

Deciphering the “Terrable” Crypto Market Crash

INTRODUCTION

Crypto winter arrived in an unusual summer.

Cryptocurrencies encountered a significant selloff over the past two months. Its market capitalization dropped from \$1.7 billion to \$857 million – 49.6% – from May 1, 2022 to June 30, 2022.¹

Why did the price of cryptocurrencies fall? In this analysis, we provide an answer.

- + Background: How the crypto space that evolved over the last few years led us to this moment?
- + Timeline: How did events unfold?
- + Implication: What do these events imply? How does this bode for crypto’s future?

SUMMARY

The recent market sell-off was essentially a cascading series of deleveraging events. Therefore, the three motivating questions we try to answer are:

- + How was leverage in crypto created in the first place?
- + What events triggered deleveraging in the past month?
- + What is the aftermath of this deleveraging?

BACKGROUND – THE CREATION OF LEVERAGE

The Emergence Of Token-Centric Economic Model

Leverage was enabled thanks to the creation of tokens during and after the 2017 Initial Coin Offering (ICO) boom. A token-centric economic model was created, allowing more ease of fund access and transfer.

It began with the problem of tokens finding it hard to be traded easily. Centralized exchanges (CEXs) such as Binance, founded in 2017, had stringent criteria to list tokens due to regulatory restrictions. CEXs therefore, were not enough in providing liquidity to broader tokens.

As a solution, decentralized exchanges (DEXs) such as Uniswap became popular. During February 2017 to November 2018, the number of tokens listed on DEXs was almost three times that of CEXs. DEXs pioneered a new model of Automated Market Making (AMM).² They eliminate the central exchange reserve by crowdsourcing liquidity and executing on smart contracts. The rise of DEXs can also be contributed to its incentivized pools. AMPL, SETH, and JRT are three examples of liquidity pools with high volumes incentivized by airdrops.³

However, DEXs faced the same liquidity challenge – where does the crowdsourcing liquidity come from? Why would people want

to supply liquidity to these decentralized protocols? To solve this problem, they issued their own token rewards as incentives. These native reward tokens can be traded and have monetary value. They also allow liquidity suppliers to earn rewards.

As more tokens were created, sourcing liquidity became a constant headache. Every new token needed incentives to gather liquidity, and the easiest model was to issue another reward token on top of the underlying token.

This created a circular problem. Eventually it created leverage in the process and laid the

ground for leveraged trades.

| What is Yield Farming? |

Before we dive into how leverage was created, we will introduce the concept of yield farming.

Yield chasing behavior plays a very important role in attracting funds in the crypto space, especially in DeFi. The nature of crypto assets can be categorized as either real infrastructure value or derivative value. Infrastructure value represents underlying protocol investment and maintenance fees, including Ethereum’s gas fees. Derivative value refers to funds not directly tied to a protocol’s development but mainly for monetary pools which then get distributed to underlying protocols.

Derivative value is mostly achieved by yield chasing, which refers to any actions taken to generate yield.

Yield farming could be in the form of liquidity mining, staking, and lending, among many other ways.⁴ As the name suggests, liquidity mining is the process of providing liquidity to a liquidity pool by depositing crypto assets and earning rewards in return. Sometimes this reward is given in the native cryptocurrency of the liquidity pool.

Staking refers to pledging crypto to a proof-of-stake (PoS) network to validate transactions. People who stake their crypto are called validators. If a transaction is verified on the network, validators receive rewards. Sometimes their stakes can be confiscated if a

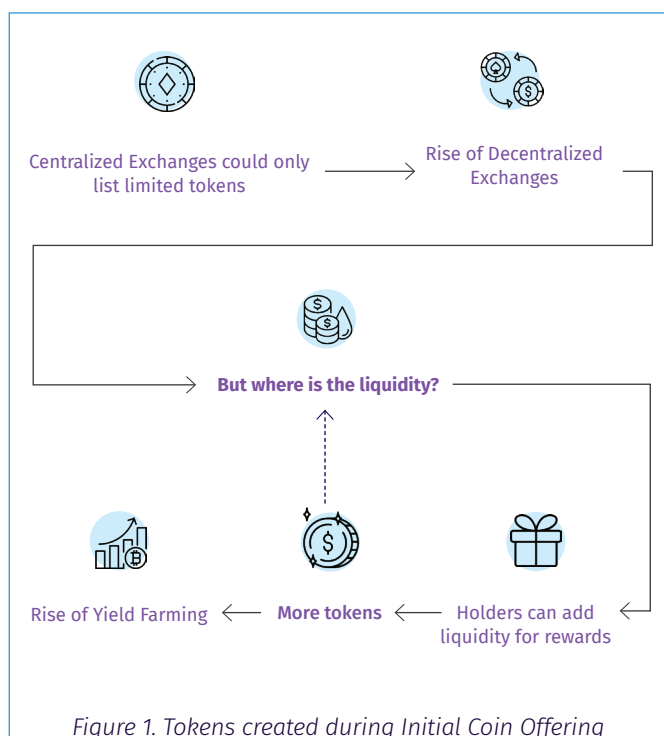


Figure 1. Tokens created during Initial Coin Offering boom needed trading avenues and liquidity

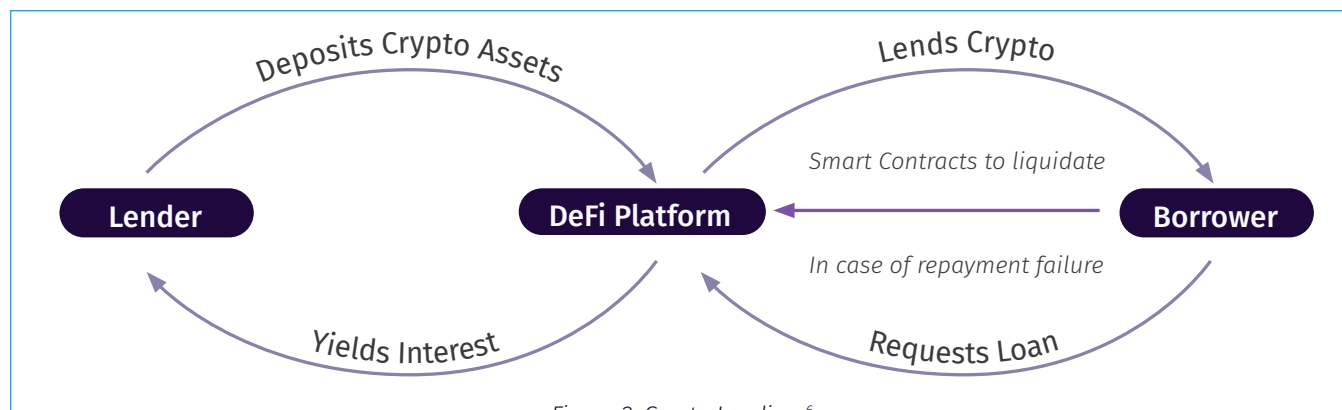


Figure 2. Crypto Lending⁶

false transaction is verified; this is commonly referred to as slashing.⁵

Lending can also be used to generate yield. A lender deposits her crypto assets to the DeFi platform, and she receives some interest on her deposit. The DeFi platform then lends those assets to a borrower who pays a fee to take out the loan. This process is similar to liquidity mining.

Liquidity mining, staking, and lending help investors increase their leverage by enabling them to perform margin trades and allowing additional rewards on top of the existing exposure of the underlying token. These tools were widely used as the three major ways to generate yield.

| The Rise Of Yield Farming |

Inflows of new token creation gave rise to a new token-centric economic model.⁷ Each has its own incentive structure and “tokenomics.” And as the number of tokens existed in the market grew, “yield farming” became popular. Investors found that tokens can be used to generate rewards through lending, liquidity mining, and staking, etc. Yield farming in general generated very lucrative yields, some around 20% and some even provided 3000% annual percentage yields (APY).⁸

Compared to other asset classes, most “yield farming” returns appear safe and easy to obtain. But most investors ignore the risks associated in the process. Beyond a great “yield,” investors do not know from where it is generated. They need to trust unregulated

centralized and decentralized players in the process, not really measuring the associated risks. Investors also get greedy as they chase higher and higher yields. Protocols need to attract liquidity by offering higher and higher yields. These problems can hide themselves well when the market is bullish, but they can quickly make things go south when the market is bearish.

Liquid Staking: The New Instrument Of Yield Farming

Recently, an innovative staking mechanism to generate yield is gaining traction. It serves as an example to show how far the crypto space has come to turn illiquidity to liquidity and thus creating leverage in the process. Liquid staking is an important factor that contributed to the selloff.

Developed around the end of 2020, liquid staking provides further flexibility to token holders and what they can do with their tokens.⁹

More specifically, people can pledge their PoS protocol tokens and receive a staked IOU token from a liquid staking protocol. This token can then be traded in other markets. For example, ether (ETH) holders can pool their ETH in a protocol that runs validators on their behalf.¹⁰ They then obtain protocol tokens representing their staked ETH. Those tokens can be used in other DeFi protocols as if it were ETH. The most popular protocol is called Lido, which has a pool of staked ETH on Lido Finance (stETH) to ETH. It accounts for 31.76% of all staked ETH.¹¹

Liquid staking has several advantages. First and



Figure 3. The new token-centric economic model lays the ground for leveraged trades

most directly, it provides liquidity for the staked token. In the case of ETH, staked ETH is locked for a certain period until it can be redeemed after Ethereum’s transition from proof-of-work (PoW) to PoS. By providing an IOU version of the token, it enabled investors to use their staked ETH to perform other investment strategies as if they are holding ETH. It thus provides investors with opportunities to earn higher rewards. This liquidity then incentivizes people to stake ETH, thereby enlarging the staked pool of ETH and help with its PoW to PoS process.¹²

However, liquid staking also poses several risks: the caveat to offering liquidity to a locked token is the price deviation of the IOU token vs. the original. There is a liquidity discount that contributes to the price difference. For example, stETH usually trades below ETH by around 0-2%.¹³ Sometimes, however, price differences can enlarge and cause a bigger problem, which was one of the reasons for Celsius’ and Three Arrows Capital (3AC)’s insolvencies.

Most importantly, liquid tokens’ design can enable high leverage.

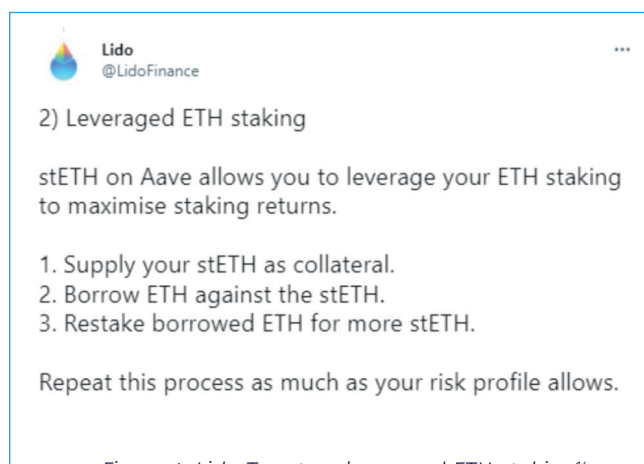


Figure 4. Lido Tweet on leveraged ETH staking¹⁴

A tweet from Lido explains it. One can simply supply the liquid token as collateral, then use the liquid token to borrow/trade for the original token, then use the original token to stake and get more liquid token. Essentially, one can swap between the original token and the liquid token

again and again to create many more tokens in the process. This increases the total asset and leverage. The caveat however, it is that the trade is limited by the lending protocols’ collateralization ratios and transaction fees.¹⁵

Trades like these are examples of how leverage is created in the space.

| Improper Use of Yield Farming |

The fundamental problem of some yield farming lies in unsustainable yield generating mechanisms and their poorly designed protocols that can be exploited. The improper use of yield farming resulted in a spiral of leverage.

This brings back of the question of “where does the yield come from?” For example, Anchor Protocol’s 20% yield on a stablecoin deposit sounded too good to be true compared to banks’ 0.08% interest rate for a savings account.¹⁶ But most investors justified the yield in their own ways, as they were sustained for quite some time.

This discrepancy is further exaggerated by the low rates and excess monetary supply post-COVID. On top of this, crypto as a novel and interesting asset class garnered attention as the newest thing to buy. There are ample crypto influencers, with even Elon Musk advocating for Dogecoin.¹⁷ Crypto seemed to become a culture that the “cool kids” threw a few cents in.

With this enthusiasm, a bullish market was accelerated from excess money, other bad investing opportunities, and culture. Opportunities that seem too good to be true lacked due diligence, and there was excessive unfounded trust in the space. People were greedy and poured money without hesitating, hoping to be set for life with one trade. Risky trades got riskier and leverage got more extreme.

THE SELLOFF

| Terra Collapse¹⁸ |

After laying the groundwork, we now turn to the selloff itself. The peak of the past bullish run had a lot of leverage embedded, but not all of it was necessarily good. Although there was value added along the process, as projects were developing and advancing, there was also irrational behavior and improper risk management.

The collapse of Terra started the series of deleveraging events in the crypto space.

|| Terra Collapse > 1. Algorithmic Stablecoin ||

In order to delve into the collapse of Terra, it's important to understand how algorithmic stablecoins work.

What is a stablecoin? A stablecoin is a token that is designed to have a 1:1 peg to fiat currencies via holding cash or fixed-income instruments. The purpose of stablecoins is to bridge fiat money to the crypto world.

However, one limit of stablecoins is that it is not fully decentralized. It relies on collateral of real-world assets to back its value. Therefore, algorithmic stablecoins are created. Theoretically, it does not rely on the fiat world to justify its value, but it depends on an arbitrage mechanism.

UST is the stablecoin of the Terra protocol, and LUNA is another native cryptocurrency of the protocol. UST is supposed to maintain a 1:1 peg

to USD while LUNA's price isn't. UST maintains its peg by trading back and forth with LUNA. The key to the arbitrage mechanism is that 1 UST can also be traded for \$1 of LUNA.

The arbitrage scenario can be further broken down into two cases. When UST is trading above \$1, investors would sell UST in open market to earn the price difference. They would burn \$1 of LUNA to mint 1 UST, essentially keeping the cost base to \$1, then sell UST.

When UST is trading below \$1, investors would buy UST at a cheaper price than \$1 and convert to \$1 LUNA, and sell that \$1 LUNA for profit.

This mechanism should work theoretically to maintain UST to \$1, assuming the market is efficient and there is enough price discovery. It is an innovative algorithm, but it does fail to consider cases when there is a supply and demand imbalance, especially in the case of a bear market.

|| Terra Collapse > 2. UST Depeg ||

How UST depegged is a debated topic. Popular narratives include a “coordinated” and “intentional” attack, well-funded investors recognizing protocol design flaw and arbitrage opportunities. We present the two most popular narratives out there, but it is out of our scope to determine the validity of these narratives.

|| Terra Collapse > 2. UST Depeg > a. Attack ||

A popular Twitter thread claimed that it was an attack that started the death spiral which led to Terra's downfall.¹⁹ Some smart investors

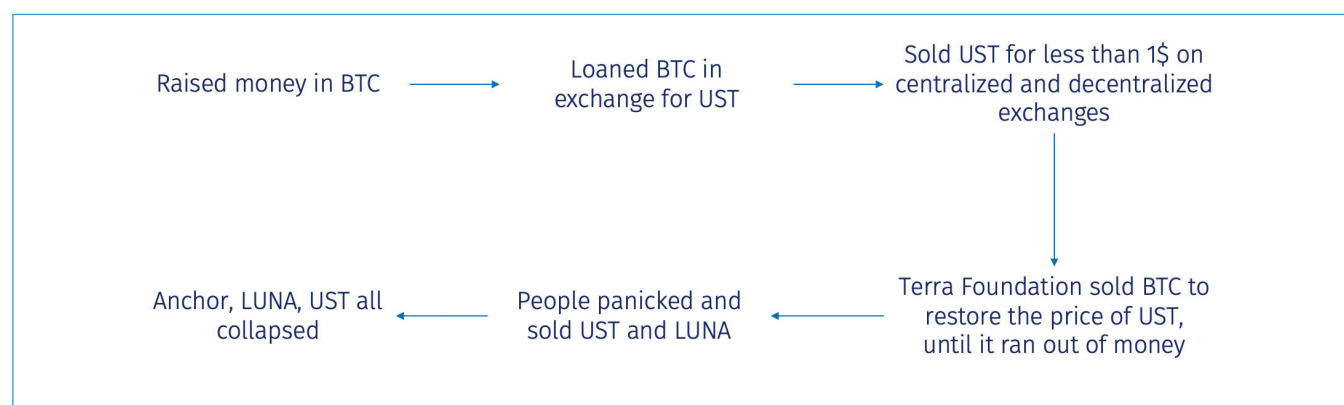


Figure 5. An “intentional” attack started the collapse of LUNA, UST and Anchor

with enough funding saw a great arbitrage opportunity. To profit, they need UST the algorithmic stablecoin to lose its peg and drop below \$1. They did it by raising money in BTC, then got into contact with Do Kwon, the founder of Terra, to strike a deal by lending out BTC to Terra and getting UST in return. Terra at the time was purchasing BTC for collateral to back UST, so the deal was made. The smart investor then sold UST for \$1 on Curve, a side pool to depeg UST slightly. This sidepool’s depeg eventually triggered other exchanges’ UST to depeg.

|| Terra Collapse > 2. UST Depeg > || b. Smart Arbitrage²⁰

Another widely circulated perspective doubted the story of an attack. Nansen, Chainalysis, and Uppsala Security performed on-chain wallet tracking analyses. They argued that the initial depeg was caused by investors taking advantage of the arbitrage trade.

The timing of the beginning of the depeg coincided with Terraform Labs’ withdrawal of funds on the Curve protocol to prepare for a new liquidity pool creation. Terraform Labs transferred UST from 3pool to 4pool on Curve. Several well-funded investors took advantage of the news and consequently wanted to exploit the vulnerability of UST’s liquidity pool by injecting more UST to the Curve protocol.

They first withdrew UST from the Anchor protocol and transferred the funds to Ethereum, among many other chains. They then exchanged a large amount of UST for other stablecoins

on Curve, to create more downward selling pressure. The selling of the large amount of UST on 3pool reduced liquidity, which led to an initial small depeg of UST.²¹

The depeg of UST propelled traders to arbitrage using LUNA, which theoretically should bring up UST’s value by decreasing its supply. However, due to network congestion, the arbitrage mechanism didn’t correct UST’s value as intended. This contributed to collective panic. As UST lost its peg, investors started losing faith in LUNA. LUNA’s price dropped. As LUNA’s price dropped, it made the intended arbitrage trade – redeeming LUNA with UST – less appealing. The supply of UST consequently increased, unable to be balanced with demand, causing UST to further depeg, which contributed to more faith lost in LUNA.

In the second week of May, Terra collapsed entirely in one week. Both LUNA and UST’s values dropped to near 0. It went from a top 10 ranked protocol by market cap to below 250. The token’s value locked dropped from a peak of 31 billion to 39 million.²²

Terra’s collapse can be contributed to two factors. First, its key arbitrage assumption was challenged. The key to maintain UST’s peg is the arbitrage mechanism between UST and LUNA. The mechanism relies on one important embedded assumption – LUNA’s price is at least stable when UST’s value drops below the peg, so that investors would burn UST for LUNA. This assumption further relies on an efficient market and uncongested network, which was challenged during the crash.

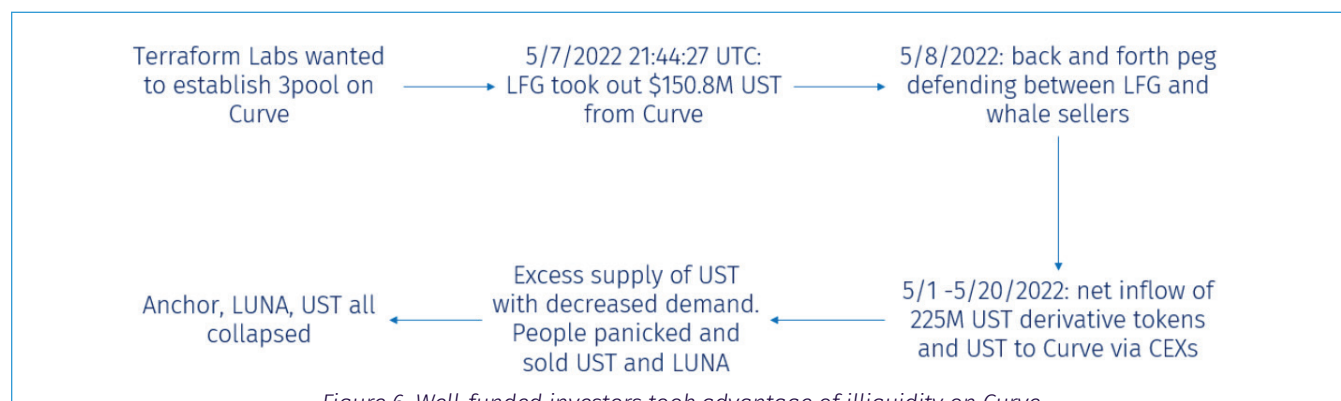


Figure 6. Well-funded investors took advantage of illiquidity on Curve

However, the most important reason of Terra’s collapse is UST’s unsustainable value, backed by the Anchor Protocol.

|| Anchor’s Unsustainable Yield ||

Anchor Protocol plays a central role in Terra’s ecosystem. To provide context on its importance, here are three statistics:²³

- + At the end of April 2022, right before Terra’s collapse, Anchor ranked 3rd by TVL in the entire DeFi sector.
- + It accounted for over half of all DeFi activities on Terra.
- + It held over 71% of UST’s total circulating supply of \$17.84 billion.

To Terra, Anchor is an incentivizing entity built to increase demand for UST and LUNA. It functions as the power machine behind Terra to attract adoption for UST and consequently drive LUNA’s price up. It does so by playing with the dynamics among UST, LUNA, and ANC. Specifically:

- + It issues UST in loans.
- + It distributes ANC – the native cryptocurrency token for Anchor – as rewards.
- + It accepts bLUNA – a wrapped version of LUNA – as collateral.

To understand how Anchor functions, follow Figure 7 below.

Since Anchor is a decentralized savings protocol, main participants can be categorized into borrowers and depositors.

Borrowers are investors who want to take out loans in UST. In order to do so, they need to stake collateral. Anchor only accepts PoS-blockchain assets in the form called “bonded assets (bAssets).” Bonded assets are tokenized representations of cryptocurrencies that can generate yield, which include ETH and LUNA. As of May 2022, Anchor only allowed bLUNA and bETH to be used as collaterals.²⁵

When borrowers provide bLUNA or bETH to Anchor, they are forgoing any yields generated by these tokens. The yields are retained by the Anchor Protocol and used to pay depositors or would be saved in its yield reserve. Interestingly, borrowers also receive a considerably large interest in ANC, as Anchor attempts to bootstrap demand of its usage and issues ANC as an incentive. Sometimes, the net borrow cost can range near 50 bps taking into account the ANC reward, a very low interest rate.

In this borrowing action, Anchor:

- + Issues ANC and UST, injecting them into markets motivating wider adoption
- + Attracts investors to stake bLUNA, reducing LUNA supply
- + Obtains yield from bLUNA and bETH as a source of income

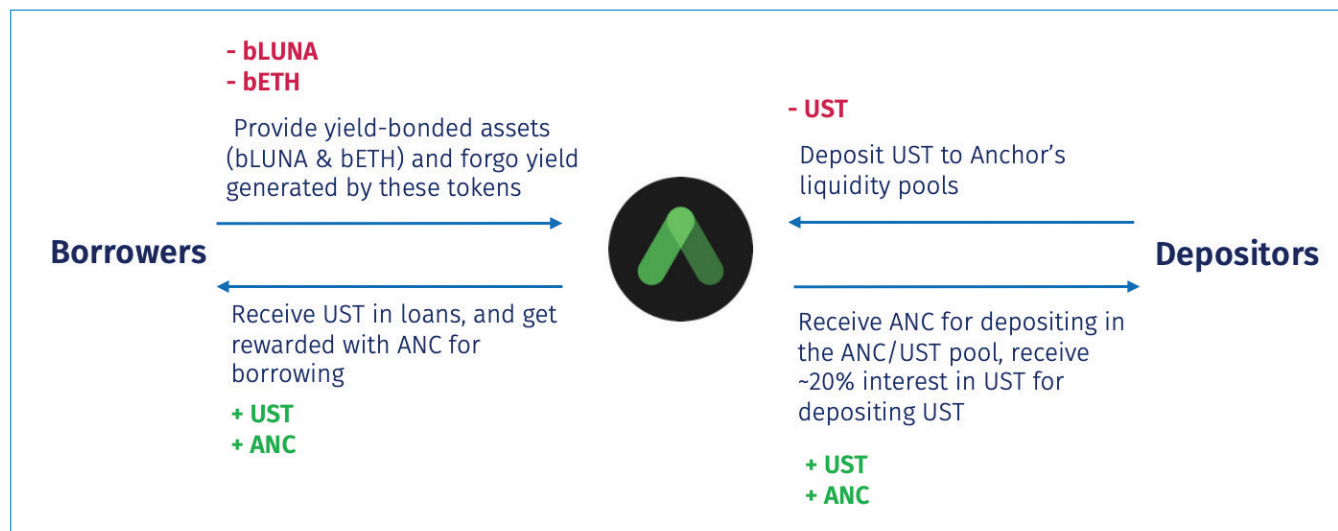
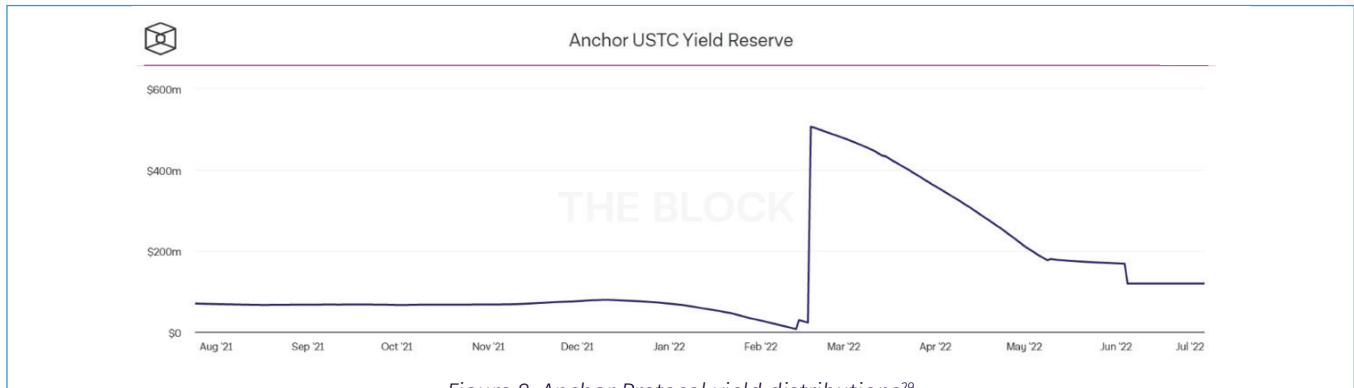


Figure 7. Anchor Protocol’s design²⁴



Depositors are investors who want to deposit UST to Anchor to generate yield. They can receive a quite stable 20% interest in UST for their deposits. They can also earn ANC when depositing into the ANC/UST pool.

In this taking in deposits action, Anchor:

- + Collects UST, reducing outstanding UST supply
- + Issues ANC, injecting it into markets motivating wider adoption

From these two dynamics, Anchor achieves its objectives of increasing demands for UST and LUNA, either by encouraging broader usage or decreasing their supplies. However, its continuing success relies upon two forms of incentives.

- + ANC's price: since ANC is the driving reward for borrowing and depositing, if its price falls dramatically, the reward wouldn't be as appealing
- + Its yield reserve's strength: since the yield reserve acts as the balancer between borrowing and depositing behavior by collecting yield when there is excess and distributing when there is insufficiency, if the yield reserve becomes depleted, economic incentive would completely get erased

Let us examine these two factors closely.

- + ANC's price: ANC is created for two purposes. First, as a governance token that allows its holders to vote for various polls, among which the most important is on Anchor's interest rates. Second, as a

pass-through reward token to distribute a portion of Anchor's yield to its holders.

The problem with ANC's tokenomics is its weakness to sustain its value during a bear market. The direct monetary incentive comes from protocol fees, which can decrease significantly when the market sells off. The governance aspect doesn't provide much value either when there is not.

- + Its yield reserve's strength: Because Anchor's intention is to bootstrap demand, it pays out high yields to incentivize borrowing and depositing. To attract users, it gives out a ~20% stable interest rate for deposits and ~20% ANC interest rate for borrowing.²⁶ This yield mainly come from Terraform Labs' injection of liquidity.

In Figure 8 above, we observe that Anchor's yield reserve constantly decrease, aside from the big jump in late February 2022 that was due to Terraform Labs' 450 million UST injection.²⁷ In fact, this was not the first time where Anchor needed to rely on external sources of funds to sustain its yield. In July 2021, 70 million UST was injected as the reserve was depleting.²⁸ This signifies that the yield is not self-sustainable, and it is essentially a competition for raising funds against time.

Perpetual machines don't exist. Anchor Protocol's failures can be contributed to ANC's poor tokenomics and its yield reserve's imbalance. High yields magnified the unsustainability and accelerated Anchor's

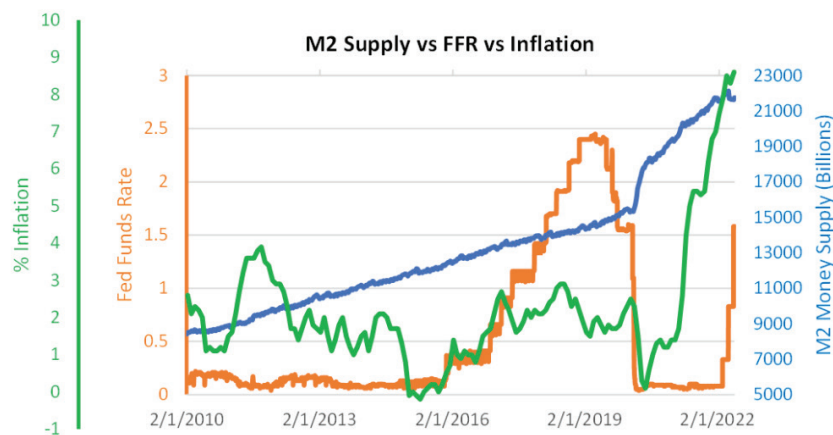


Figure 9. Risk-off macro environment triggered broad market selloff³³

failure. As Anchor failed, it started the domino effect spreading selling pressure to UST and LUNA, eventually led them to \$0.³⁰

| Contagion Begins |

Terra's collapse triggered the crypto selloff. However, the risk-off macro environment also played an important role in driving down prices.

Due to historically high inflation and excess monetary supply, the Fed announced an unexpected 75bps interest rate hike in June.³¹ The market reacted negatively. Equities also encountered a strong headwind as the S&P 500 Index shed off 10.51% from the beginning of May to end of June.³²

As a more volatile asset compared to traditional asset classes, the price of cryptocurrencies was impacted by the sudden reduction of monetary supply. BTC dropped 50.74% and ETH dropped 63.55%.³⁴

Against this backdrop, Terra's collapse spread the fire more rapidly. Above we show a timeline of the events:

- + **May 7th – May 13th:** Terra collapse caused UST and LUNA to drop to near \$0.³⁵
- + **June 10th:** The price of stETH deviated from ETH by approximately 5% on Curve due to liquidity dry up caused by Terra's collapse.³⁶ When UST collapsed, many users panicked and converted more than 600,000 bETH back to stETH in 9 days.³⁷ On top of

the conversion from bETH to stETH, there was massive selling pressure of stETH back to ETH. This liquidated much of Lido's staked assets and disrupted a previously consistent 1:1 ratio between stETH and ETH. In response, Lido incentivized a redistribution of stETH to a 13:1 ratio in order to rebalance the protocol.³⁸

- + **June 12th:** Celsius Network, a lending platform where investors can receive interest on deposited cryptocurrencies or take out crypto-backed loans, paused customers' withdrawals, swap, and transfers.³⁹ It faced insolvencies as UST, LUNA, stETH, and the broader cryptocurrency markets sold off. This is caused by its misuse of customer funds to generate yields, which allegedly they had exposure to UST, LUNA, and stETH, among others.⁴⁰ As of May 3, Celsius wallets had deposited around 261,000 ETH into Anchor.⁴¹ As their invested tokens' prices began sliding after LUNA's collapse, Celsius' assets shrank. As investors rushed to withdraw, Celsius encountered a worsening liquidity problem.
- + **June 16th:** Hedge fund Three Arrows Capital (3AC) failed to meet margin calls as the broader crypto market sold off. BlockFi, FTX, Deribit and BitMEX liquidated its loans consequently.⁴² This sent a cascading effect to its lenders, which allegedly include Celsius, Nexo, BlockFi, Genesis, and Voyager.⁴³ 3AC had borrowed \$2.4

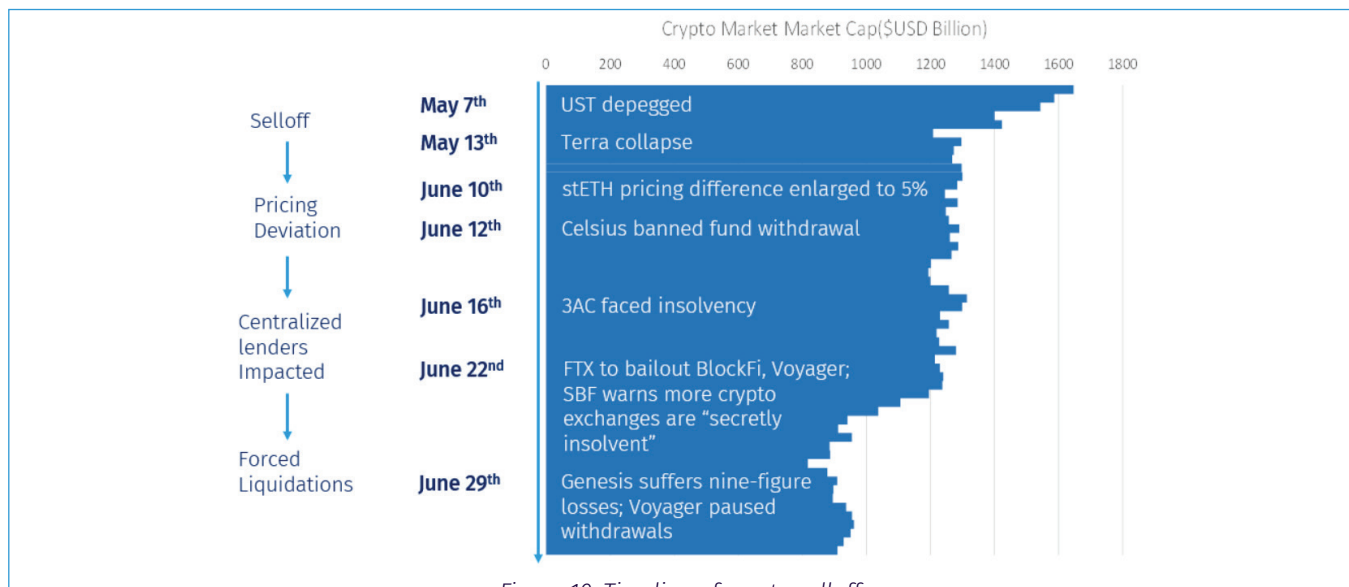


Figure 10. Timeline of crypto selloff

billion from Genesis and \$650 million from Voyager, and failure to meet these payments led to liquidity issues for the lenders.⁴⁴ 3AC was considering options of asset sales and bailout as a solution.⁴⁵

- + **June 22nd – June 28th:** Due to 3AC’s insolvency, its lenders including BlockFi and Voyager faced loan defaults from 3AC were facing bankruptcy risks. As a solution to save the companies, FTX provided BlockFi with a \$250 million line of credit with the option of acquiring the struggling lending platform.⁴⁶ Similarly, Voyager took \$200 million and 15,000 BTC as a loan from FTX.⁴⁷ Sam Bankman-Fried, FTX’s CEO, warned that there were likely a lot more exchanges that are secretly insolvent. Due to balance sheet issues or even a lack of business remaining, SBF believed that many of these exchanges were too far gone to be worth being saved.⁴⁸
- + **June 29th:** Genesis exchange reported nine-figure losses in damages associated with Three Arrows Capital insolvency.⁴⁹
- + **July 1st:** Three Arrows Capital filed Chapter 15 bankruptcy.⁵⁰
- + **July 6th:** Voyager filed Chapter 11 bankruptcy.⁵¹
- + **July 18th:** Celsius filed Chapter 11 bankruptcy.⁵²

In a short span of two months, events escalated quickly. Deleveraging began with pricing deviation across many cryptocurrency pairs, then it impacted centralized lending due to their mismanagement of clients’ funds and poor risk management. Celsius, as an example, used users’ funds to stake in other protocols like Anchor, Lido, and Curve, in order to pay out the promised 20% yields to platform lenders.⁵³ These trades led to an expensive aftermath as their funds faced forced liquidations, and consequently led to insolvencies and bankruptcies.

In this crash, LUNA and UST were the backbone for many projects and companies. Their collapse shattered crypto funding. The speed at which it happened indicated the interwovenness of funds in the space. Entities that did not have proper risk management practices in place suffered swift and heavy consequences.

IMPLICATIONS

The recent selloff caused panic and fear in the crypto space. However, it may just be a natural deleveraging process of any development cycle that should not be taken completely negatively. Data suggests that the crypto market has matured to provide sufficient liquidity for price discovery and trades, shown in tight bid-ask

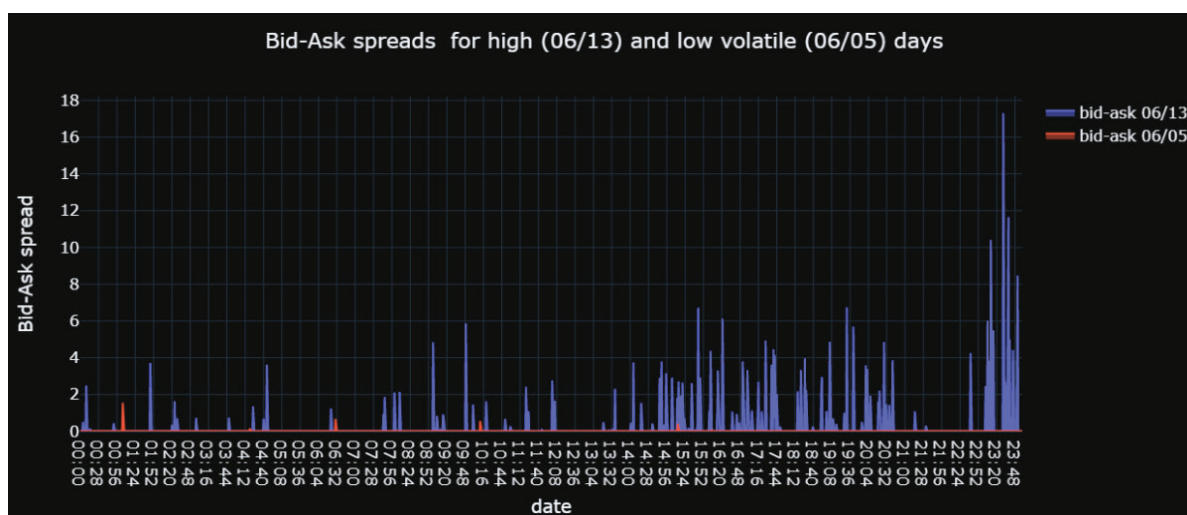


Figure 11. Bid-ask spreads of BTC/USDT trading on Binance, Huobi, OKEx, GDAX, FTX, Gemini, Kraken exchanges⁵⁹

spreads and volume transacted during volatile periods.

| Tight Bid-Ask Spread |

Major cryptocurrencies trading on centralized exchanges have tight bid-ask spreads which indicate market depth and liquidity.

Figure 11 shows two days of bid-ask spreads on June 5th and June 13th for a comparison of different volatility profiles. June 5th was a relatively non-volatile day – with BTC’s daily annualized volatility standing at 31.73%. On June 13th, the day after Celsius paused fund withdrawal, volatility spiked – with BTC’s daily annualized volatility at 171.85%.⁵⁴

On June 13th, the maximum spread on was 7.8bps, compared to June 5th’s maximum of 0.52bps. The majority of spread, however, falls below 4bps. Compared to June 5th, spread widened to accommodate volatile trades.⁵⁵

Although it looks to be an >10x jump, we have to observe that BTC’s 7.8bps bid-ask spread is comparable to Tesla stock’s average bid-ask spread of around 4-5bps.⁵⁶ On a volatile day such as March 1st, 2020, as the COVID pandemic hit the market, Tesla’s average bid-ask spread increased to 15.5bps.⁵⁷

It is also important to note that, on an average day, BTC/USDT and ETH/USDT trading on Binance has an average bid-ask spread that is

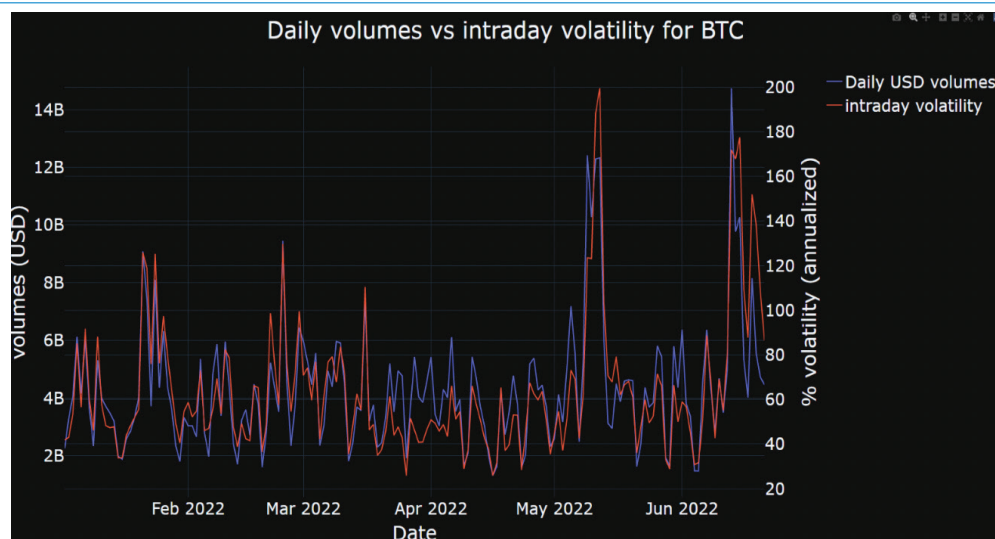


Figure 12. Crypto daily trading volume vs. intraday volatility for BTC⁶⁰

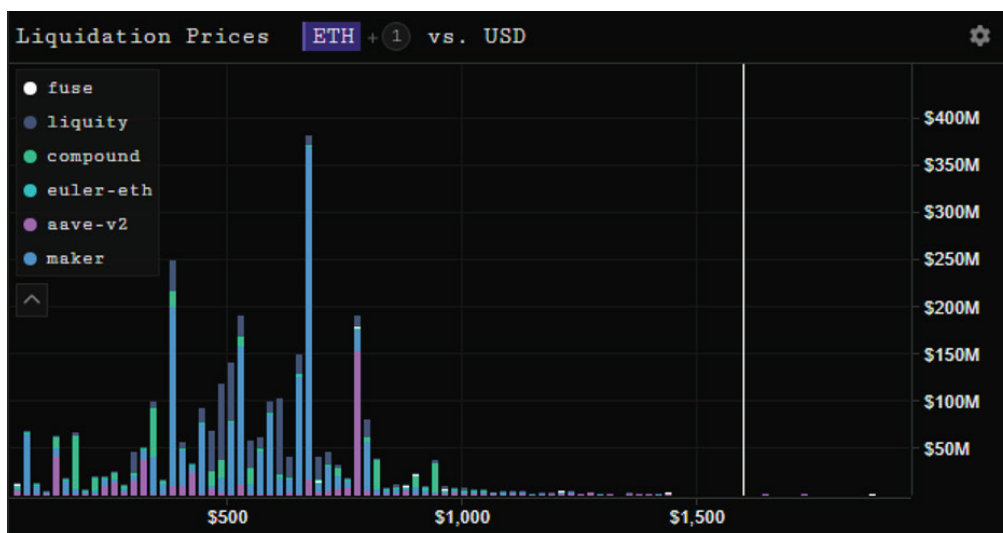


Figure 13. Margin calls on ETH⁶²

<1 bps, comparable to Apple’s average bid-ask spread.⁵⁸

High Volume Transacted During Volatile Periods

A healthy and orderly market is typically characterized by increased volume during volatile periods. In Figure 13, we chart market trading volume against intraday volatility of BTC.

From May to June, there were two sudden rises of intraday volatility. But daily USD trading volume also spiked to support trading and suggesting sufficient market liquidity.

We did not observe liquidity drying up during high price volatility periods. However, in nascent markets (such as meme coins), we observed the opposite phenomenon.

Margin Calls Untouched

Another bullish signal that suggests that deleveraging has taken its course is aggregate margin call positions. Specifically, we look at ETH positions on decentralized protocols including Aave-v2, Maker, Compound, Euler, Fuse, and Liquity. The second threshold of liquidation, apart from Fuse’s large position near \$1500, stands at 44% below the current ETH price levels.⁶¹ Key levels to watch out for, in

our opinion, are \$850, \$650, and \$500.

CONCLUSION

Summer 2022 marked a historic moment for crypto. Events unfolded in a short span of time and caused a large loss of funds.

Crypto markets sold off due to aggressive leverage, built up by yield chasing behavior, triggered by risk-off market environment and Terra’s collapse, which eventually led to contagion events.

The central players of this selloff are yield chasers and centralized lenders. Yield chasers committed to risky strategies without proper risk management. Centralized, underregulated lenders abused the system, profiting from lack of timely regulation.⁶³

However, the underlying infrastructure has dramatically improved over the past five years. The infrastructure of DeFi worked exactly as intended, including protocols that played a role in the crash.

Certain of these protocols, including Curve, Aave, and Compound, implemented safety modules and reserve factors that protected them from bear market events. They also ran on smart contracts that facilitated speedy and automated trades.

The core values of cryptocurrencies reiterated their importance. The value of decentralization and transparency did not vanish. DeFi is transparent. While all sort of incentives were created, protocol mechanics, reserves, and value accruals are publicly visible for analysis.

Similar to 2018, we expect the industry will go into “build” mode for the next few years. In the process, “bad” liquidity will be removed and orderly markets will force “bad” actors from the field.

ANSWERING THE QUESTIONS

At the end, let us revisit the three motivating questions surrounding leverage:

| 1. How Was Leverage Created? |

After the ICO in 2017, a token-centric crypto economy was built. Tokens were created on top of each other to source liquidity. With these tokens, yield farming gained popularity. Bad investing practices and a culture of enthusiasm resulted in a death spiral of leverage.

| 2. How Did Deleveraging Happen? |

Terra’s collapse and the risk-off macro environment kickstarted the selloff. Deleveraging began with pricing deviation across many cryptocurrency pairs, then impacted centralized lending entities and fund entities due to their mismanagement of clients’ funds and poor risk management.

| 3. What Are The Implications? |

Examining the details of these recent events, crypto markets remain healthy as demonstrated by tight bid-ask spreads, high transaction volumes, and unexecuted margin calls. Deleveraging has the benefit of creating a more stable market focusing on “building” the underlying infrastructure rather than participating in risky trades. We remain excited and optimistic about what lies ahead in the future.

FOOTNOTES

¹ Source: CoinMarketCap

² https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3717330

³ <https://www.coindesk.com/markets/2020/07/22/how-uniswap-became-king-of-dexs/> Airdrops: Sending tokens to crypto wallet addresses in order to incentivize token trade and raise awareness.

⁴ <https://jumpcrypto.com/yield-farming-for-serious-people/>

⁵ Note that slashing can happen due to various reasons, including but not limited to verifying false transactions and having operating nodes offline for a prolonged period.

⁶ https://medium.com/@blockchain_simplified/the-yield-farming-phenomenon-lending-crypto-to-earn-interest-82933675f142

⁷ <https://columbialawreview.org/content/coin-operated-capitalism/>

⁸ <https://app.anchorprotocol.com/#/earn>, <https://www.defipulse.com/blog/analyzing-high-yield-opportunities-on-defi-kingdoms>

⁹ <https://www.coindesk.com/business/2022/05/04/lido-briefly-becomes-top-defi-protocol-by-tvl-with-20b-staked/>

¹⁰ Validator: Someone who verifies transactions on a proof-of-stake blockchain

¹¹ <https://lido.fi/ethereum>, as of 7/3/2022

¹² Ethereum currently is undergoing a transition of its consensus mechanism, from proof-of-work to proof-of-stake. It is frequently referred as the Merge.

¹³ <https://coinmarketcap.com/currencies/steth/steth/eth/>

¹⁴ <https://twitter.com/lidofinance/status/1498653519993311233?lang=en>

¹⁵ <https://blog.lido.fi/aave-integrates-lidos-steth-as-collateral/>

¹⁶ <https://www.fdic.gov/resources/bankers/national-rates/index.html>

¹⁷ <https://www.bloomberg.com/news/articles/2022-06-21/musk-says-he-supports-dogecoin-after-people-encouraged-him-to-xj4y7vzkg>

¹⁸ There are many narratives that explains the Terra collapse. The widely circulated view is that there was a coordinated and intentional attack. However, Nansen, Chainalysis, and Uppsala Security state that it is not triggered by an “attack” but several well-funded parties who recognized the arbitrage opportunities. <https://blog.chainalysis.com/reports/how-terrausd-collapsed/> <https://www.nansen.ai/research/on-chain-forensics-demystifying-terrausd-de-peg> <https://medium.com/sentinel-protocol/part-1-debunking-the-lunatic-conspiracy-what-you-didnt-know-about-the-activities-behind-the-57227b75d5a6>

¹⁹ https://twitter.com/OnChainWizard/status/1524123966641741828?s=20&t=y_2M1NHZFC7KosbqZiqF-g

²⁰ <https://blog.chainalysis.com/reports/how-terrausd-collapsed/> <https://www.nansen.ai/research/on-chain-forensics-demystifying-terrausd-de-peg> <https://medium.com/sentinel-protocol/part-1-debunking-the-lunatic-conspiracy-what-you-didnt-know-about-the-activities-behind-the-57227b75d5a6>

²¹ <https://www.theblockresearch.com/layer-by-layer-issue-30-terra-146660s>

²² Source: Messari, <https://defillama.com/chain/Terra>.

²³ <https://decrypt.co/98482/we-need-to-talk-about-terras-anchor>

²⁴ Luca Prosperi wrote a detailed analysis on Anchor, which serves as a good foundation of Anchor’s economics: <https://dirtroads.substack.com/p/-21-from-the-earth-to-the-moon-ii>

²⁵ <https://docs.anchorprotocol.com/protocol/bonded-assets-bassets>

²⁶ <https://www.anchorprotocol.com/>

²⁷ <https://cointelegraph.com/news/terra-injects-450m-ust-into-anchor-reserve-days-before-protocol-depletion>. Also see the graph below from the Block, footnote 37

²⁸ <https://www.coindesk.com/markets/2022/01/28/anchor-protocol-reserves-slide-as-money-markets-founder-talks-down-concerns/>

²⁹ <https://www.theblock.co/data/decentralized-finance/cryptocurrency-lending/anchor-yield-reserve>

³⁰ <https://coinmarketcap.com/currencies/terrausd/>, <https://coinmarketcap.com/currencies/terra-luna/>

³¹⁻³² Source: Bloomberg

³³ Source: the FRED database, Bloomberg.

³⁴ Source: Bloomberg, from 4/29/2022 to 6/30/2022.

³⁵ <https://coinmarketcap.com/currencies/terrausd/>, <https://coinmarketcap.com/currencies/terra-luna/>

³⁶ <https://www.theblockcrypto.com/post/151380/lido-staked-ether-steth-discount-drops-to-5-for-second-time-in-one-month>

³⁷ Bonded ETH (bETH) is a wrapped token version of stETH on the Anchor Protocol. It is used as a form of collateral to take out loans in UST.

³⁸ <https://www.nansen.ai/research/on-chain-forensics-demystifying-steth-depeg>

³⁹ <https://blog.celsius.network/a-memo-to-the-celsius-community-59532a06ecc6>

⁴⁰ <https://www.reuters.com/business/finance/how-crypto-lender-celsius-stumbled-risky-bank-like-investments-2022-06-15/>

⁴¹ <https://www.theblock.co/post/146752/celsius-pulled-half-a-billion-dollars-out-of-anchor-protocol-amid-terra-chaos>

⁴² <https://www.theblock.co/post/152665/ftx-deribit-bitmex-liquidated-three-arrows-capital>

⁴³ <https://cointelegraph.com/news/nexo-price-drops-40-in-three-days-on-rumors-of-ties-to-insolvent-crypto-fund>, <https://www.coindesk.com/business/2022/06/17/genesis-trading-mitigated-losses-with-a-large-counterparty-ceo-says>

⁴⁴ <https://www.theblock.co/post/159261/three-arrows-capital-founders-miss-the-mark-in-first-interview-since-firms-collapse>

⁴⁵ <https://www.wsj.com/articles/battered-crypto-hedge-fund-three-arrows-capital-considers-asset-sales-bailout-11655469932>

⁴⁶ <https://www.wsj.com/articles/crypto-exchange-ftx-extends-250-million-credit-line-to-lender-blockfi-11655833674>

⁴⁷ <https://www.theblock.co/post/159261/three-arrows-capital-founders-miss-the-mark-in-first-interview-since-firms-collapse>

⁴⁸ <https://blockworks.co/voyager-digital-issues-3ac-notice-of-default-on-around-665-million-loan/>

⁴⁹ <https://www.coindesk.com/business/2022/06/29/genesis-faces-hundreds-of-millions-in-losses-as-3ac-exposure-swamps-crypto-lenders-sources/>

⁵⁰ <https://www.coindesk.com/business/2022/07/01/three-arrows-capital-files-for-bankruptcy-in-new-york-tied-to-british-virgin-islands-proceeding/>

⁵¹ <https://www.reuters.com/business/finance/ftx-plans-partial-bail-out-bankrupt-voyagers-customers-2022-07-22/>

⁵² <https://www.coindesk.com/business/2022/07/18/celsius-bankruptcy-filings-hint-retail-customers-will-bear-brunt-of-its-failure/>

⁵³ <https://www.coindesk.com/business/2022/06/16/how-crypto-lender-celsius-overheated/>

⁵⁴ Source: Amberdata, 6/5/2022 and 6/13/2022.

⁵⁵ See Figure 11.

⁵⁶ Source: Bloomberg.

⁵⁷ Source: Bloomberg.

⁵⁸ Source: Amberdata, from 6/1/2021 to 6/1/2022.

⁵⁹ Source: Amberdata, 6/5/2022 and 6/13/2022.

⁶⁰ Source: AmberData, volume measured from Binance, Huobi, OKEx, GDAX, FTX, Gemini, Kraken exchanges.

⁶¹ See Figure 13

⁶² Source: Parsec, as of 7/22/2022.

⁶³ Beyond the centralized lenders’ leveraged trades and poor risk management, the existing regulatory environment also contributed to the market turmoil. Specifically, the use of state-by-state regulation Money Service Business/Money Transmitter license—as opposed to federal prudential regulation—to oversee the aforementioned entities naturally made it difficult for regulators to catch potential systemic risks. To this end, the state banking regulators focus primarily on consumer protection issues and do not have the requisite oversight authority (nor an explicit remit) to evaluate systemic risk. Thus, these regulators are not properly equipped to regulate risks posed by the individual licensed entities.

This issue is at least partially mitigated through federal prudential oversight, because systemic risks can be properly identified and addressed through federal examinations and federal prudential regulators’ engagement with the Financial Stability Oversight Council. In addition, federal prudential oversight also provides additional systemic safeguards when digital asset companies partner with financial institutions, because the federal regulators are able to review the operations of the financial institution and the digital asset company under their general and third-party oversight authorities.

By operating as a federally regulated and insured financial institution, Cross River and its partners are subject to federal prudential oversight, which helps mitigate potential systemic risks posed by crypto companies and provides important safeguards on relevant activities. Specifically, these partnerships impose established risk management and liability frameworks on the crypto companies due to their engagement with banks. Further, to ensure the safety and soundness of its partners activities, Cross River engages in strong due diligence and compliance monitoring practices. Allowing banks like Cross River to partner with crypto companies will give regulators further access to crypto activities and strengthen the compliance and risk management practices in the partnered crypto companies.

WE ARE CROSS RIVER

Cross River is a comprehensive technology infrastructure provider offering core banking services, built with modular APIs. We are incorporating fiat and crypto seamlessly in a regulatory compliant and safe way with direct connection to traditional payment rails.

For more information on our research, contact us at
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You can find our weekly crypto market overview report at
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