant that, despite the many headlines of hacks and exploits, the industry as a whole has learned from these mistakes and permanently hardened its infrastructure moving forward. Where best practices in TradFi are passed down through rulebooks or, more likely, memories of executives, DeFi passes down knowledge in code.

TradFi best practices need incorporation into DeFi. DeFi infrastructure needs incorporation into CeFi/TradFi. Embracing this symbiosis is the key to the next level.

The Great Bifurcation Of DeFi

We believe 2023 will see the bifurcation of regulated and censorship-resistant infrastructure.

It is important to remember that blockchain promises both the creation of new financial rails (in which TradFi institutions are interested) and a new financial system (in which censorship-resistant actors are interested).

There has always been a great deal of skepticism about enterprise DeFi, much of which I believe is unwarranted. Non-decentralized, permissioned blockchains that facilitate existing relationships between financial actors, as opposed to creating new ones, is a very different vision from a censorship-resistant financial ecosystem that can weather tyrannical governments and intermediaries.

At the same time, this reflects the immense promise of blockchain technology – by creating a horizontal technology that facilitates two (at least) very different camps of builders. It is important to remember why we are here: credibly neutral infrastructure benefits everyone, badly designed biased infrastructure benefits no one.

First, a reminder of how far we have come for enterprise DeFi. As Coinbase noted in their 2023 report, J.P. Morgan's intra-day repo application on Onyx Digital Assets has processed more than $430 billion of repo transactions since its launch in November 2020. Additionally, J.P. Morgan, DBS Bank, and SBI Digital Asset Holdings traded tokenized currencies and sovereign bonds via Polygon in November 2022. These developments mean that regardless of how the rest of the market plays out, blockchain will have its place in the enterprise tech stack. Institutions are still investing in and researching DeFi despite what the current market downturn may imply.

At the same time, the events of OFAC, FTX, MakerDAO, etc., support skepticism in allowing centralization compromises within DeFi infrastructure. Also at the same time, we will see increased regulatory clampdown and challenges towards many DeFi dApps and infrastructure, making the need for building a credibly neutral infrastructure turn from a question of long-term stability to a condition for existence.

The bifurcation and development of these two very different ideologies will emerge in a big way in the market, and for many investors who have not needed to confront these latent tensions in the bull market.

Areas Of Interest In 2023 :: Macro Affects Portfolio Construction

The past few years has seen the development of a "risk-on" on-chain financial infrastructure. We will see the development of what a "risk-off' financial ecosystem looks like as the macro-environment favors a rush to safety. As real-world portfolio allocations stay risk-off and seek safer instruments, particularly in the fixed-income space, we should expect to see more real-world yield and fixed-income assets grow on-chain.

Where bonds and real-world fixed-income assets become more attractive, the proper reaction is an excitement to this – a clearly identified problem statement – as well as a good understanding of which part of the value-chain represents the greatest opportunity to invest in for real-world assets on-chain. I am particularly excited about taking this one step further per the promise of crypto unlocking global liquidity: providing real world assets for customers all over the world in ways that traditional fintech institutions are constrained. Companies that focus on "0-1" access to financial instruments as opposed to incremental access will do well in particular.

Just as the last bull market was a catalyst for alternative investment platforms, so too will this bear market be a catalyst for a new wave of safer investment instruments.

Application Weaknesses Lead To Infrastructure Opportunities

Why was it easy to find so many weaknesses in DeFi infrastructure and dApps? Because when we are building a financial system from scratch, we are also both building a business and its infrastructure from scratch. This is hard to say the least, and rife with challenges. There are bound to be suboptimal infrastructure components to existing businesses or reliance on shortcuts due to a lack of available external infrastructure providers. As the market and regulations demand better practices, there will be demand in-tandem for infrastructure providers to better support safer practices.

Going back to the example of counterparty deposit risk, a similar problem was faced in TradFi and solved by companies like IntraFi, which help break apart a treasury into separate accounts to take advantage of the $250k FDIC insurance. As companies realize that they need to manage counterparty risk in a similarly stringent manner, we will see increased demand for various types of infrastructure players to tackle previous issues.

In other words, as Union Square Ventures noted in a different way, infrastructure booms lead to app booms lead to infrastructure booms. As they noted, we can build great apps before the infrastructure arrives, but sometimes those apps break and lose money. We learn from those experiences to demand better outsourced infrastructure and to build safer apps. We are continuously investing in better infrastructure and safer apps across DeFi and other sectors.

Lessons From TradFi Fintech Investing

Prior to Pantera, I invested in emerging market fintech and have always held a strong belief that many aspects of crypto investing resemble fintech investing in relatively thin emerging markets. These markets demonstrate difficulty monetizing, a need to build core infrastructure internally, distribution and user education challenges, with large public and private incumbents occupying monopolistic market share. The ecosystem around the Unified Payments Interface (UPI) in India is a fantastic example of some of these challenges, particularly around the ability for companies build on UPI to monetize on what are essentially public rails. For the TradFi folks in the room, I always joke that staking and MEV (maximal extractable value) are the new lending.

The main lessons I learned from those experiences was that success meant an intense ability to build on a product roadmap that focuses on occupying mindshare of extremely valuable customers within existing markets, and which has an incremental ability to monetize through a wider range of revenue streams than traditional startups. Some of the most innovative fintech startup strategies have arisen in India precisely because of this dynamic.

As founders building in crypto double down on finding product market fit, many TradFi lessons will extend to the fold of crypto.

August 24, 2022

BANKLESS INTERVIEW HIGHLIGHTS

DeFi vs. Wall Street

Ryan: What would you say to the criticism "DeFi is the same as Wall Street"?

> ***Joey***: *"They are quite different in some really key ways. Historically on Wall Street, there's not a ton of* ***transparency*** *into what's actually going on. In 2008 no one (even people at these companies) knew what their derivatives exposure was. When you had the bailouts, the government was both guessing on how much money they needed to use to actually do the bailouts, and also didn't know the derivatives' exposure until long, long after everything had occurred. You have all these weird situations in traditional finance due to things not being transparent, where you don't actually know what's going on, you don't know what your actual risk is.*

"The CeFi companies built on top of DeFi, like Celsius, had the same problem. If Celsius showed on their website what was the clarity horizon of a dollar deposited in Celsius, I don't think we'd be talking about Celsius today, because they wouldn't have had customers. If the customers saw that – 'if you withdraw all your money, it's going to take you two years. And by the way, your money is in assets that have a hundred percent plus annualized fall'. The average person doesn't know what that means, but the press would cover it and tell people what it means – which in this case means your money's really risky. It's not like your deposit in USDC and it's some low-risk thing."

***Dan**: "Transparency, that's the whole thing about blockchain – it's all out there for somebody to see. DeFi projects all let you see what's happening. Whereas, as Joey said, if you really knew what was happening behind the curtain in some of these centralized lenders, you probably would've never lent them any money.*

"The Lehman story is so interesting because when it went under, nobody knew what their risks were to the firm, and nobody knew what collateral they had. Everyone just grabbed anything they could. Abrogated contracts didn't give back collateral. It was all just a huge mess. At the beginning, people were like, '$120 billion loss, it's all terrible, world's coming to an end.' Six years later, bankruptcy proceedings, etc. over, they lost $3.9 billion – a tiny amount relative to the crazy damage it did to the entire world. It would've been so much better for the US Treasury to just write a check – 'Here's $3.9 billion, we're done, let's move on'. It was crazy, because nobody knew, a total black box.

"That's the beauty of DeFi – protocols will have all their information out there and you can make a choice. Do you want to do business on Maker Dao, for example? You can look at all the stats and decide if it's a good idea or not.

"Take Mt. Gox, a failed CeFi project. We're still dealing with the bankruptcy. That was seven years ago and it's still going on and on and on. Whereas in DeFi, we're already done. We already had the May crisis and it's over, and we're on to the next thing. Not one taxpayer paid a dime.

"The next generation of centralized lenders are going to be forced to provide more transparency. We did a five-year experiment in the total black box and it didn't work great. Whether it's by commercial motivations or regulators (probably both), people aren't going to want to lend billions of dollars to entities where they don't know what they're doing.

"We even saw that with Credit Suisse and other big lenders to family offices – they had no idea how much leverage their clients were taking.

"Everybody is learning that lesson, both in crypto and in the normal securities markets. They'll be forced to disclose more about how much leverage they have, what the imbalance is between the timeframe of their liabilities and their assets. Regulators probably are going to get more active and require more transparency."

***Joey:** "Second is **risk controls**. There's this great saying in software, "worse is better". I think you can think about that in risk control systems. On Wall Street, people come up with these really complicated risk control mechanisms where people convince themselves that they know more than everyone else and that their risk mechanism is right. You saw this with the credit default swaps issue in 2008. If you look back over the last 300 years of financial history, you see it so many times – whether it's Long-Term Capital Management or Three Arrows Capital or anyone else.*

"In DeFi it's very simple – if your loans are within a certain percent of the collateral threshold, you start to get liquidated. If you don't top up the collateral, you get liquidated. It's very basic. A lot of people in traditional finance say, 'Oh, that's super inefficient'. Yes it's less efficient, but it also means that if I'm depositing money in it, I don't need to trust Compound/Aave/Maker to call some supposedly rich person at 3:00 AM and have them top up their collateral. And often in these collapses what you find out is, people who you thought were supposedly rich actually aren't, or they borrowed the same money 10 times from 10 different venues. No one is talking

to each other, no one actually knows. DeFi is much simpler; these problems don't exist. Sure, it's less efficient, but it's also much, much less risky."

DeFi Is Too Referential Critique

Ryan: "DeFi is too self-referential. . . there's no real world assets, even when you're collateralizing things it's other DeFi token." What do you think about this comment?

***Joey**: "If you look through the history of financial tech innovations, people have used that criticism every single time. Whether it's the invention of the joint stock company a few hundred years ago, to the invention of options, swaps, every derivative that's ever existed – people have used that criticism. What's interesting about it is, it's both true and wrong. In the beginning, new technologies are used a lot for speculation. They are very self-referential. When the internet first came out, it was a bunch of academics sending each other their papers for peer review. Pretty self-referential.*

"But as time goes on, people figure out new use cases for these technologies. They figure out new ways to use them in the real world. You fast forward 5-10 years and no one makes that criticism anymore. Or at least, people who do make that criticism, nobody cares because it's so obvious that they're wrong. Imagine saying the internet's just self-referential and pointless today. Tons of people said that back in the '90s. You can pull up videos of tons of talk shows where the hosts are making fun of Bill Gates saying, 'What's this crazy thing that you call the internet? Kind of seems like a joke.' The same thing is true with the history of the automobile, 'Well, my horse is faster so I don't need that car.' People are very shortsighted when it comes to tech innovation.

"That is somewhat true today, but it's starting to change. Doing stuff in the real world is harder than the virtual world, but I think we're starting to see more and more of this. It'll probably start to take off more with derivatives that are pegged to real world assets – synthetics has a bunch of new traction recently, for example. Then there are things that already take place in the real world on Maker Dao. It's pretty primitive and early, but I think if we have this conversation again in five years, it won't look primitive and early anymore."

***Dan**: "Any new technology has people that want to speculate on it, right? There are probably a hundred million people that actually use crypto in real world situations every day, transmitting money across borders etc. Then there are some people that are speculating on it. The fact that there are speculators isn't new/negative – it happened in the dot com boom, it happened in all kinds of booms that we've had over centuries."*

DeFi Worked Great

Ryan: How well did DeFi hold up through this storm?

***Joey**: "If you look at what's different about DeFi, the main thing is in how it worked – it's just much faster at liquidating people. DeFi has simple liquidation mechanisms versus CeFi*

companies. CeFi mechanisms don't work that way. I have friends who have used those companies, and I know that when they're close to liquidation, they'll often give them 24-48 hours to top up their liquidity. And that's even if they've fallen below par value, because they just trust them as a counterparty. There's a lot of risk in doing that. In DeFi, you don't really have that issue."

***Dan**: "I think Joey's spot on. In DeFi it's just code and collateral. You can't con code. You can't lie to it. You can't say you've got more assets than you do. You have to post the assets and the code owns the assets and controls the assets. So DeFi really is superior."*

Quick Macro Takes

***Dan**: "My main view for the next 12 months is crypto's going to decouple from the macro story and trade on its own fundamentals. A lot of people are using it, DeFi worked, etc.*

"On the macro side, I think the Fed are going to have to hike a lot more than people are talking about. The Fed's mandate is to hike until they get core CPI below 2% – that's going to take a couple of years, things are going to take forever.

"So overall, I think rates will keep going up, and crypto's going to go up."

***Joey**: "What we're looking forward to:*

- ***DeFi:** A lot of interesting stuff is happening in DeFi. We're finally starting to see DeFi numbers like TVL start to get back in an uptrend. The total market cap of DeFi is approximately $20 billion. The crypto market cap is a trillion. I think it's absurd for DeFi to be anything less than 10%. I would actually argue much, much higher than that – 20/30% of the total crypto market. And so, over the long run, we're very bullish on DeFi.*
- ***Ethereum:** Look at what's upcoming with Ethereum 2.0 and all the rollups on top (Arbitrum, Optimism, StarkWare). I think ETH is going to look really interesting coming into the next bull market, because it's going to be the first time that it actually scales. You could argue in the last cycle that you could sort of use things like Polygon, but now there are a bunch of different solutions. They all actually work. People will be able to work out a lot of the UI/UX issues over the next 6-9 months. As we go into the next cycle over the next two years, DeFi is actually going to scale, which is something that we've been talking about forever, but will finally actually be here. We're super excited for that."*

Check out the full interview here.

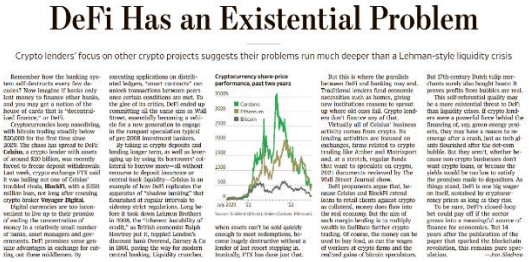
July 12, 2022

DEFI WORKED GREAT

*"Cryptocurrencies keep nosediving . . . The chaos has spread to DeFi: **Celsius**, a crypto lender with assets of around $20 billion, was recently forced to freeze deposit withdrawals. Last week, crypto exchange **FTX** said it was bailing out one of **Celsius'** troubled rivals, **BlockFi**, with a $250 million loan, not long after rescuing crypto broker **Voyager Digital**."*

– Jon Sindreu, *Wall Street Journal*, June 30, 2022

The whole article is a screed gleefully ruing the alleged failure of DeFi.



DeFi Has an Existential Problem

Crypto lenders' focus on other crypto projects suggests their problems run much deeper than a Lehman-style liquidity crisis

There's a huge misconception that DeFi – Decentralized Finance – failed. It didn't – it worked great!

Unfortunately the author – and all the skeptics who are promoting this narrative – have it totally backward. DeFi's flawless performance over the past months will be seen as a pivotal moment. DeFi is a very important movement.

It's **CENTRALIZED** finance that failed. All five of the companies that the reporter listed on are **CENTRALIZED**. They are just old-fashioned venture-backed start-up companies. They are not DeFi or on the blockchain at all. Just some start-up banking entities that got overleveraged. Very old school failure actually. Nothing new or novel about them.

DECENTRALIZED finance protocols – like Aave, Compound, Uniswap, MakerDAO – all functioned flawlessly 24x7. This crisis proves the opposite of the common narrative. It proves DeFi works great. Way better than centralized finance firms like Celsius, BlockFi, Lehman Brothers, *et al*.

First, I really try to avoid having to read journalists who reference tulips. I can't recall ever reading anything intelligent in an article with that four-hundred-year-old trope. However, my desire to support blockchain is so strong that I dutifully muscled through the whole thing.

Let's break down the common misunderstandings contained in the article:

> #1. *"Remember how the banking system self-destructs every few decades? Now imagine if banks only lent money to finance other banks, and you may get a notion of the house of cards that is 'decentralized finance,' or DeFi."*

You don't need to remember. It did again. Celsius, BlockFi, Voyager Digital are all banking entities. They are not decentralized in any way.

Those start-ups are just banks that took in short-term deposits and lent long to each other and others. They were 20-to-1 leveraged business models run by mortal humans.

DeFi, on the other hand, is not an empty house of cards. Its foundations are rock solid and totally transparent. DeFi removes human subjectivity in financing decisions. Parties agreeing to conduct transactions openly and transparently on the blockchain, as opposed to backroom deals by opaque, human, potentially-conflicted financial actors, is the vision we should be striving for, rather than clinging on to inefficient centralized financial systems.

The author holds a misguided view of yield in blockchain. He ignores that DeFi is the financial backbone for the entire blockchain ecosystem that is used to power all manner of transactions – retail, institutional, and even the type of green loans that he claims does not exist on the blockchain. Staking yield to ensure blockchain security and incentivization of liquidity to prevent slippage are merely some of the ways yield is generated in crypto today.

> #2. *"To the glee of its critics, DeFi has ended up committing all the same sins as Wall Street, essentially becoming a vehicle for a new generation to engage in the rampant speculation typical of pre-2008 investment bankers."*

Oh, so sins in banking supposedly stopped in 2008? Hmmmm…I'm not sure the record supports that. Banks have paid an astounding $321 billion in fines since their supposed redemption at the hands of us taxpayers in 2009.

I remember one anti-bitcoin nut wrote an article "Bitcoin Is Evil". I don't get that. It's a piece of open source code anybody can use. It certainly has not ever done evil to anyone. Banks, on the other hand, have been convicted of $321 billion worth of evil deeds. (And, that's only the ones they were caught at.)

To put that number in context: the United Nations food-assistance branch, the World Food Programme, estimates "$6.6 billion would help stave off starvation for 42 million people across 43 countries."

Banks spent fifty times the amount that would solve world hunger on fines. Maybe the article should have been "Banks Are Evil".

As further perspective, the banks' fines are equivalent to the combined GDP of 84 nations. If banks had not sinned they could have given all 363 million citizens of those 84 nations an entire year's wages.

DeFi has never "sinned". The rules of engagement are coded into the smart contract. You do not need to trust a counterparty who may be incentivized to twist the truth, nor rely on trust to engage in financial transactions. The code just executes what both parties agreed to.

> #3. *"Crypto lenders' exclusive focus on other crypto projects suggests their problems run much deeper than a Lehman-style liquidity crisis."*

Nah...Celsius, BlockFi, Voyager were just like Lehman Brothers.

> #4. *"Digital currencies like bitcoin are too inconvenient to live up to their promise of ending the concentration of money in a relatively small number of banks, asset managers and governments."*

Why does a reporter – and here I love borrowing a classic Marc Andreessen line – "who can't chin 12,000 followers" get to pronounce 300 million people wrong? 300 million people see the promise of blockchain. Not my problem if a reactionary who completely misunderstands the basics can't see it.

I'm a true sportsman though. I made a serious effort to help this young whippersnapper through his misunderstanding.

From: Dan Morehead
Sent: July 3, 2022 8:43 AM
To: 'jon.sindreu@wsj.com' <jon.sindreu@wsj.com>
Subject: I'M GOING TO QUOTE YOU IN AN INVESTOR LETTER TO 150,000 IMPORTANT INVESTORS

Jon,

I'm going to quote you in my July investor letter.

I'd love to help you understand DeFi before I do.

Would you like to talk?

Dan

From: Dan Morehead
Sent: June 30, 2022 9:36 AM
To: jon.sindreu@wsj.com
Subject: You've Got A Factual Error in Your Article, DeFi Worked Great

Jon,

Your article is factually incorrect.

All the companies you reported on are CENTRALIZED finance companies. They are venture-backed companies. The are not DeFi at all.

DECENTRALIZED finance protocols – like AAVE, Compound, Uniswap, MakerDAO – all worked great. This crisis proves the opposite of your argument. It proves DeFi works great. Way better than centralized finance firms like BlockFi, Lehman Brothers, *et al*.

Happy to have a call if you want to really understand what's going on.

All the best,

Dan

DAN MOREHEAD
CEO

T: 650 854 7001 **EA:** 650 854 7003

P A N T E R A

To quote from *Cool Hand Luke* (starring Paul Newman, 1967), *"Some men, you just can't reach."*

DEFI IS SUPERIOR

The most elegant proof of the superiority of DeFi over centralized finance/banking is in head-to-head competition. Centralized finance companies like Celsius and BlockFi did business with counterparties who then invested funds in DeFi protocols. What happened is profound.

The centralized finance companies were forced by smart contracts to pay back the DeFi protocols.

In fact, you could say that DeFi, due to its discipline for over-collateralization, protects you from CeFi. Celsius was forced to prioritize paying down its $400+ million DeFi loans on Maker, Aave, and Compound to prevent its collateral from being liquidated. There is no ability to "re-structure"/renege on smart contracts. In DeFi "a deal is a deal" – you can't back out.

All centralized finance companies are forced by smart contracts to pay back the DeFi protocols. On the flip side, centralized finance companies can lie to and then ghost their own clients.

For example, even as of this week Voyager explicitly advertised that their client's deposits were FDIC guaranteed – when the FDIC obviously only guarantees member banks that fail. They certainly don't bail out the business losses of a bank's customer, like Voyager.

> *"In the rare event your USD funds are compromised due to the company or our banking partner's failure, you are guaranteed a full reimbursement (up to $250,000)."*
>
> – Voyager Website, 2019
>
> *"Your USD is held by our banking partner, Metropolitan Commercial Bank, which is FDIC insured, so the cash you hold with Voyager is protected."*
>
> – Still on Voyager Website, July 12, 2022

The failed centralized finance companies have gone silent to their customers. Unfortunately, their customers are unlikely to recover their money.

DeFi never does. Customers can monitor the protocols on the blockchain and are certain that the code will execute their transitions. Centralized finance clients have only vague website spin to believe in.

WHY DEFI IS SO IMPORTANT :: By Chia Jeng Yang, Investment Associate

Of the large leading crypto lenders founded in 2017 – Aave, Compound, BlockFi, and Celsius – the DeFi protocols have fared the best. BlockFi was essentially bailed out by FTX with a deal that provided a $400mm line of credit and the option to buy the company at a 93% discount to their high watermark observed in the private markets. Celsius at one point handled $24bn assets under management which is about as much as Point72, one of the most famous hedge funds, founded by Steven Cohen in 2014, off of his 30 years of investment experience. Celsius is now facing potential bankruptcy.

So how did DeFi work better than CeFi in this current crash?

Let's go back to why blockchain is useful once again.

Blockchain provides full transparency. Smart contracts provide automated rules for how specific financial instruments and protocols should act, executed and governed by code, rather than relationships.

Blockchain's visibility and transparency comes with accountability. DeFi applications can't escape with the funds, nor deploy them in strategies your retail investors did not agree to, nor favor one investor over another, nor be under-collateralized without others knowing of it. With the blockchain, the whole world gets to track your actions 24/7 and see every step that you take.

BlockFi Misrepresented the Level of Risk in the BIA Investment Opportunity

22. BlockFi made a material misrepresentation to BIA investors concerning the level of risk in its loan portfolio. Beginning at the time of the BIA launch on March 4, 2019 and continuing to August 31, 2021, BlockFi made a statement in multiple website posts that its institutional loans were "typically" over-collateralized, when in fact, most institutional loans were not. When BlockFi began offering the BIA investment, it intended to require over-collateralization on a majority of its loans to institutional investors, but it quickly became apparent that large institutional investors were frequently not willing to post large amounts of collateral to secure their loans. Approximately 24% of institutional crypto asset loans made in 2019 were over-collateralized; in 2020 approximately 16% were over-collateralized; and in 2021 (through June 30, 2021) approximately 17% were over-collateralized. As a result, BlockFi's statement materially overstated the degree to which it secured protection from defaults by institutional borrowers through collateral. Through operational oversight, BlockFi's personnel failed to take steps to update the website statement to accurately reflect the fact that most institutional loans were not over-collateralized.

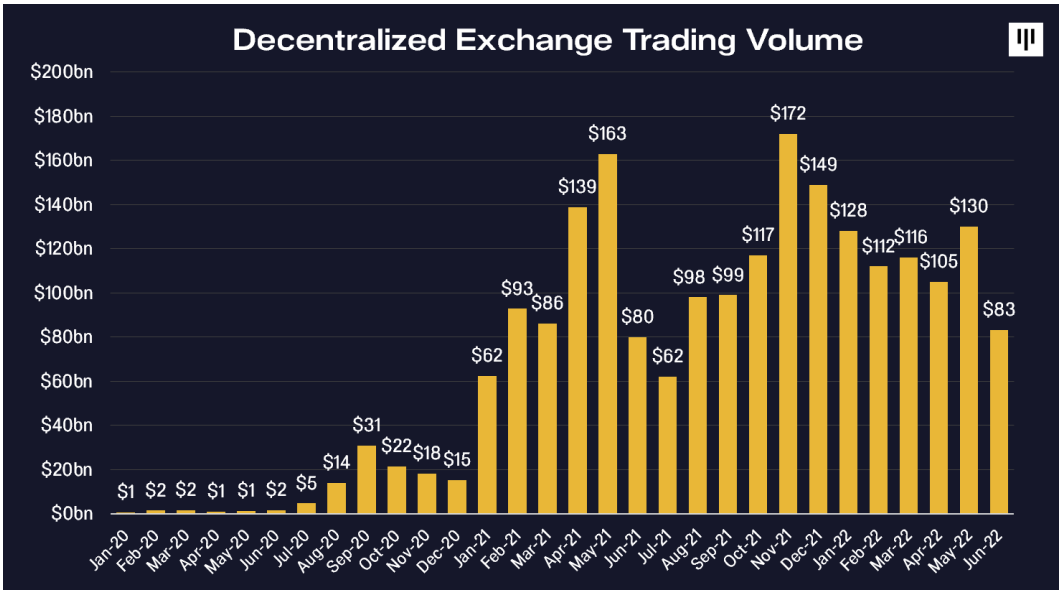
From an SEC statement on BlockFi. DeFi lending protocols governed by smart contracts would not have allowed this to have happened, since the rules of the loans would have been stated clearly in the smart contract.

This transparency transcends specific DeFi applications but encompasses industry-level transparency for the entire crypto community conducting transactions on the blockchain. Information on how various assets and wallets are performing are completely visible to all. For example, we can use on-chain data to see that wallets that have taken out leverage to purchase Ethereum face significant liquidation pressures at $600 and $500 /ETH. For any actor operating in the market, on-chain market visibility is available to all, not just those in the know. This increases everyone's ability to understand what is going on in the markets.

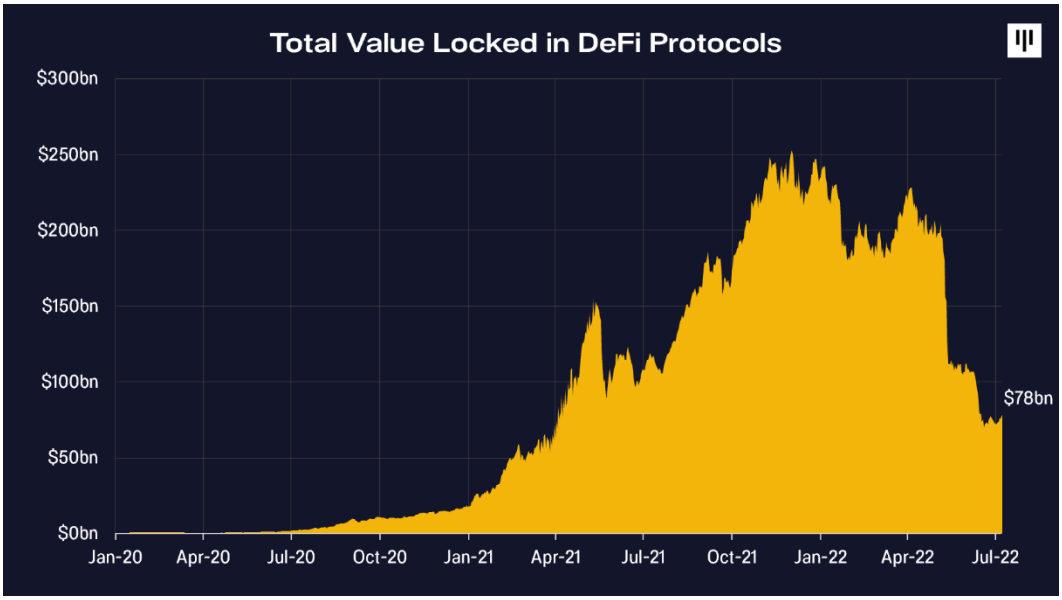
Contrast that with the role of trust for CeFi. We are reliant on market rumors to get a sense of which crypto lender one has deposited their assets with, is safe. There is no visibility into their balance sheet, nor the actions they have taken with your funds, because there is absolutely no transparency with CeFi.

DeFi also relies almost exclusively on over-collateralization in lending protocols providing transparently healthy risk management practices. This is similar to how banks issue mortgages against homes. The strength of DeFi's current platforms is over-collateralization with the minimum collateralization ratio for most DeFi platforms being 110-150%, representing a 60-90% loan-to-value ratio. In practice, we saw strong DeFi protocols (MakerDAO, Compound, Aave) with much higher collateralization ratios of 200-300%, representing a 30-50% loan-to-value ratio. DeFi's anonymity means that only those with strong risk management practices will survive for long, and no leeway was given to relationship-based or gut-feel-based underwriting/under-collateralized lending. CeFi did not have such on-chain discipline, conducting under-collateralized lending to entities that they felt were good borrowers (until they were not), or for a range of reasons that may not be financially sound. In contrast, if not explicitly allowed by the transparent smart contract, DeFi protocols cannot undertake such backroom deals.

DeFi players could also be relied upon to conduct their business in the same way before the crash, during the crash, and now in their aftermath, with no pauses in withdrawals or requirements for emergency funding. During the LUNA crash, for example, DEXs continued functioning as normal while some CEXs were forced to halt withdrawals to the clear detriment of their users, who suffered losses as a result.



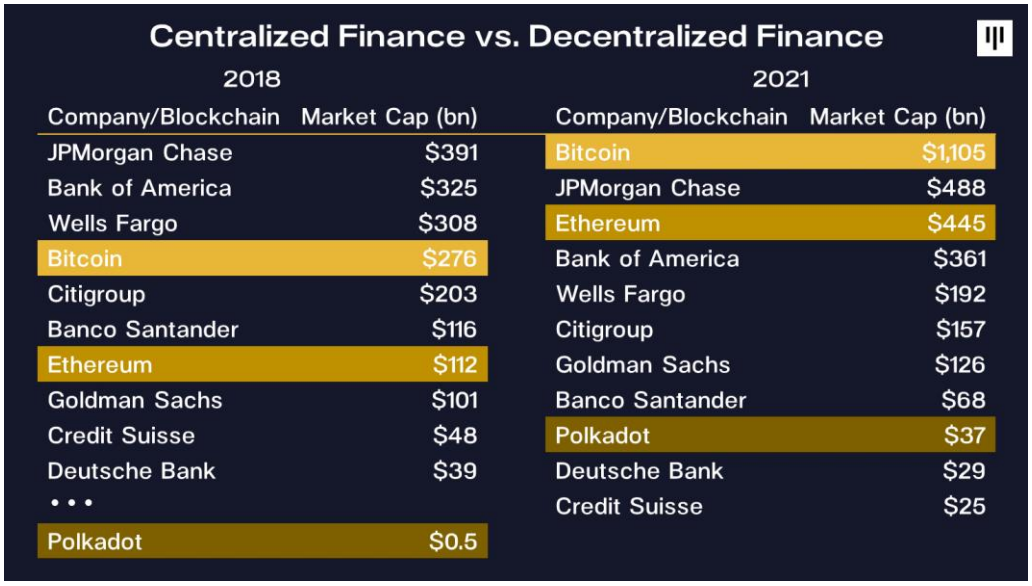
There will be lessons learned from the crash of 2022. The strength of DeFi will be recognized and we think that better tooling for institutions to engage with DeFi will emerge and grow in strength in the next bull cycle.



May 10, 2021

CENTRALIZED FINANCE VS. DECENTRALIZED FINANCE

The grip centralized finance companies have on the world's population is waning. Power being devolved to the people is evident in the rise of decentralized finance. Ethereum – the largest platform for decentralized finance – is now worth more than every bank except JP Morgan Chase. At its recent rate of growth Ethereum will overtake JP Morgan Chase by the end of the month.



February 10, 2021

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.

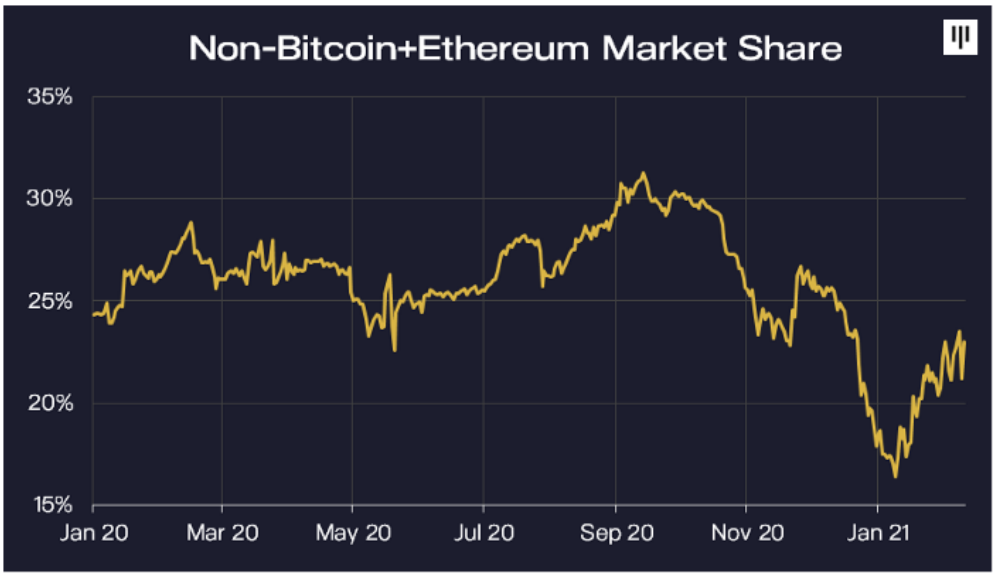
On top of that, these assets' underlying fundamentals should grow proportionate to the price of ETH. As ETH goes up, total value locked and volumes go up, which increases revenues, which increases the prices of these DeFi assets. As the market gains confidence that DeFi is here to stay and isn't a fad, 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 (DEFI)

As we wrote in our January investor letter, we're very bullish on Ethereum. We're even more bullish on the DeFi projects built on top Ethereum and Polkadot.

The non-bitcoin+ethereum market share has grown from 16% to 23% in the past 4 weeks. Watch this space. That's where the largest gains are likely to be.

Pantera Liquid Token fund is currently long 68% non-bitcoin+ethereum.

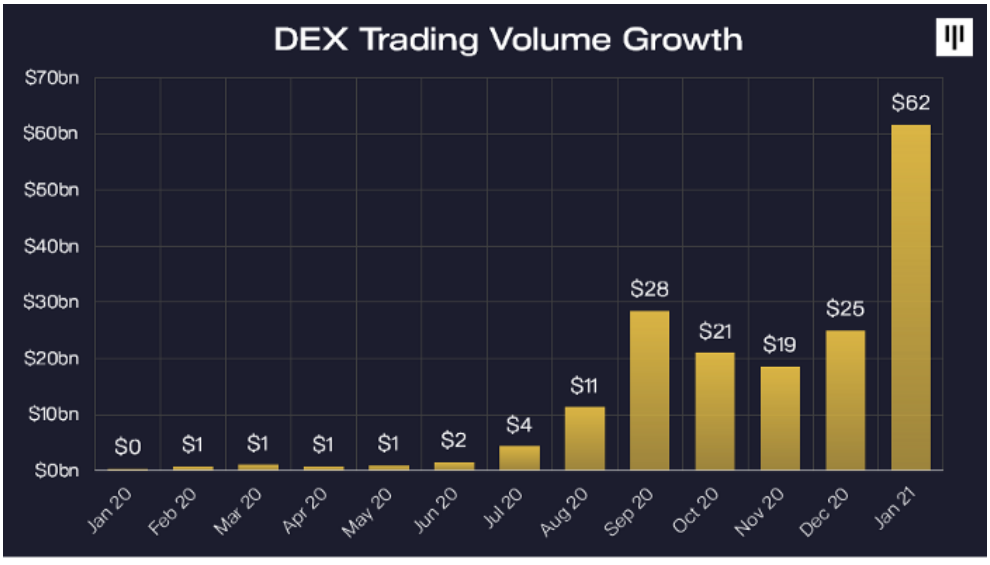


DECENTRALIZED FINANCE GROWTH METRICS

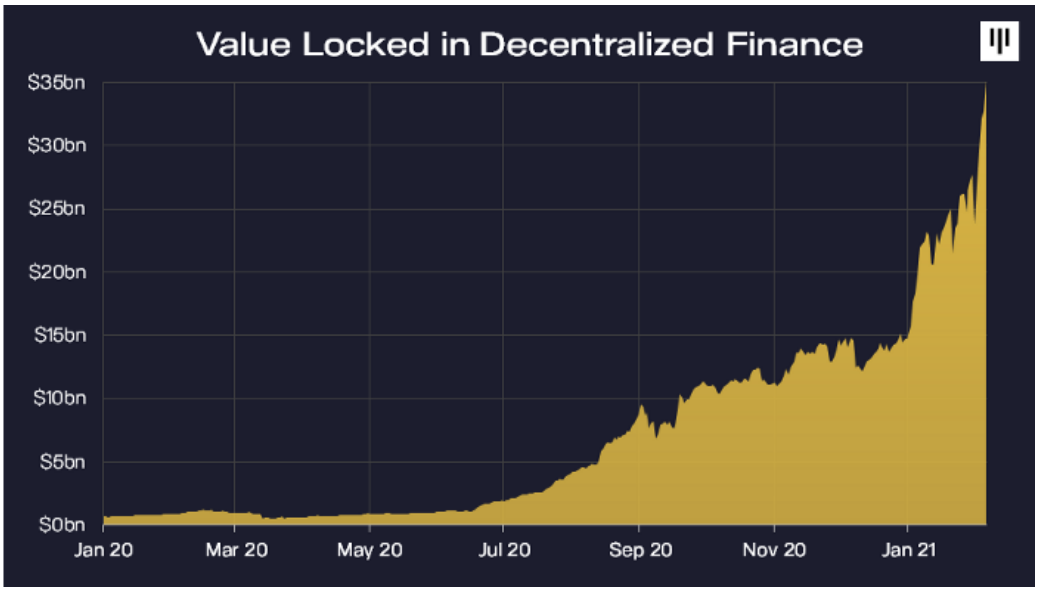
Decentralized exchange volume is beginning to take off. Total trading volume across DEXes surpassed $60bn in January 2021.

Pantera has positions in these decentralized exchanges:

- 0x
- Injective
- 1inch
- PowerTrade
- Balancer
- SushiSwap
- DODO
- Uniswap



In parallel, the total value locked in DeFi protocols is continuing to rise. As of February 5th, the amount of value in DeFi was around $35bn. At the same time last year, it was just about $1bn in total.



January 14, 2021

WHY ETHEREUM IS UNDERVALUED – BY JOEY KRUG

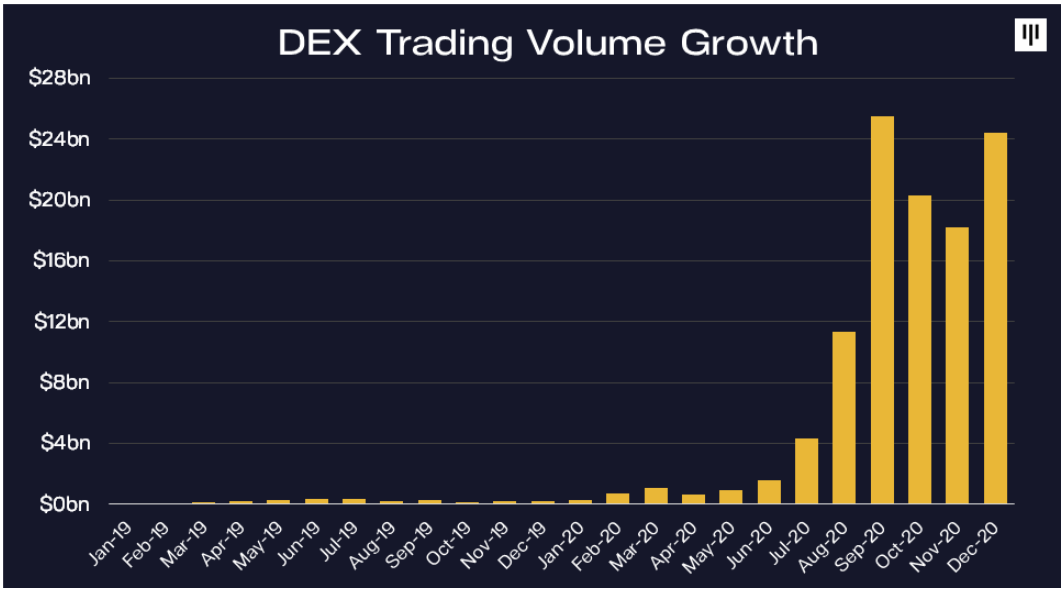
Ethereum is the leading asset in the cryptocurrency space for developers who want to write smart contracts and decentralized finance (DeFi) applications. It's the base money collateral for this new financial system. On Ethereum, DeFi has grown from $1bn in Jan 2020 to $16bn in Jan 2021, has more fees paid than Bitcoin, trades at an implied P/E multiple of 79, is down 14% 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.

March 16, 2021

WHY ETHEREUM IS UNDERVALUED WITH JOE LUBIN

Last month's thematic call 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."

BEST-PERFORMING CURRENCY

There are over 200 paper currencies on Earth. We've limited the cryptocurrencies to just the top five.

Even with that, a cryptocurrency has been the best-performing currency nine of the past eleven years.

In the era of unlimited money printing, paper money is no bueno.

Best-Performing Currency

Year	Currency	Performance
2020	ETH	+460%
2019	BTC	+85%
2018	JPY	+3%
2017	XRP	+32,204%
2016	ETH	+773%
2015	BTC	+38%
2014	USD	+0%
2013	BTC	+6,035%
2012	BTC	+169%
2011	BTC	+1,387%
2010	BTC	+480%