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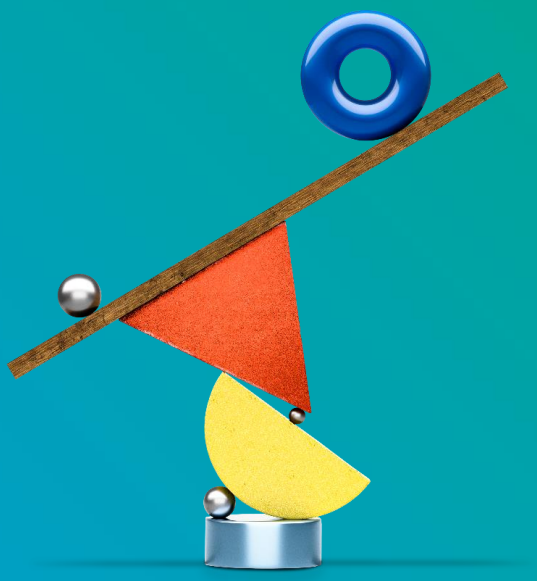
An unstablecoin ecosystem

Obstacle removed or end of the line for crypto?

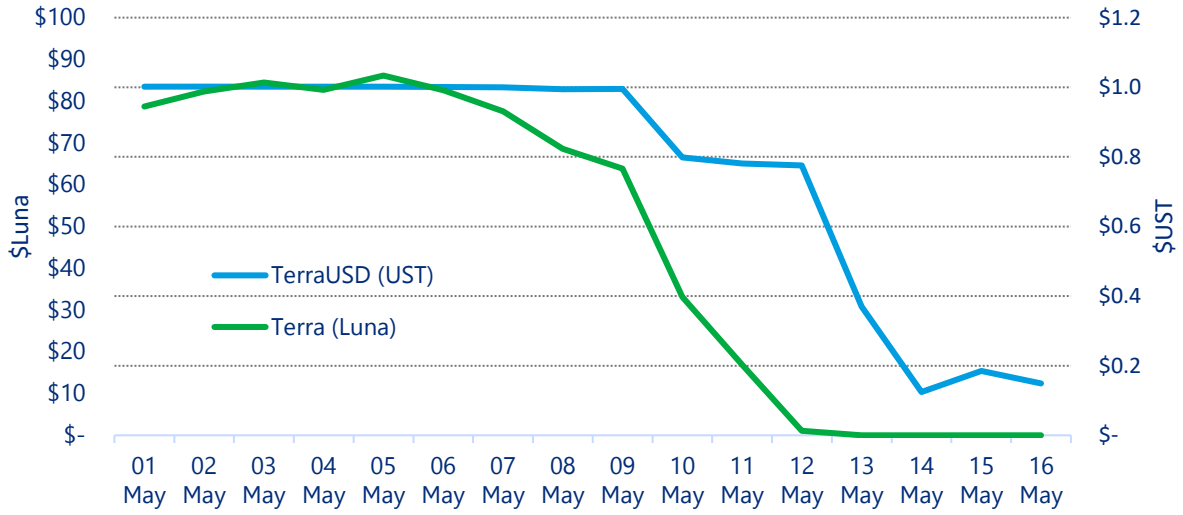


Introduction

Left Financial grapevines have been buzzing this month with news of the collapse of a specific stablecoin system, prompting investors to ask questions from the basic – "what is a stablecoin? – to the more systemic "is there a contagion risk?" This article attempts to shed light on the matter.

A stablecoin is a cryptocurrency[1] that aims to provide a stable link to a fiat currency, typically the US dollar (although others exist too). Their main purpose is to avoid having to leave the crypto ecosystem when trading into dollars or other fiat currencies. The collapse of the US dollar-linked Terra stablecoin ($UST) and its algorithmic partner ($LUNA) in May is not the first time a stablecoin has burnt investors[2]. However, the collapse has attracted considerable attention. At the end of April 2022, $UST had a market cap of $18.5 billion (equating to 10.2% of all stablecoin assets[3]) while $LUNA had a market cap of $29.4 billion (source: CoinGecko). Had they been stocks, each would have been big enough to join the S&P 500.

Figure 1. $UST and $LUNA prices collapsed in May 2022



Source: CoinGecko, May 17 2022, opening prices

Three types of stablecoin

Each type comes with its own controversies and risks, and should be judged on its own merits. $UST, the US dollar stablecoin on the Terra blockchain, is an algorithmic stablecoin pegged to the US dollar.

[1] A cryptocurrency is a form of digital money that differs from typical digital money (for example, Japanese Yen in a bank account), in that money creation and transactions are typically controlled by a wide user base in a trustless system achieved by various cryptographic innovations (trustless means that users are incentivised to behave honestly rather than relying on institutions to intermediate). Fiat money, by contrast, is issued by state institutions and has value by decree whilst transaction validation is accomplished on trusted networks such as those run by credit card companies.

[2] Iron, Basis Cash, Empty Set Dollar and NuBits all collapsed in the past, whilst Neutrino lost its peg in April, and has been undergoing a similar death spiral to $UST and $LUNA.

[3] Source: Share of Total Stablecoin Supply (theblockcrypto.com). 30 April 2022.

(1) Conceptually, *fiat-backed* stablecoins are the simplest. An investor hands over a dollar, which goes into a bank account and in return is issued with an equivalent stablecoin. The main controversy surrounding these coins has been under-regulation. There have been allegations that some stablecoin backers do not, in fact, maintain 1:1 backing of dollars to stablecoins. These stablecoins also lack decentralization, one of the founding principles behind cryptocurrencies – essentially a central enterprise usually controls the bank account of dollars and in some cases does the accounting as well. A prime example of a fiat-backed stablecoin is Tether, the US token which broke its peg briefly and fell to $0.94 on May 12 (source: Coinbase) on the exchanges, before recovering. This was put down to a general crisis of confidence / panic selling following the Terra Luna crisis. However, Tether continued to honour all redemptions from verified customers during the market volatility. Also, interestingly, during this period other major fiat-backed stablecoins, USDC and BUSD by Circle and Binance/Paxos respectively, traded at a 1-2% premium as investors were drawn to assets they perceived were less at risk of contagion. Note that traditional assets such as gold can also collateralize stablecoins.

(2) *Crypto-collateralized stablecoins*: In this system there is a mismatch between the stablecoin being issued and the collateral being used. For example, if you use Ether, the native token of the Ethereum blockchain to collateralize the stablecoin, it suffers from severe volatility relative to the currency the stablecoin is mimicking. In this case, it is necessary to over-collateralize, so there is more than a 1:1 backing. The major risk here is a severe correction in the collateral leaking into the stablecoin price. DAI is the prime example of a crypto-collateralized stablecoin, which also traded at a 1% premium during this volatility.

(3) *Algorithmic stablecoins*: These have often been thought of as crypto collateralized stablecoins. However, the crypto collateral comes from within the same ecosystem, and is integrated in purpose and design. Given the lack of independence, the partner crypto should not truly be thought of as collateral. These coins were developed largely to mitigate the centralization issue with fiat-backed stablecoins. The use of the word algorithm relates to the mechanism used to stabilize the price of the stablecoin.

The five largest stablecoins at the end of April 2022 were USDT (Tether), Circle's USDC, Binance Coin, $UST, and DAI. Collectively they had a 95% share of the stablecoin market. The first three listed are fiat backed stablecoins and accounted for 80% of the market as of 30 April 2022 (Source: The Block, see footnote 3).

How did the Terra Luna system work?

The Terra blockchain hosts several cryptocoins, including $UST and $LUNA, which are part of a linked system. $UST is the "stable"coin that is supposed to stick closely to a 1:1 peg to the US dollar, whilst $LUNA is the token for the Terra blockchain, which users of the system are required to hold should they wish to generate an income from validating transactions on Terra.

Essentially the system worked, or was meant to work, by destroying (or "burning" in crypto terms) $UST when the price of $UST fell, increasing its scarcity, and creating more $UST when the price rose. It did this by incentivizing users to exchange their $UST for $LUNA when the $UST price fell. This transaction caused the destruction of the $UST exchanged. If $UST fell by ¢2 and was thus priced at ¢98, you could still exchange it for 1 dollar's worth of $LUNA. Similarly, if $UST prices rose above the peg, you could buy them for 1 dollar, making a profit and some $LUNA would be destroyed. Tiny deviations from the pegs are hard to profit from, though, as transaction fees are incurred.

Who is funding the ¢2 $LUNA subsidy is a key question? Essentially the system itself is. If $LUNA is consistently devalued, or if no-one really wants to buy $UST, the system collapses. The algorithmic system essentially acts as a pair of shock absorbers that works as long as there are no seismic shocks and money continues to flow into the system. Whilst the system operates smoothly in normal times and during trending popularity, and is stable most of the time as it has just been restructured, there's a huge tail risk lurking, making algorithmic stablecoins essentially "fragilecoins".

Let's look at the foundations of the $LUNA $UST paired system:

(1) **Demand for $UST as a stablecoin is crucial for the system**. Demand for $UST was based on ultra-high interest rates for lending it to crypto banks (Decentralized Finance (DeFi) institutions known as DAOs or Digital Autonomous Organizations)[4] and on speculation. Essentially people would borrow $UST to earn an interest rate or to buy highly volatile cryptocurrencies like Bitcoin. The system then relies on the assumption that Bitcoin will go up by more than the lending rate. This is precisely the same mentality that led to the speculative sub-prime mortgage lending in the build-up to the Global Financial Crisis, where lending models relied on property prices always going up. If you buy a Bitcoin dip and make 50% in a month, you're perfectly happy to pay a high interest rate on the money you borrowed to do it. The high rates available led to 75% of circulating $UST being deposited with Anchor (source: Coindesk), just prior to the collapse of $UST and $LUNA.

Banks essentially make money by paying a depositor a prime rate and lending the same amount of money out at a premium to the prime rate[5]. There are, of course, additional factors to take into consideration: a depositor usually has the right to withdraw their money at any time, whilst loans do not usually have similar callability. Additionally, you cannot pay the depositor the prime rate if you cannot find much borrowing demand for the money that has been deposited, or if borrowers default. For $UST, the eye-watering prime rates available for deposits on the Anchor protocol appear to have essentially been "sweetener" rates, backed by a reserve provided by venture capital investors. The idea was to attract customers from other DeFi protocols by guaranteeing a high rate, and backing this was a pool of investor capital. However, the problems arose when the amount of Terra being lent by Anchor decreased as the amount of $UST being deposited increased, causing the capital pool to erode. A rumour spread that the c.19.5% rate was going to be changed to a variable rate, and holders of $UST fled into $LUNA. In many respects, therefore, this crisis resembles a typical run on a bank.

(2) **Value / usefulness of $LUNA** is the next key factor. If $LUNA is mechanically inflated, it has to still be "worth it" for those who hold it. $LUNA's fortunes eventually rely on the usefulness of the decentralized apps available on the Terra blockchain, and in some ways this can be a circular justification as most of the major apps are decentralized finance apps. $LUNA holdings also offer a yield as the holder can "stake" their assets and earn fees as transaction validators. If the yield provided by these fees is higher than the inflation in $LUNA, investor confidence is un-imperilled. This is a critical problem. Instead of being a self-regulating positive feedback system, $LUNA and $UST both encountered confidence problems at the same time, which, in turn, caused a negative feedback loop or "death spiral".

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[4] In March 2022 rates available for depositing $UST were 19.45% on the Anchor decentralized finance protocol (essentially a crypto version of a bank, with the key principle of decentralization being a major differentiator). Anchor is a decentralized finance protocol which is based on the Terra blockchain.

[5] This is exemplified by the 3-6-3 maxim, a rule of thumb for US finance in the post-WW2 pre-"Big Bang" era. A banker could obtain money at 3%, lend it at 6%, and be at the golf course by 3pm.

Conclusion

In our view, the fiasco of the Terra Luna system illustrates key investment 101 mantras: if you are offered an interest rate that is too good to be true, there is always a fundamental risk; do not invest in something you do not understand; and if it looks like a “get rich quick” scheme, it probably is.

Crypto markets are governed by “animal spirits” as much as any other markets. During times of sudden change when new information is causing indigestion, emotional decisions are often made, and the collapse of this algorithmic stablecoin system could lead to runs on other crypto assets. Maintaining sangfroid, we suggest that there is little new information from this collapse. Many crypto pundits predicted that $UST would be unstable, for the very reasons it proved to be.

Ultimately the success or failure of the crypto universe will depend on the usefulness of the technology. The internet did not fail because Pets.com failed, nor did the banking system collapse because Washington Mutual went under. It does seem though that the success of the crypto world so far has been due to a highly optimistic view of the future usefulness of decentralized apps and Web 3.0, and it is likely that most of the projects in the space will fail, in our view. Terra Luna’s collapse is likely to be an obstacle albeit a large one for crypto rather than an endpoint as its success is not indelibly linked to the success of the wider ecosystem. This could be the end of the road for algorithmic stablecoins, although the ecosystem is rather exuberant and has learnt little from previous failures. Other stablecoins will likely continue to grow for some time, although the potential for major economies to create Central Bank Digital Currencies (CBDCs) poses a threat to them. That is a topic for another time.

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