UNIVERSITY of NICOSIA

Week 6, Session 11

How tokens obtain value

BLOC 528: Token Economics

Today's Overview

- Objective #1: To understand the difference between momentum and fundamental value.
- Objective #2: To understand the purpose and different types of stablecoins.
- Objective #3: To take stock of some best practices in tokenomics.

Price & Value

- Price = what someone is willing to pay (or get paid)
- Value = what something is truly worth

But “truly worth” is much more subjective than a price you can observe in the marketplace, although there are some assets that do not trade (and others that rarely trade – e.g., very fine art).

- There are (at least) two prices: the highest price that someone is willing to pay (bid), and the lowest price at which someone is willing to sell (ask).
- Price depends on volume: (a) the bigger the trade the further away are the bid and offer price, and (b): there usually is a volume beyond which there simply is no price (i.e., no one is willing to trade).

Implications

- Market dynamics are unpredictable to the average observer… “The stock market can remain irrational longer than you can remain solvent.” – Einstein
- Prices can sometimes deviate from fundamental value if a market is not in equilibrium due to frictions (e.g., information asymmetries), market imperfections (e.g., externalities).
- Arbitrage opportunities will help “correct” for these deviations, characterized by people who take advantage of a condition such that they draw attention to the problem and prices return to their value.
- Arbitrage is generally anchored in a replication strategy – that is, an action that can be taken repeatedly in order to exploit an asymmetry in the market. Sometimes arbitrage is possible “both ways” (e.g., buying a stock, keeping it, and then reselling it), but other times it is “one way” (e.g., if you can long a stock, but not short it). These same principles in the stock market apply to tokens.
- Particularly bad applications of arbitrage in web3 happen when there is inside information among the founders of a project, hoarding tokens and bidding up the price, then selling them and leaving retailer owners with the tokens after the price collapses.

Diversification, banks, and stablecoins

- Consumers are risk averse and investors want to similarly reduce volatility in their assets.
- Exchange traded funds (ETFs) are one way to do that in traditional finance: open-ended fund whose shares trade on an exchange and whose shares can be created or destroyed with a specific mechanism that keeps the price in line with their underlying value.
- The supply of ETF shares is variable as the issuer is ready to issue and redeem them at any point in time against the reference portfolio (e.g., could be an energy ETF consisting of different energy companies and even commodities). (a) If ETF shares trade above the price of the reference portfolio, then an arbitrageur can purchase the reference portfolio in the open market, hand it to the ETF issuer and get ETF shares, and then sell the *ETF shares in the open market*; (b) If the ETF shares trade below the price of the reference portfolio, then the arbitrageur will purchase the ETF shares in the open market, hand them to the ETF issuer in return for the reference portfolio, and then sell the *reference portfolio shares in the market*.
- That same logic is what will apply to stablecoins.
- Of note, banking generally refers to a system of institutions that take deposits and make loans almost always engaging in some “fractional reserve banking.” In many ways, that is what FTX was doing, but they did not comply with any of the regulation that banks must comply with to ensure good governance.

Stablecoins

- Collateralized stablecoins are fully backed by a reference asset and there is some mechanism, like a smart contract, that ties the value of the two together.
- Cross collateralized stablecoins (generally what people refer to) are backed by multiple assets other than the reference asset, such as ETH, BTC, dollars, real estate, etc. To protect the value of the coin, there needs to be some degree of over collateralization, especially if there is high uncertainty.
- Algorithmic stablecoins generally involve a smart contract that buys and sells the coin depending on the price or other conditions that are met to maintain an effective price.
- But, there are stark differences in the type of algorithmic stablecoins…

Stablecoins (and collateral)

Patrick Collins
@PatrickAlphaC

🪙 Stablecoins are a misunderstood DeFi primitive.

Let's clear some things up.

1. "Algo stablecoins are bad" is wrong
2. "A stablecoin is anchored to another asset" is wr
3. Where do stablecoins come from? (IMPORTANT)

Let's jump in. 🧵

Patrick Collins @PatrickAlphaC · Oct 8

🤔 But then this leads to the question of "ok, well, how do we categorize terra-luna like coins?".

To that, we need to look at one of the three properties of a stablecoin, the collateral type.

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Property 1: Collateral Type

A stablecoin can have collateral ranging from exogenous to endogenous collater.

Exogenous collateral is collateral that originates outside the system.

Endogenous collateral is collateral that originates inside the system.

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https://twitter.com/PatrickAlphaC/status/1578775196613353472

Stablecoins (and collateral), continued

- What matters is the degree of diversification among the collateral.
- Consider a shock, z. If Corr(x1,z) > 0 and Corr(x2,z2) > 0, then even if you're holding x2 as additional "collateral," a shock z affects both simultaneously. The stronger the correlation, the worse the collateral.
- One solution to give confidence to the public is through "proof of reserves" (cf Nic Carter).
- "Proof of Reserves is the idea that custodial businesses holding cryptocurrency should create public facing attestations as to their reserves, matched up with a proof of user balances (liabilities)."
- BUT: "Proving that you control some funds on chain is trivial, but you could always borrow those funds on a short term basis. This is why point-in-time attestations mean relatively little. And additionally, exchanges can have hidden liabilities or have creditors claim seniority to depositors, especially if they don't legally segregate client assets on the platform."
- The solution generally is to have a competent and experienced auditor come in and study the liabilities on the balance sheet and track reserves over time.

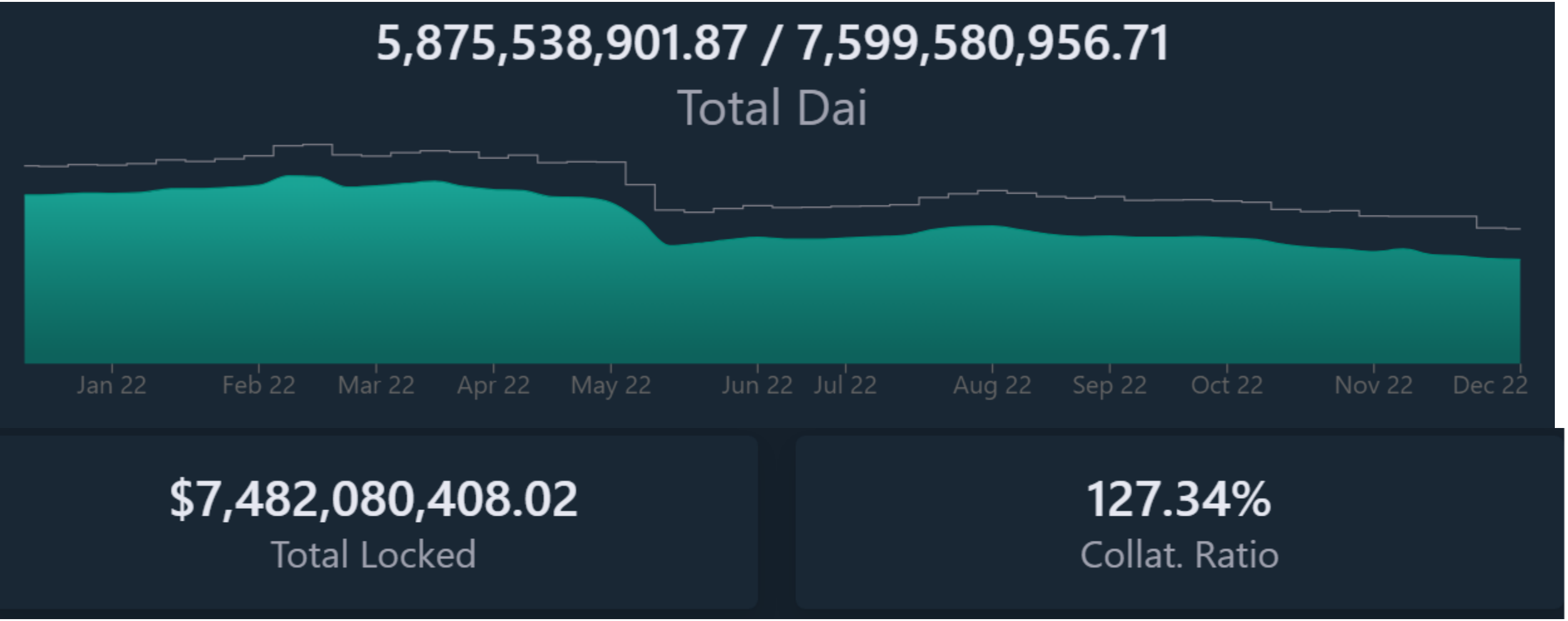
https://niccarter.info/proof-of-reserves/

MakerDAO Example

- The Maker Protocol is one of the largest dapps on the Ethereum blockchain, managed by people around the world who hold its governance token, MKR. These MKR holders govern the Protocol and the financial risks of Dai to ensure its stability, transparency, and efficiency. One MKR token locked in a voting contract equals one vote.
- The Dai stablecoin is a decentralized, unbiased, collateral-backed cryptocurrency soft-pegged to the US Dollar. Users generate Dai by depositing collateral assets into Maker Vaults within the Maker Protocol. Others obtain Dai by buying it from brokers or exchanges, or simply by receiving it as a means of payment.
- Every Dai in circulation is directly backed by excess collateral, meaning that the value of the collateral is higher than the value of the Dai debt, and all Dai transactions are publicly viewable on the Ethereum blockchain.
- "The lender-borrower structure seems to be great for MakerDAO, but why would anyone want to borrow less than they lock up? The main reason is that by borrowing DAI (as opposed to buying it), an investor would be able to access a U.S. dollar stablecoin without having to sell his or her ETH. This is useful because many yield farms and lending platforms offer higher returns for U.S. dollar stablecoins than for ETH itself. DAI can be converted back to ETH at any time." – CoinDesk
- In addition to the governance token that allows holders to vote on protocol updates, the Dai Savings Rate (DSR) is a savings protocol that issues returns to those who lock up DAI in the DSR's smart contract. "This lets those within Maker's governance module influence the demand for DAI by changing the levers of the protocol's monetary policy, just like a centralized bank."

Whitepaper: https://makerdao.com/en/whitepaper/#the-maker-protocol; https://www.coindesk.com/learn/how-does-makerdao-work-understanding-the-central-bank-of-crypto/

MakerDAO Collateral



https://daistats.com/#/

Taking stock

Tokens are a vehicle for delivering product to market fit – not the other way around. Tokens are simply a way of reflecting a transaction on a digital ledger in a secure and transparent way, but that still requires all the other facets of a business to function as well.

There is no shortage of “expert opinions” out there, but really what you care about is just:

- Is the economic strategy repeatable?
- Is there some way of diagnosing when and how to deploy the strategy for your token and the estimated value of doing so?
- Is there research that validates the strategy so you can talk about it more credibly?

While most token designs emphasize deflation, “they are not optimally designed,” according to Will Cong, the Rudd Family Professor of Management and faculty director of the FinTech Initiative at Cornell University. Defaulting to tweets and community ideologies, “many platforms also can't even write down a logical objective for their token supply and allocation policy.”

Myths in tokenomics – Deflation v. inflationary

The temptation with focusing on whether a token is inflationary or deflationary is that it shifts the attention to second-order issues. The price of a token can always adjust to meet supply and each token can be arbitrarily fractionalized, so a fixed supply is a moot point if the token does not provide value to end-users.

"In fact, some inflationary coins with robust burn rates may regularly switch between being inflationary or deflationary, like Solana… the inflation rate started at 10% and will reach its final rate of 1.5% in about 10 years, but there are also deflationary features, like a percentage of each transaction fee getting burned," said Eloisa Marchesoni, a tokenomics consultant. "With enough transactions per second, the transaction fees that are burned could be even higher than 1.5% per year if many transactions occur, which would bring Solana's inflation rate to 0% and make it deflationary in the long run."

Many tokens have risen with transient social media momentum, but collapsed as the fads pass. "SafeMoon relied on heavy selling fees and deflationary mechanics to convince holders that the price would go up endlessly even though the protocol never actually was solving a problem. Similarly, Olympus DAO inflated their OHM token in accordance with its price, even advertising (3,3), a misrepresentation of simple game theory, which told holders that if none of them sold, they'd all get rich," said Eric Waisanen.

Myths in tokenomics – High yields

Another big shortcoming of tokenomics strategies is their emphasis on how holders can stake their tokens to earn a high yield. A large yield that lasts for a day, or even a month, is not helpful for consumers and investors who take a long-run perspective. “The use of staking options to lure extractive users into the project usually does not end up well, causing volatility, or the risk of market prices and token price fluctuations, which will stress the whole tokenomics and may end up breaking it, if not adequately tested already with simulations under extreme conditions,” Marchesoni continued.

While PoS protocols rightly incentivize staking because it secures the network, the emphasis can get misplaced. “Now we’re seeing inflation rates well over 20%. Evmos, an EVM compatible chain in the Cosmos ecosystem, currently has a 158% APR for staking. Similarly, Layer-2s are giving staking rewards just for holding a token without having a blockchain to secure,” Waisanen continued.

When you see high yields, you have to ask how they are sustainable. For example, Vitalik Buterin recently commented: “*Honestly I think we emphasize flashy defi things that give you fancy high interest rates way too much. Interest rates significantly higher than what you can get in traditional finance are inherently either temporary arbitrage opportunities or come with unstated risks attached*.”

“Too much of emphasis in tokenomics has been placed on generating returns for early adaptors and users of tokens rather than driving utility values. In this deep crypto winter, the sentiments around tokens have entirely shifted. Even VCs are starting to place more weight on the equity components rather than the token component when considering new investments… some protocols have even opted to airdrop USDC instead of their protocol-specific tokens,” said Gordon Liao, chief economist at Circle.

Myths in tokenomics – tokens are not stocks

While tokens can inherit similar features as stock, they rarely do in practice. “The vast majority of NFT art projects … convey no actual ownership for the underlying content,” according to Alex Thorn, Galaxy Digital’s head of research, in an August report. In response to the growing confusion about NFTs and property rights, a16z released a playbook containing best practices. But the reality remains that many tokens are receiving valuations commensurate with corporate stocks, which is not sustainable.

When to use a token

Many projects should ask whether they need a token in the first place. Even if they do, they often struggle to articulate why. Indeed, a web3 organization can exist without a token. For example, OpenSea and Rarible are both NFT marketplaces, but Rarible has a token and OpenSea does not. The answer really depends on the organizational objectives and strategy.

“Because the incentives for launching a new token are so high, there has been a proliferation of tokens. If they were to take a step back, most founders would quickly realize that they do not actually need a new token, and that building on an existing crypto ecosystem would be a much more sustainable choice in the long run… To date, only a handful of networks like the Bitcoin and Ethereum one have proven the value and usefulness of their native token,” said Christian Catalini, founder of the MIT Cryptoeconomics Lab.

But tokens can still bring substantial value in certain instances:

1. Tokens provide a common system of account that reduces the probability that assets and liabilities will be mismatched in different units of account.
2. Tokens can help secure credible commitment on both sides of a trade.
3. Tokens reduce transaction costs on a platform and make it easier for a network to form because they enable exchange around a common pain point.

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Questions?

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