# Danger Signals from the Crypto Casino*

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The meltdown in May 2022 in the cryptocurrency world, in which the values of digital coins plunged and rendered some near-worthless, is a wake-up call. It once again shows that cryptocurrencies are nothing but a bunch of insubstantial, digital 'bits' created by speculators as 'coins' for speculation. Over the years since 2009, when the first bitcoin was minted, privately generated cryptocurrencies have failed to live up to the claim that they offer an alternative to government-backed and regulated fiat currencies. They are hardly used as media of exchange in routine economic transactions. They mainly serve as virtual instruments on which speculators, with money to lose and the time and inclination to gamble, place costly bets. And consequently their 'value' is volatile. For example, the value of a single bitcoin rose from a low of less than $30,000 on 20 July 2021 to a high of more than $67,000 in the middle of August 2021 and fell to less than $30,000 in late-May 2022. Yet the promise of high returns in short periods of time is appealing to the speculative instincts of ordinary, poorly-informed citizens. A recent survey by the European Central Bank found that as many as one in 10 EU households "may own cryptoassets", and a survey by the Federal Reserve revealed that 12 per cent of US adults held cryptocurrencies in 2021. With such penetration what happens in the cryptoworld affects the decisions of those who are embedded in the regular economy. Those who fear that the growing popularity of an asset so fickle could destabilise the rest of the economy are calling for it to be banned or severely regulated.

Yet, there is no shortage of digital currency enthusiasts. They present the crypto world as being decentralised and transparent because of the use of blockchain technology. They even attribute the volatility in the value of these tokens to the limited volume of cryptos in circulation. The original token Bitcoin was designed to be limited to 21 million units released over time (of which more than 19 million have already been mined). However, with no regulatory control over the creation of tokens, new cryptocurrencies—such as ethereum and dogecoin— were created, as a result of which crypto presence in terms of the number of tokens expanded considerably. Supply alone cannot explain volatility. Demand swings generated by speculative investments were crucial.

Moreover, volatility is not just the result of speculation, but also whets the appetite of speculators and aggravates it. That could create a problem in the crypto world that can spill over into the regular economy. Despite the misplaced belief that the crypto world exists apart from and is insulated from the fiat money economy, digital tokens are valued in terms of dollars, euros or other 'fiat' currencies issued by governments. The growth of the cryptocurrency ecosystem requires conversion of regular into digital currencies. And those making that conversion need to be provided the option of converting crypto holdings into regular money. This tether to the fiat money economy handicaps the crypto world in which quick buy or sell decisions necessitated by high price volatility are hampered by the cumbersome process of moving between crypto and regular currencies. Given the volatility in the value of crypto assets, any delay in acquiring or disposing them can entail losses. And such delays are likely if crypto purchases or sales involve converting fiat currency into digital coins and vice-versa.

But as the so-called “innovation” unleashed by deregulation in the fiat money world illustrated, an unregulated financial system has ways of circumventing such constraints. In the case of the cryptocurrency sphere, the mechanism devised to undo the link to the fiat money economy was the “stablecoin”. First spotted in 2014, stablecoins, such as Tether and USD Coin, are meant, in principle, to be tokens that are pegged in value to fiat currencies (most often the US dollar) and maintain a fixed ratio (normally one-to-one) relative to them. Given this characteristic, they serve as the medium in which temporarily idle savings or wealth in the crypto universe can be held. If stability in value is ensured, the holding of stablecoins entailed no loss while transacting in the cryptoworld was made easier through their use. Not surprisingly, they proved to be popular. The value of stablecoins in circulation rose from a little more than $21 billion to close to $130 billion over the year ending October 2021. According to the Wall Street Journal, stablecoins accounted for around $160 billion of the $1.3 trillion cryptocoins in circulation at the beginning of the last week of May. With this stable wall created at the junction of the crypto and fiat money worlds, the crypto ‘economy’ could function as if it was more or less independent and self-contained.

What was crucial to this new arrangement, therefore, was the mechanism through which the value of stablecoins could be kept stable. In principle that stability was to be ensured by backing stablecoins in circulation with reserves of instruments such as Treasury bonds or commercial paper that are ‘liquid’, in the sense of being easy convertible to cash in fiat currency form at short notice. The issuer of a stablecoin backed the issue with fiat money. That obviously sets limits on the volume of stablecoins that are likely to be generated, since it requires holding cash in forms that yield no or low returns. Such dependence of the volume and value of stablecoins in circulation on backing with fiat currency denominated assets reduces the ‘independence’ of the cryptoworld from that of fiat currencies. Cryptoplayers issuing stablecoins tried working around this limit by not revealing the volume and nature of the assets backing a stable coin, which is easy to do since in the unregulated world of cryptos, information on such matters is not in circulation. The issuers of Tether and the linked exchange Bitfinex, for example, have been fined by both the New York Attorney General and the Commodity Futures Trading Commission on allegations that their claims of full dollar backing were not correct and that they had concealed losses.

But there were limits to which such deception could facilitate crypto expansion. An alternative had to be found. This is where the crypto coins—Terra and Luna—that were at the centre of the May mayhem come in. Terra and Luna are versions of what are termed “algorithmic stablecoins” created by Terraform Labs, a firm co-founded by South Korean digital entrepreneur Do Kwon. The idea of these twin, inter-linked stable coins was to weaken the dependence of the crypto on the fiat currency world, while pegging their value to the dollar. To do this the designers of Terra claimed to have done away with the need to back stable coins with assets denominated in fiat currencies like Treasury bonds. Do Kwon’s “algorithmic stablecoin” was based on a routine that could purportedly automatically stabilise the value of Terra. Whenever Terra’s value fell short of one dollar, an “algorithm” worked to “burn” units of that stablecoin through exchange of those tokens for units of Luna, which too had its value pegged to the dollar on a one-is-to-one basis. The sellers of Terra gain by exchanging a token valued at less than a dollar for one Luna whose value equals a dollar. With the

sale and withdrawal of Terra tokens, the available supply of Terra falls, because of which its value was expected to rise and be restored to its $1 level. On the other hand, if the value of Terra rises above $1, then Luna coins were similarly burned to generate units of Terra, the increased supply of which brought its value down to one dollar.

This story left unanswered the question as to what would ensure that the value of the Luna would remain stable vis-a-vis the dollar. Kwon promised to ensure that by backing the Luna with cryptocurrencies, especially bitcoin. He created a reserve fund of bitcoins and other cryptocurrency resources, owned by the Luna Foundation Guard, a non-profit he co-founded, that would, in an emergency, protect the value of Terra and shore up confidence in the value of Luna. The Foundation had by early May been funded with $3.5 billion worth of bitcoins, and sundry amounts of other cryptocurrencies. In sum, the promised 'stability' of Terra was based on two bets—one was that the process of algorithmic arbitrage between Terra and Luna would keep the former's value at $1; the other was that the stability of Luna could be ensured by backing it with cryptocurrencies the values of which were volatile. Terra's stability was to be ensured by generating confidence in its value by using a digital artifice. The outcome was to be the release of cryptos from excess dependence on fiat currencies. Kwon obviously did not do all this out of love for his creation. He must have expected to make a large fortune as the creator and issuer of Terra.

The "May mayhem" in the crypto world began with a collapse of the Terra-Luna arbitrage scheme for ensuring stability of these stablecoins. The problem was that Do Kwon's speculative gambit could not end by just launching an algorithmic stablecoin. For the Terra-Luna combine to be successful, it had to attract support from more than venture capitalists and giddy investors—the self-proclaimed "lunatics". It needed support and demand from a much wider range of investors to generate the confidence that could make Terra a substitute for fiat currency at the border of the crypto and non-crypto financial worlds. To win that support, Kwon offered buyers of Terra an option of lending out their Terra through a plan that promised a 20 per cent yield. Terra buyers could lend out their coins through a platform named Anchor Protocol created by Terraform Labs.

The seductive yield the platform offered saw a rush of investors into Terra. Coins were acquired with the sole purpose of benefiting from the high yield to be derived by lending them out. Around $15 billion of Terra USD had been invested in Anchor in the year to May 2022, which was the month when the scheme unravelled, burdened by a structure in which one set of crypto coins are backed by other crypto coins, which in turn are backed by another set of crypto coins, and so on—a structure that in the regular financial world would be identified as a Ponzi scheme. The stablecoins that were to permit unfettered speculation in an 'independent' crypto world were themselves built on a speculative edifice.

But, when the overall uncertain environment combined with fears that the issuers of Terra were overextended, a pull out of investments in Terra began, setting off a decline in its value that the arbitrage process involving Luna could not stop. Terra's value dipped precipitously because of the sheer weight of the number of coins that had been minted to satisfy the demands of investors attracted by the high yields that Terra-lending offered. When Terra's value began to slide relative to the dollar in May, panic gripped speculative investors, who began to pull their coins out of Anchor to redeem them for Luna to protect the value of the original investment. Creating huge

volumes of Luna to keep Terra stable, undermined confidence in Luna, whose value began to decline. This required selling the backstop bitcoin reserve to buy Terra tokens and restore the peg. But the volume of withdrawals from Anchor was so large and occurred in such a short period of time that the bitcoin-nest backing the system proved inadequate to the task. Soon every Luna was worth only a few cents. If Luna could not hold, Terra could not hold either. Given the interlinkages between the distinct coins in the crypto world that speculators like Kwon had built, the value of cryptocurrencies like bitcoin, the strongest in the fold, was also eroded, as the large reserve was sold. And other stablecoins like Tether and USD coin were soon subject to the threat of contagion. Many investors lost much money, some their life's savings.

The Terra episode and its fall-out have made clear that the cryptospace is not only inherently volatile but is prone to systemic crisis as it expands in size and draws into its operations players other than a bunch of risk loving digital gamblers and high net worth speculators. That should worry regulators since the myth that the crypto world is relatively independent of and isolated from the normal financial system is also being challenged. If a mass of investors is being drawn into the crypto world because of the promise that coin appreciation offers large profits and schemes like the Anchor Protocol high returns, those investors must be buying their way into cryptos with money borrowed from banks and other intermediaries in the regular financial system. Without that it is difficult to explain how a combination of the number of coins issued and the value of those coins resulted in the size of the crypto market increasing from around $500 billion towards the end of 2020 to close to $3 trillion a year later.

With the regular financial system awash with cheap liquidity, and interest rates at historic lows, investors were looking for new and alternative assets to speculate using that easy money. Hedge funds and asset management firms too are now increasingly exposed to crypto assets. According to the Financial Times, the ECB recently noted that some international and eurozone banks are "already trading and clearing regulated crypto derivatives, even if they do not hold an underlying cryptoasset inventory". The difficulty is that it is not easy to assess what is the flow of capital from the real to the crypto financial system. But what is clear is that with speculation and volatility still rife, the impact any destabilising tendency in the crypto market can have on the rest of the financial system and the economy can be severe.

In sum the Terra/Luna crisis has starkly underlined features of cryptos that sceptics of these tokens have often cited to argue that they are not just unnecessary but economically disruptive and destabilising. Yet concern about that disruptive and destabilising role is once again subsiding. As long as there is an overhang of excess liquidity in the system, speculative finance will fight back any effort to regulate the "alternative assets" or the chips they gamble with in their newly built virtual casinos.

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