Unearthing the Biggest Algorithmic Stablecoin: UST by Terra

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When we talk about algorithmic stablecoins, we often think of Ethereum-based protocols like Empty Set Dollar or Frax Finance. Newcomers like Fei Protocol and the upcoming launch of Gyroscope are also on everybody's watchlist. Many have concluded that Frax Finance is one of the leading protocols taking its cue from its highly successful, fractional reserve/partially collateralized model.

While Frax Finance has undoubtedly proven it is here to stay (one only needs to look at how well it maintained its peg during Bitcoin's recent crash), another sleeping giant has not garnered the same attention in the community. We are, of course, talking about TerraUSD (UST).

To understand why we classify UST as an algorithmic stablecoin, we first have to define what an algorithmic stablecoin is. As its name suggests, algorithmic stablecoins utilize algorithms to control the stablecoin's market structure and the underlying economics. You may think of algorithmic stablecoins as an automated Federal Reserve, where instead of human-made decisions, pre-programmed code executes specific actions to control and influence the price.

While most can agree on that general definition, there has rarely been a definitive consensus on the finer details. Some might argue that it requires an arbitrage mechanism, while others believe that its collateralization ratio is an important consideration. We believe that an asset qualifies as an algorithmic stablecoin if it has any of the following characteristics:

1. Has no collateral; and/or
2. Is partially/fully collateralized by their own native token; and/or
3. Has a floating peg.

We believe this captures the meaning behind algorithmic stablecoins because possession of these characteristics requires algorithmic functions to stabilize the price in order for the protocol to maintain its peg.

There are some semantics on whether UST falls under point 1 or point 2 because although UST is not explicitly collateralized by LUNA (its share-token counterpart), there are those who would argue that LUNA is effectively 'endogenous collateral' for UST because of their arbitrage relationship (further discussed below). Regardless, UST would still fall within our definition of an algorithmic stablecoin.

TerraUSD (UST) Market Capitalization
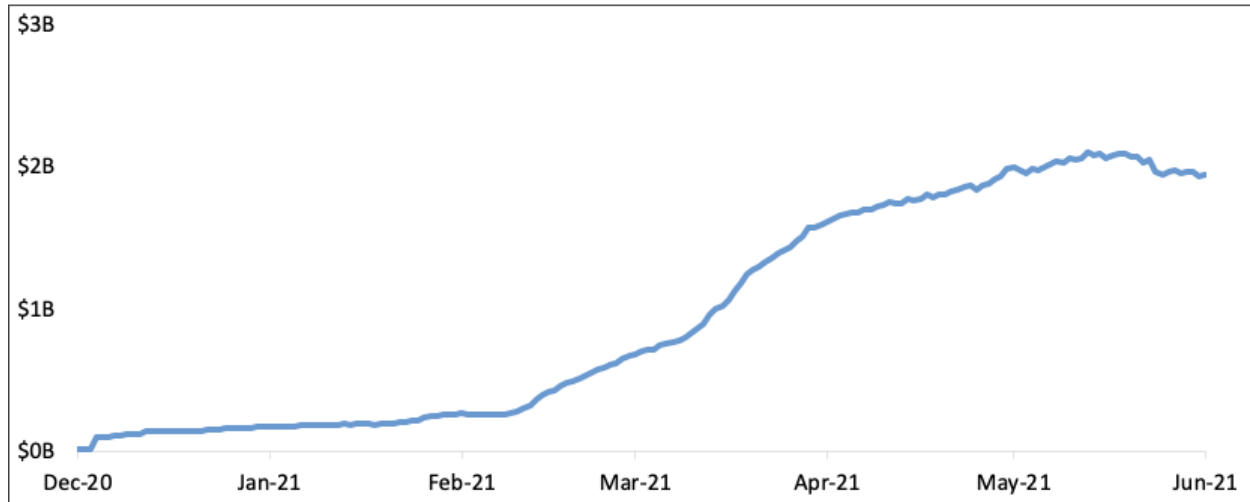
Source: Coingecko

Since UST's genesis in September 2020, the algorithmic stablecoin has exploded in popularity and grew exponentially to $2B in just 7 months[1] - this eventually catapulted it into the top-5 stablecoins by market capitalization.

However, unlike other algorithmic stablecoins, UST and LUNA cannot be discussed in isolation. UST is built as one of the core currencies of the Terra blockchain and is integral to how the network functions. Therefore, we must look at the entire ecosystem to understand why UST is as successful as it is.

Throughout this report, we will be looking into the background of Terraform Lab, Terra Stablecoins, the role of LUNA, and the factors that contribute to UST's successes. The report will also cover the May Bitcoin (BTC) crash and conclude with our view on UST's future.

Background

Terraform Labs is a Korean blockchain firm that created the Terra blockchain. The Terra blockchain is part of the Cosmos ecosystem and utilizes the Tendermint Proof-of-Stake (PoS) model and currently has a cap of 100 validators.[2]

Terraform Lab's approach has been developing business relationships with key players in both the e-commerce industry and online-to-offline (O2O) industry from the get-go. As a result, the Terra Alliance was formed which consists of 15 companies, including big Asian backers such as

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[1] CoinGecko only tracked market capitalization data towards late November 2020.
[2] There is currently a proposal to increase the cap to 130 validators. See
https://station.terra.money/proposal/86

TMON and Yanolja. For some context, TMON is one of the largest e-commerce players in South Korea while Yanolja is South Korea's largest travel platform.

Before launching UST, Terraform Labs launched two precursive stablecoins: TerraKRW (pegged to the Korean Won) and TerraMNT (pegged to the Mongolian Tögrög). Notably, Terra has partnered with the Mongolian government which will accept TerraMNT as currency for certain services like utilities. Terra also has a very successful mobile payment app called Chai which utilizes the Terra blockchain for backend processing and has over 2.4 million users.

Terra Stablecoins

According to Terra's whitepaper:

> *'The existential objective of a stable-coin is to retain its purchasing power. Given that most goods and services are consumed domestically, it is important to create crypto-currencies that track the value of local fiat currencies. Though the US Dollar dominates international trade and forex operations, to the average consumer the dollar exhibits unacceptable volatility against their choice unit of account.'*

Following this line of reasoning, Terra has set out to create cryptocurrencies that are individually pegged to global currencies such as USD, EUR etc, using decentralized oracles. However, to ensure that Terra's primary currency has a stable price, Terra has chosen TerraSDR (now known as TerraSDT) as its flagship currency. To understand why we have to look at what SDR is in the first place.

SDR stands for Special Drawing Rights, an international reserve asset created by the International Monetary Fund (IMF) in 1969. The SDR is essentially a basket of currencies meant to supplement member countries' official reserves during financial crises. The table below is the current makeup of the SDR.

Currency	Weights	Fixed Number of Units of Currency for a 5-year period Starting Oct 1, 2016
U.S. Dollar	41.73	0.582520
Euro	30.93	0.386710
Chinese Yuan	10.92	1.017400
Japanese Yen	8.33	11.90000
Pound Sterling	8.09	0.085946

Source: International Monetary Fund

Technically, the SDR is not a currency but is a potential claim on the available currencies of IMF members - this means that SDR's value is derived from its underlying currencies. As of 1 June 2021, 1 SDR = 1.4438 USD.

By pegging to SDR, **TerraSDT** can 'exhibit the lowest volatility against any fiat currency'. TerraSDT thus becomes a prime candidate for Terra's flagship currency because it can be reliably **used to denominate transaction fees and mining rewards**.

What is interesting to note is that Terra utilizes similar principles as the SDR to stabilize their currencies. Terra stablecoins have shared liquidity, meaning that users can perform atomic swaps between currencies at their respective exchange rates. This mechanism helps mitigate the demand shock when demand for one currency suddenly drops.

Luna (LUNA)

The LUNA token plays many vital roles in the Terra ecosystem. We have broken down three (3) of its core functions below:

Peg Stabilizer

Terra stablecoins rely on a two-token seigniorage model. In seigniorage models, prices are stabilized by controlling the supply of coins in circulation. When the coin price is above the peg, the supply is increased and, conversely, decreased (removed from circulation) when trading below the peg. However, increasing/decreasing the supply leads to greater price volatility on the stablecoin itself - this is where LUNA comes into play.

LUNA acts as the **volatility absorber** because it can always be minted at a fixed exchange rate, irrespective of market conditions.

Example:

Whenever 1 UST < $1, UST holders may exchange 1 UST for $1 worth of LUNA.
Whenever 1 UST > $1, LUNA holders may exchange $1 worth of LUNA for 1 UST.

This system offers **arbitrage opportunities** whenever a Terra stablecoin is trading off the peg; arbitrageurs are thus incentivized to ensure the price returns to its peg. LUNA's burning mechanism further complements this - a portion of LUNA is burned during expansion and algorithmically adjusted until UST is restored to $1.[3] In other words, the price volatility of Terra stablecoins are effectively transferred onto LUNA's fluctuating supply.
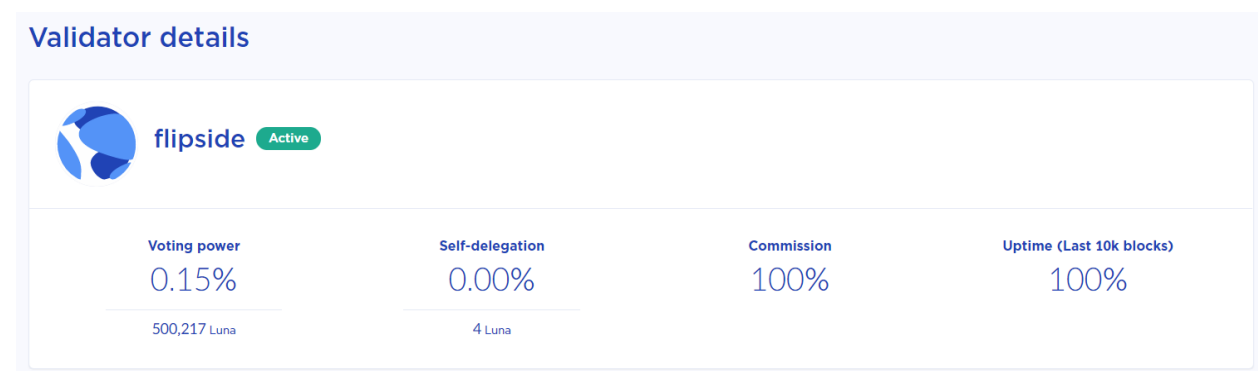
Validator/Delegator

Validators are full node operators that help secure the network by storing a copy of the blockchain on their system and authoring new blocks on the chain. In return, validators receive the following rewards:

1. **Gas Fees**: Validators may set minimum gas fees (paid in LUNA) to prevent spamming.
2. **Stability Fees**: Every transaction incurs a 0.1%-1.0% fee (capped at 1 TerraSDR) and paid in any Terra currency.
3. **Seigniorage**: Validators receive seigniorage rewards for accurately reporting oracle prices.

When summed up, these rewards add up to an annualized return of about 10-15%. This includes airdrop rewards for LUNA stakers for existing protocols (e.g. Anchor and Mirror) and upcoming protocols (not mentioned above as these are temporary rewards).

However, **only 'active validators' are entitled to receive the rewards described above**. To become an 'active validator' on Terra's blockchain, a 'sufficient' amount of LUNA must be staked on the platform. What amounts to 'sufficient' is relative as only the top-100 validators with the highest amount of staked LUNA will become active validators.

As of 1 June 2021, the 100th validator is 'flipside' and has 500,217 LUNA staked.

Validator details

flipside Active

Voting power	Self-delegation	Commission	Uptime (Last 10k blocks)
0.15%	0.00%	100%	100%
500,217 Luna	4 Luna		

Source: TerraStation

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[3] A portion of excess LUNA is routed to Terra's community pool (Treasury) but will be discontinued once the new update (Columbus-5) kicks in. See
https://agora.terra.money/t/proposal-to-burn-all-seigniorage/438.

Therefore, to become an active validator, a validator must stake more than 500,217 LUNA tokens in order to surpass flipside and push them out of the top-100. As of 2 June 2021, 1 LUNA = $6.6, putting the minimum investment requirement at $3.3M. However, not everyone has $3.3M lying around, which is where delegators come in.

Referring to the same illustration above, we can see that 'flipside' has only 4 LUNA staked under 'Self-Delegation'. This means that out of 500,217 LUNA, only 4 belong to 'flipside' while the remainder belong to delegators.

Delegators are **LUNA holders that delegate their LUNA to validators**. In return, validators 'borrow' these LUNA tokens for a 'fee' and stake them in return for more mining power. The fee is essentially staking rewards for LUNA holders and is a percentage of the mining rewards that validators earn. Delegators are free to choose any validator they want while validators are free to set their own fee rate.
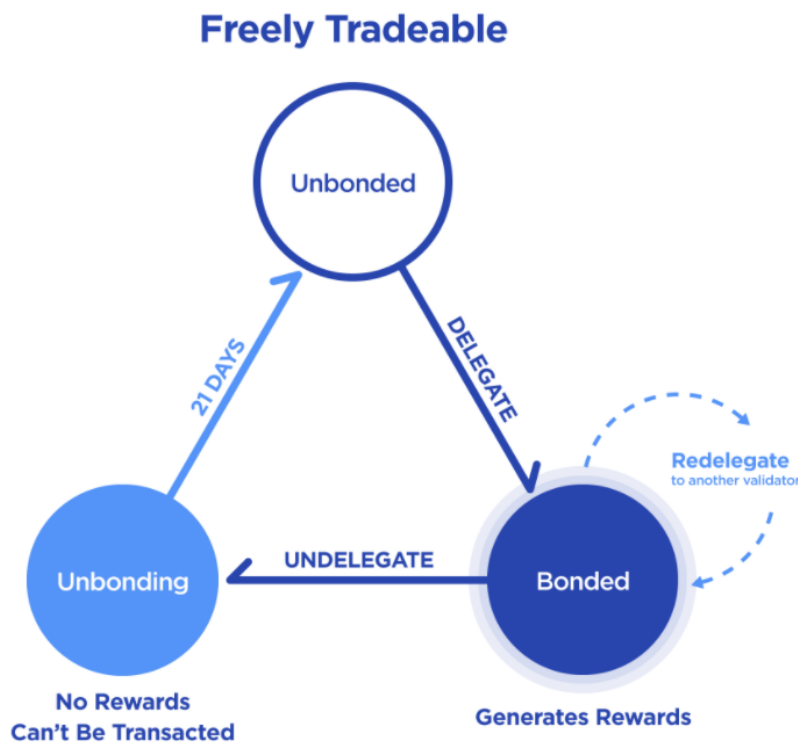
Source: Terra Docs

Once a person has delegated their LUNA with a validator, they will start accruing rewards instantly. However, suppose the delegator unbonds their LUNA. In that case, there is a 21-day lockup period where they cannot withdraw their LUNA and will not receive any staking rewards (the same rule applies to validators). The exception is if they redelegate their LUNA to another validator; in that case, there is no penalty.

Governance

Anyone who has staked their LUNA may participate in Terra's governance process through voting. Voting power is proportional to how much LUNA is staked. Although there is no minimum LUNA required for voting, there is a minimum for governance proposals.

The proposal process consists of three (3) stages which are Deposit -> Voting -> Passed or Rejected. Before proposing, the proposer (or any other LUNA holders) must deposit a minimum of 512 LUNA to move it to the Voting stage. If the proposal reaches a consensus, the deposit is returned (regardless of whether it passes or fails). However, if the proposal gets a 'No with Veto' majority, the entire LUNA deposit is burned.

TerraUSD (UST)

As of 1 June 2021, UST has a market capitalization of $2.0B. While this may seem trivial compared to other stablecoins (USDT has $62.1B), it does not change the fact that **UST is the only non-collateralized algorithmic stablecoin in the top-5 category**.[4] This becomes especially significant when you realise that USDT, USDC, and BUSD are all centralized, fully collateralized currencies. On the other hand, DAI is overcollateralized and backed by third-party decentralized assets such as Ethereum.

Top-5 Stablecoins by Market Capitalization
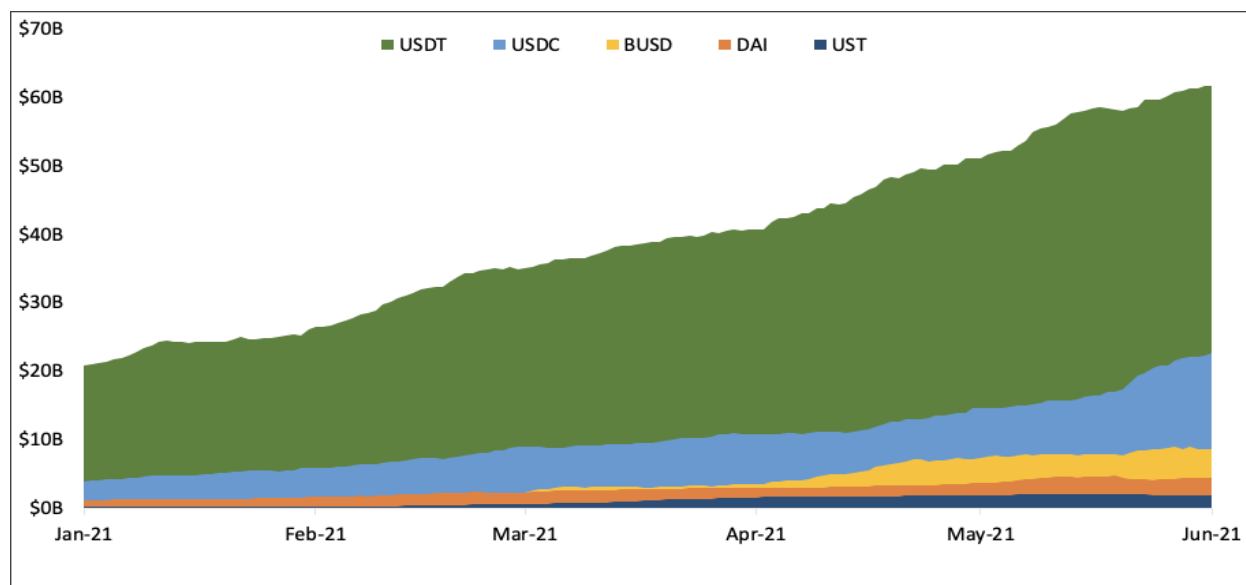
Source: CoinGecko

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[4] We do not consider MakerDao's stablecoin, DAI, as an algorithmic stablecoin, primarily because it does not use its own native token (MKR) as collateral, despite being overcollateralized. This is a key criterion because reliance on a native-issued asset as collateral creates recursive value, which then requires algorithmic functions to regulate the price.

Furthermore, UST's price peg has been incredibly resilient, even when taking into account BTC's crash two weeks ago (further discussed below), which has since recovered. As of 1 June 2021, UST has an average price of $1.002 throughout 2021.

TerraUSD (UST) Price Chart
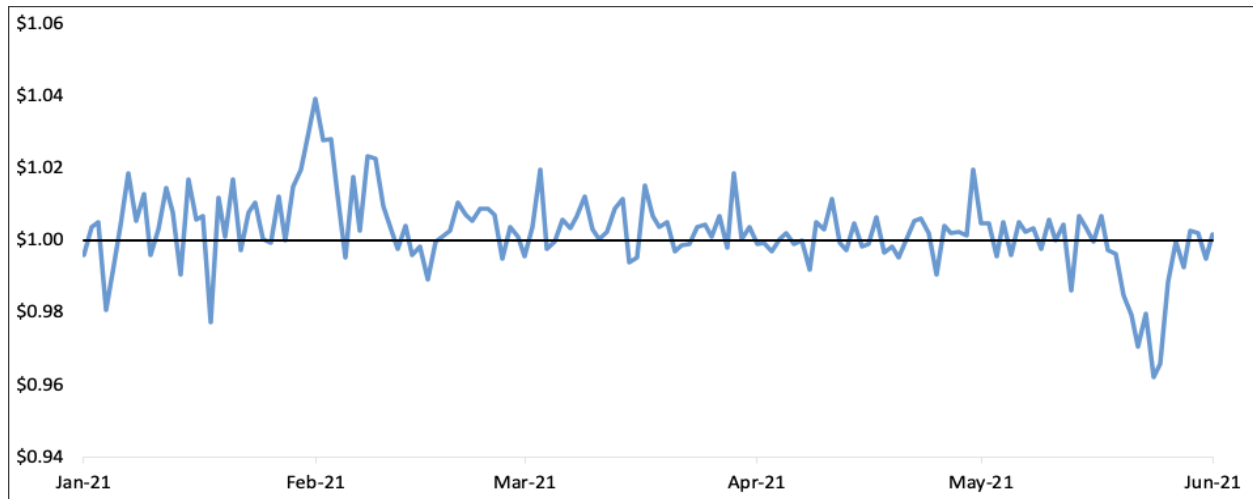
Source: CoinGecko

The benchmark for a 'successful' algorithmic stablecoin model appears to be the partially collateralized model pioneered by Frax Finance. Newer generations like the Fei Protocol are gravitating towards this model. However, what UST (or rather the Terra ecosystem) shows is that you do not need collateral to create a successful algorithmic stablecoin.

Why has UST been successful?

Taking into account the [Lindy effect](#), only FraxFinance, SynthetixUSD ([sUSD](#)), Celo Dollar ([cUSD](#)) and UST have been around for a long enough period to be considered even remotely 'successful'. So what sets UST apart from these models (and other failed seigniorage models for that matter)? We believe there are two (2) main reasons for this.

LUNA Validators help stabilize the UST peg

So far, every single algorithmic stablecoin is built on an existing blockchain as a standalone project. Contrast this with Terra, where Terra currencies themselves are embedded into the network - this allows validators to help stabilize the price of UST.

As mentioned before, validators earn revenue from three (3) main sources: gas fees (optional), stability fees, and seigniorage rewards. However, like most mining rigs, the rewards are subject to volatility. In Terra's case, the uncertainty comes from two factors:

1. The number of transactions conducted, which translates into mining fees
2. The fluctuating supply (and thus value) of LUNA due to seigniorage

To manage this volatility, the network controls transaction fees and the rate at which LUNA is burned whereby:

When mining rewards are increasing (usually bull market);
- Fees are decreased
- Luna burn rate is decreased

When mining rewards are decreasing (usually bear market);
- Fees are increased
- Luna burn rate is increased

The adjustment of these rates occurs every week and is known as 'stability levers' analogous to Bitcoin's Difficulty Adjustment Algorithm (DAA). Thus, mining rewards are meant to be relatively stable, regardless of whether the Terra economy enters a bull or bear market. This is important to attract validators to the system because they help secure the network and inadvertently help stabilize UST's price.

Validators are effectively LUNA whales since they require substantial amounts of LUNA to stake and participate in network security.

		Voting Power				
1	hashed	8.71%	86.76%	10%	12.83%	100%
2	B-Harvest ✓	7.77%	0.03%	5%	12.90%	100%
3	Staking Fund ✓	7.54%	0.02%	20%	12.35%	100%

Source: Terra Station

To illustrate, as of 3 June 2021, the total amount of LUNA staked is 330,701,342 (33.47% of the entire LUNA supply). The top-3 validators with the highest voting power amount to 79,434,462 LUNA or 24.02% of the total amount LUNA staked. This is a key factor because whales exert the most influence on markets and the Terra economy is no different.

One of the most significant threats to any seigniorage model is the price crash of its 'share token'. If the crash is significant enough, whales may lose faith in the system and flee to safer waters by dumping their tokens. A perfect example of this can be seen during Dynamic Set Dollar v1 (DSD)'s attempted salvage operation.

DSD Case Study:

Back in early January 2021, a bunch of DSD whales decided to coordinate a collective pump by burning their DSD tokens and pushing the price of DSD above its $1 peg. The idea was for the protocol to reach its inflationary stage and reward DSD stakers with more DSD tokens. However, once the price started approaching its peg, other whales immediately started dumping their DSD tokens. Ultimately, the selling pressure was too intense, and the pseudo-anonymous collaboration failed. Till today, the DSD peg has not recovered. Although DSD did not have a share token, DSD tokens played a similar role and were part of the liquidity pairing (along with USDC) for the protocol.

What Terra's system does is force whales to cooperate (i.e. not dump their LUNA tokens) for several reasons:

1. Most whales are validators and are able to earn a relatively stable income.
2. Validators have already invested significant resources into the network (e.g. time, mining rigs, application processes, etc.).
3. Even if validators wanted to leave the network, there is a minimum 21-day lockup period where they cannot earn rewards or withdraw their LUNA tokens. The same restriction also applies to delegators who have delegated their LUNA tokens.

We should not underestimate the ripple effect of this setup. Terra's system effectively **transfers the risks of short-term volatility for Terra demand onto validators**. As a result, other users (including whales) can rest assured that if the Terra economy experiences a downturn, it is a challenge and unlikely for other whales to abandon the network. This brings more confidence to the system and encourages traders to continue arbitraging UST and LUNA without fear of holding a dead bag.

Essentially, Terra has managed to create a system that **aligns the incentives of LUNA whales with the network's stability** which helps stabilize UST's price at $1.

Real Demand for UST

Competition is stiff in the crypto ecosystem. Users are spoiled for choice as there are numerous alternatives for stablecoins. Unfortunately, choosing one over the other is often tied to convenience and 'adoption by other applications' instead of philosophical principles like 'true decentralization'. Not to mention that protocols need to manage scalability issues as the demand grows, something most algorithmic stablecoins have yet to experience due to lack of maturity.

Terra has the advantage over other protocols because it has its entire network at its disposal. Terra can thus facilitate demand for UST by building their ecosystem around it.
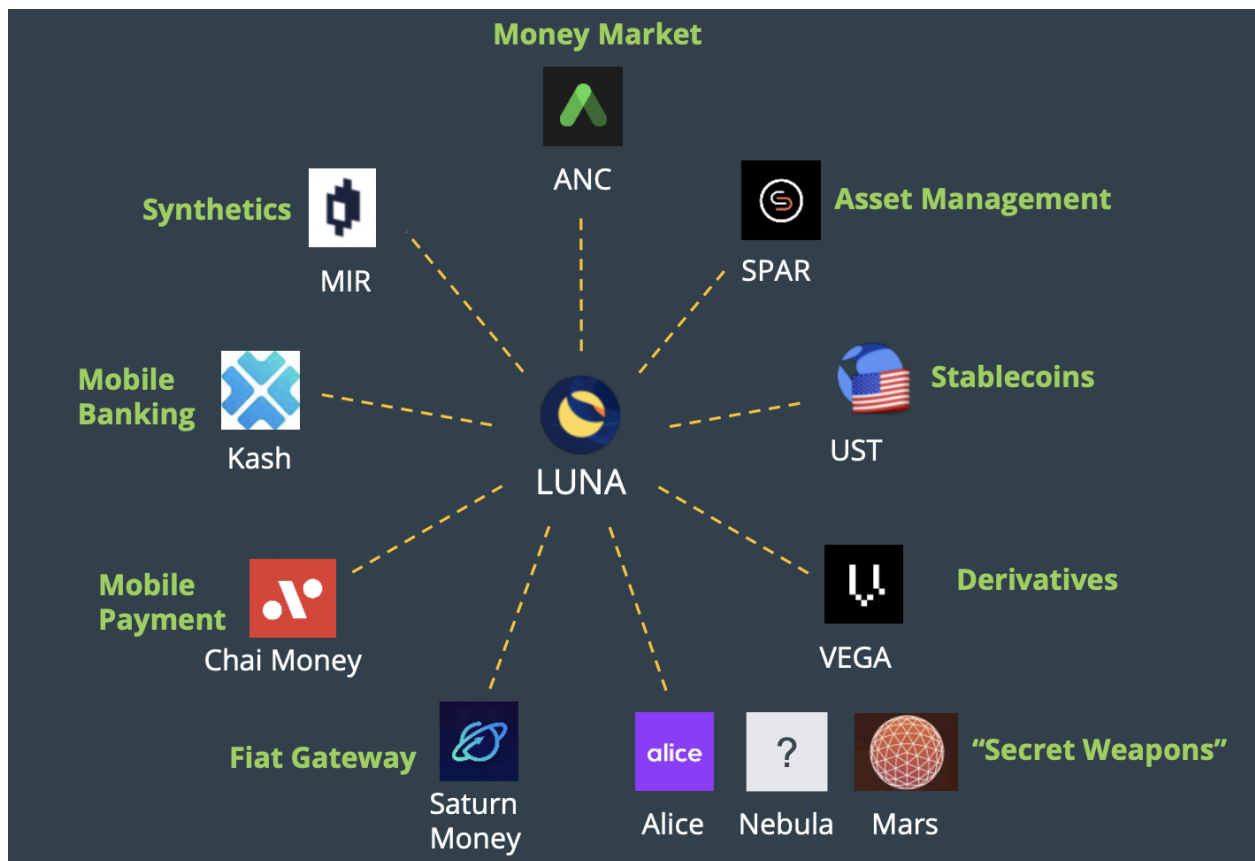
Source: CoinGecko Q1 2021 Report

The two (2) examples we will cover here are Mirror Protocol and Anchor Protocol. We will also briefly cover upcoming projects on the Terra chain that are expected to increase UST demand.

[Mirror Protocol](#) is a decentralized derivative protocol that creates synthetic assets, incubated by Terra Protocol. The synthetic assets are called Mirrored Assets (mAssets). The aim of mAssets is to mimic the price of any assets and give investors access to more assets to invest in.

Like synths from [Synthetix](#), mAssets can be minted by creating a collateralized debt position (CDP) with either UST or other mAsset tokens as collateral. The CDP is essentially a short position against the price movement of the reflected asset. For example, if the stock price of AAPL rises, minters of [mAAPL](#) would have to deposit more collateral to maintain the collateral ratio. If the ratio falls below the minimum balance of 150%, it can be margin called and liquidated by other users.

Notably, in February 2021, Mirror [capitalized on the GameStop Saga](#) by listing synthetic versions of GameStop and AMC; thus, allowing traders to trade these stocks while they were banned from trading by Robinhood. This is a great instance of how a decentralized application can offer significant value to the market while its centralized counterpart failed to do so.

Mirror also has a governance token (MIR) that entitles holders to voting privileges and earns a share of the protocol's CDP withdrawal fees.

| As of 4 June 2021	Key Statistics
Total Value Locked (TVL)[5]	$1.91B

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[5] TVL consists of collateral, liquidity, and staked MIR.

Total Liquidity of mAssets[6]	$1B
mAsset Market Capitalization	$414.5M
Network Collateralization Ratio	193%
Number of Trading Pairs	24

Source: Mirror Protocol

All mAssets are paired with UST as trading pairs. This metric alone puts the demand for supplying UST liquidity at $500M. And since UST is also used to back mAssets (which add up to $800M), **the total UST deposited for mAssets in Mirror amounts to $1.3B**.

Anchor Protocol
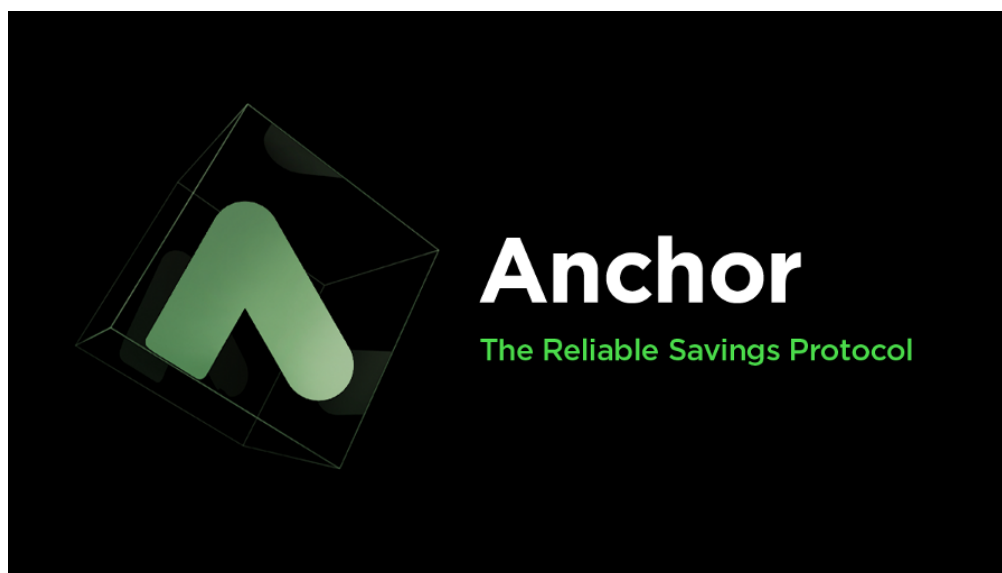
Anchor Protocol is a lending protocol whose primary objective is to offer a reliable savings product. It achieves this by extracting the yield earned from its bonded assets (LUNA) that are used to borrow stablecoins. Lenders deposit their UST into Anchor, which earns yield at a stable interest rate. However, at the time of writing, only bLUNA is accepted as collateral. Thus, before borrowing, borrowers would have to mint bLUNA (1:1 ratio) by bonding their LUNA tokens as collateral. Once they have received bLUNA, they may then deposit it as collateral and borrow UST.

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[6] Liquidity consists of all mAssets and UST in liquidity pools.

Anchor's interest rates are variable and algorithmically adjusted based on borrowing demand and supply (similar to Compound). This is determined through Anchor's utilization ratio. However, reliance on this formula alone would lead to strong cyclical movements led by LUNA's prices. To mitigate this issue, Anchor also introduced a benchmark rate known as the Anchor Rate. The Anchor Rate is defined as an average of the yields earned by borrowers, weighted by the collateral value backing each yield. Anchor will distribute gains from collateral bAssets accordingly to ensure that the utilization rate closely mirrors the Anchor rate, which is touted as the 'ideal' interest rate.

Anchor also has a governance token (ANC) which entitles users to voting privileges and earns a portion of Anchor's yield from its assets under management (AUM).

As of 4 June 2021	Key Statistics
Total Value Locked (TVL)	$671M
UST Deposited	$288.4M
Deposit APY	18%

Source: Anchor Protocol

At this point, Anchor's design effectively allows UST holders to earn LUNA staking rewards without holding LUNA. **UST thus becomes an investment medium for Anchor lenders** to bet on the growth of the Terra network. At the same time, the 18% yield attracts demand for those **looking for exposure to USD while signifying belief in the UST peg**.

Upcoming Terra Chain Projects

Spar Finance is a decentralized asset management platform that allows pool managers to create their own 'funds' while offering investors access to passive DeFi investment strategies.

Mars Protocol is a decentralized lending protocol that aims to be a cross-vertical credit facility for both consumers (DeFi users) and businesses (DeFi Protocols) which utilizes a dynamic interest rate model based on control theory.
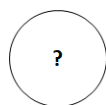
Ozone Insurance is a decentralized protocol that offers levered insurance coverage for technical failure risks in the Terra ecosystem.

The Impact of Bitcoin's Crash on UST

For the most part, we have discussed the Terra ecosystem under ideal market conditions where market prices remained relatively stable. However, just three weeks ago on 19 May 2021, the entire market went through the biggest black swan event in crypto history. Bitcoin (BTC) plunged by 30% in just one day. Every protocol was affected, and the Terra ecosystem was no exception. So how did UST fare?

Screenshot of TerraUSD (UST) Price Chart

Source: CoinGecko

Due to the way CoinGecko data is stored, only the asset's daily close is recorded. However, if we were to refer to UST's price chart during the crash (19 May 2021), we will see that UST was trading below $0.90 for a short period. Multiple factors led to this but to summarize briefly;

1. Macroeconomic factors (BTC crash) led to LUNA's price drop.
2. LUNA's price drop led to cascading liquidations in Anchor protocol, further fuelling the price drop of LUNA as it was sold off.
3. Arbitrageurs were discouraged from taking action due to inflated swap spreads, leading to UST's peg deviation.

Anchor's Cascading Liquidations

Within the Anchor Protocol, depositor's assets are guaranteed through overcollateralized debts. Once the collateral's value drops below the liquidation threshold, it is sold off to pay off debts before it threatens the protocol's survivability.

During positive price trends, users can leverage their positions by borrowing additional UST to mint more bLUNA. This is profitable because the yield earned exceeds the costs of borrowing and can be repeated multiple times. However, using this leveraging strategy significantly lowers the collateralization ratio, where small price drops in LUNA could lead to a high risk of liquidations.

Several hours before the black swan event, LUNA was trading at around $14 but dropped to below $9 within 24 hours. The sharp decline led to cascading liquidations, which at one point amounted to 4,000 liquidation transactions. Anchor also went offline for 30 minutes because nodes were overloaded from the amount of web traffic - this led to faulty oracle data that triggered another wave of liquidations.

Throughout the ordeal, liquidators took advantage of bLUNA/LUNA's high liquidity on Terraswap, allowing them to sell large amounts of bLUNA to UST. Higher slippage increased LUNA's downturn as users were forced to sell at bigger losses.

Arbitrage was Unprofitable

Under normal circumstances, if UST negatively deviates from its peg, arbitrageurs have two (2) options:

1. Mint new LUNA with UST, swap LUNA for another stablecoin (e.g. USDC) and buyback UST ('Fast Arbitrage'); or
2. Swap LUNA for UST and wait for UST peg to recover ('Time-based Arbitrage').

While the 'Fast Arbitrage' method was profitable during the crash; it exacerbated LUNA's sell-off. At the same time, there was a limit on the UST amount that could be redeemed per day (20 million). Both these events led to inflated on-chain swap spreads (up to 9%). Wide swap spreads equate to increased slippage for minting UST, increasing the risks of profit-loss when executing the 'Time-based Arbitrage' method.

Consequently, arbitrageurs were incentivized to wait and see rather than actively defend UST's peg.

Moving forward

Since BTC's black swan event, the Terra ecosystem has taken several steps to address its prevalent issues. Proposal 90, which has since passed, aims to increase minting/redemption

limits of UST/LUNA (over 100 million) - this lowers spread deviations through balancing off-chain and on-chain liquidity. Terra also intends to introduce insurance for UST by partnering up with Unslashed Finance - they will adopt a similar product as USDT where a payout is given if UST deviates from its peg for too long. This will help instill confidence in the UST peg and also encourage more 'Time-based Arbitrage'.

Anchor also has a number of proposals which, amongst others, includes:-

- Increasing the deposit rate and Anchor rate to ensure that Anchor's yield reserve can closely match the target rate (20% APY) during market downturns.
- Increasing liquidation threshold to minimize cascading liquidations and network congestion during volatile periods.
- Adjusting the premium rate which lessens the profitability of liquidations.

Conclusion

Terra does the opposite of what most algorithmic stablecoins have done. Instead of developing a currency within an established network (e.g. Ethereum blockchain), **Terra has built its own country from the ground up**. As such, Terra can incorporate nuances into its system that no other existing algorithmic stablecoin can do. For example, by integrating LUNA validators into the UST peg stability equation, **Terra has created a resilient community** borne out of faith, game theory, and technology.

On top of that, Terra can generate demand for UST through its native applications and its network of partnerships (e.g. Terra Alliance). What most algorithmic stablecoin projects fail to achieve is to create demand for their stablecoins. If there is no demand other than speculation and liquidity mining rewards, de-pegging will eventually occur once high yield APYs diminish. No matter how complex the design mechanics are, **there is no use case if no one uses it**.

For Terra, UST is required to create mAssets in Mirror. As mAssets usage increases, more UST will be minted to support the system. Anchor also encourages depositing UST inside its ecosystem by offering yields as high as 18%. Even though the only source of yield is from the staking of LUNA itself, it allows users to have exposure to USD. Not to mention, Anchor plans to expand to other PoS blockchains (e.g. Cosmos and Polkadot), and become more resilient by diversifying the yield.

In other words, **Mirror and Anchor help create a sink for UST deposits**. Users that want access to high yield USD savings and trade traditional stocks through these protocols will have to use UST.

Meanwhile, the May 2021 black swan event was a real stress test on the resiliency of UST's peg. During the crash, UST experienced a negative price deviation of more than 10%. Even though the peg recovered within the next few days, it was not a perfect performance.

Nevertheless, the Terra ecosystem has shown great robustness, even with the sharp LUNA price drawdown of more than 70%. Moreover, since the storm's passing, Terrans and Lunatics alike have incorporated the lessons learned into newer and better proposals. While these improvements are expected to minimize price deviations of UST, Terra's design ultimately does suffer from short-term reflexivity; it is a trade-off the system makes in exchange for pure capital efficiency by removing the need for collateral.

Both UST's price stability and growth have been impressive. As more projects launch on the Terra network, **it is not impossible to imagine that UST might dethrone DAI and become the biggest decentralized stablecoin in the foreseeable future**.