Token Design Research by Rubiks Hub.

3-AUG-2022

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The Evolution of Token accrues the value of the world physical assets. Allowing people to own assets in a digital space. A Token accrue it's economic value within it's ecosystem, while it's price discovery is the displaying value in the secondary market. Token Design Framework is capped within the Economic Design Framework of an Ecosystem.

In puzzles, there is clarity

The primary functions of a token is categorized into four abbreviated as SUMS. Security, Utility, Money and Stable Tokens (Peg Token). In DeFi, one of the fundamental metrics of determining a solid project is valuing it's Token Economics. To understand Token Economics, there is a need to review the Token Design Structure of the Economic framework which is divded into three(3):

- Token Policy
- Financial Incentives
- Architecture

Token Design is the rule of the token itself. These rules are defined in the smart Contracts with codes. Such rule changes as the project grows or the ecosystem integrates a new form of transactional activity.

Token Policy: Looks at the Monetary Policy and the valuation accrued to a token. The monetary policy of a token is designed aggravating from three factors. The Token Use Case, The Token Function, and the project's Business Model.

For example, if your token is a currency that is vulnerable to external forces such as stable coins, the Monetary Policy approach used follows the Central Bank policy approaches. If a token represents a claim to a certain asset on or off chain, bonding curves is the monetary policy reviewed, it defines the price as a function of the token supply. If the token is a utility to access the network, the monetary policy depends on it's use case. A token that facilitates transactions as a currency is reviewed through the traditional monetary policy models- Monetary policy instruments.

Token Valuation is reviewed within the entire ecosystem. It determines a token price. The token valuation answers the questions of ;

1. How funds value a specific start-up
2. How token derive their value when designing economics
3. Value through transaction fees or Arbitrage, etc.
4. The Growth if the project and the ecosystem

Token Design Framework

In this framework, the valuation model used are;

- Dynamic Price Equilibrium
- Dynamic Adoption.

As a basis of understanding Token valuation, we review Bonding Curves. Bonding Curves is a curve that connect two variables. For Example;

Equation that connects two variables

All of the above are determined mathematically embedded in a smart contract code. In a pool, via Automated Market Makers, a bonding curve is the smart contract executed to create a market for tokens without order books.

Bonding Curve Use Cases: The What, How and Why

- By what; A Bonding Contract creates the market for tokens
- By How; it shows the formula functions governed by smart contracts. This exhibits how variables are determined in the charts
- By why; Factors such as fundraising, liquidity provisions and curation market are considered. Bonding curve is also used to mitigate risks.

Bonding Curve Functions

In a Decentralized Exchange Pool, the above diagram is redefined as follows;

The Constant Sum Market Maker ~ Linear

The Constant Product Market Maker ~ Exponential

The Constant Mean Market Maker ~ Cob Douglas/Logarithmic functions

Stableswap Invariant ~ Variation

The Constant Sum Market Maker explains arbitrage opportunities. While the Constant Product Market Maker explains the demand and supply theory and so on.

Bonding Curve is divided into Augmented Bonding Curve (ABC) and the Dynamic Bonding Curve (DBC). Token in the pools are divided into Liquid token and the reserve Token. A combination of both is regarded as a Relay Token.

Cake/BNB combines the Reserve Token and the Liquid token together to form a Relay Token. The Relay token generally gives avenue for staking, price spillage reduction in the Relay.

P= Value of the Reserve Pool/Supply of the Liquid Token

A Bonding Curve. Visit https://www.desmos.com/calculator/28itwn8nkh

Mathematics of Token Valuation:

The price of a liquid token = P(e)^rt-p

Where;

P= price

E= exponential function

S=supply

Rt= constant ratio

Other mathematics valuation model of a token includes:

- Cost payable to purchase tokens in the reserve token.
- Liquid Token price.
- Reserve Ratio.
- Changes in conversion of liquid tokens.
- New cost payable.

All of these valuation model mathematics are derived using differentiation (dy/dx) methods within a range of values. Chain rule for example is used to derive the ration token formula.

Financial Incentives

One of the practical reasons for creating a token is that "It aligns to incentivise various utilizers". Money is capable of doing this, however, there are too many diverse participants. An Ecosystem or Project token can achieve incentive alignment via several mechanisms.

Financial incentive is divided into Platform Activities and Return on Investments or Stake.

The platform activities defines the utilities a project is set to provide. A P2E incentivise it's utilizers via gaming, insurance protocols such as Bancor incentivise via Impermanent Loss insurance.

The second variable is the ROI. Return on investment comes in various forms; Yield Farming, Staking, Exchanges in the secondary market, arbitrage of liquid token prices, etc.

Architecture

The Architecture of the Token Design is the major research model for fundamental labels. It involves two variables: The Property Rights and Distribution. This architecture explains the structure of a token. It describes the analysis of the token economics. The TVL, Market Capitalization, Tokenomics, and many more. Here, I am reviewing the Tokenomics.

The Tokenomics of a Token:

Tokenomics is derived from two words "Token" and "Economics". It is the study of the supply and demand of a token reviewing it's qualities, production and distribution measures. Below are the fundamentals that is studied in a Tokenomics:

1. Cost if service.
2. Token model.
3. Network Metrics.
4. Operating Revenue.
5. Effect of Network growth.
6. Deriving value from utility
7. Operating cost.

The above fundamentals are deciphered into a few processes.

Tokenomics processes

Supply:

In traditional economics, the supply of goods is the number of goods produced at a particular period of time. The available goods are directed to market to meet people's demand. Here in Crypto economics, Tokenomics supply describes the total amount of tokens available in produce. A token supply is divided into:

Circulating Supply: This is the number of tokens in circulation at a particular period of time. They are the tokens currently owned by people. It is important to note that not all tokens are being traded or used. There are lost tokens, unclaimed tokens, locked tokens and tokens in the deep cold storage. All of these are measures for token capitalization in On-Chain Analysis.

Maximum Supply: The maximum supply of a token is the maximum number of that token that can ever exist. The Avalanche token ($Avax) has a maximum supply of $720,000,000. Here, it is also important to research if the max supply is fixed or not.

Total Supply: The total supply of a token indicates the total amount of a token issued. It is not necessarily tokens in circulation. It also includes Burned tokens and locked tokens.

The Tokenomics is a perfect metrics for analysing the supply and demand of a token.

Note:

a. If an asset is scarce, and there is a rise in demand for it, appreciation is speculated.

b. No maximum supply lead to abundance of the token in the market and a decrease in price (Not necessarily). Other factors affect price such as the emission rates, etc.

c. Once locked up tokens are released into the market, they affect the price of a token.

Above are determinants in evaluating the supply of a token.

Burning:

Have you ever burned a currency note? After burning what happens? A burned resources can never be restored. That is the principle of nature. In Decentralized Finance, Burning occurs for the below reasons:

- To decrease the number of tokens in circulation
- To adjust supply and demand
- To make assets (tokens) less inflationary

Just like the basic characteristics of money and what makes money valuable is Scarcity, tokens are made less demanding to create a scarce pool via burns causing a less inflationary asset. All burned tokens are transferred into a null address (0x0000000000000000000000000000000000000000). They cannot be withdrawn, nor do they have value. A token creator or a DEV creates a null address for burned tokens. It is significant to note that there are several measures for token burns. An example is when an individual transfers a BSC token to an ERC wallet address or vice versa, wouldn't reach its destination but rather be sent to a null address. Token burnt!

Monetary Policy:

In Web3, Decentralized Finance tokens operate it's monetary policy with the below questions;

Is the token inflationary or deflationary? Never should you forget that monetary policy is a measure for hedging against inflation. Same applies to tokens.

What are the plans for the token issuance in the future (Vesting schedule)?

Inflation rates of token is derived onset from liquidity mining programs that rewards users with new tokens entering the circulating supply on a daily basis. This increases its sell pressure. Thus, token inflation decreases it's purchasing power. Token inflation is caused by;

Unlimited and continuous token issuance or emissions

The appearance of many projects. Getting the supply rising while market cap remains constant.

Mining: Increases the number of tokens held for miners.

Staking: Increases the token supply, decreases the token value.

Token Monetary Policy

The basis of monetary policy for any project in an ecosystem is the consensus mechanisms of such projects (Related to the source code). They are listed below:

- Proof of Authority (PoA)
- Proof of Burn (PoB)
- Proof of Capacity (PoC)
- Proof of Developer (PoD)
- Proof-of -Donation.
- Proof-of -Elasped-Time~Nodes.
- Proof-of-Liquidity.
- Proof-of -Replication(Data Storage Mining)
- Proof-of-Spacetime.
- Proof of Stake (PoS) (Validating transactions or blocks
- Proof of Work (PoW)~ Each block is mined by individuals or nodes on the network

All these monetary policy ideas are automated by codes.

Token Distribution:

Tokenomics Allocation mechanisms. Token distribution refers to the division of the total token supply into segments in order to maintain a stable growth process. To understand Tokenomics, asking the below questions about token distribution is important:

How initially was the token distributed? (Pre-mining, IDOs, etc.)

What percentage of the token supply are owned by the founders, developers, and partners?

What minimum percentage can public investors own?

What percentage are locked-up for future distributions?

If a percentage is locked up from 4 above, what is the plan for the future distribution. That is what is their vesting schedule plan?

Are there Whales holding the major share of the tokens? What percentage?

Is there a possibility that a whale would sell off it's token and manipulate the market?

Tokenomics for Uniswap, Solana and Avalanche. The above questions are Tokenomics research questions that help you set a guide towards determining a solid project in the ecosystem. There are two basic models for token distribution;

- Paid Model (Token sold for money)
- Free Model (Token distributed free of charge)

Note: Tokenomics is about Trade-offs and incentives.

Paid Models is a method of token distribution from;

a. The investor token tool (SAFT, Private Token Sale and other old methods)

b. From the community pool (Launchpad, Public Token sale, etc.)

Free Models is method of token distribution from the founder's team pool. They include;

a. Token transfer from founders, token incentive scheme for team and advisors.

b. Distribution of tokens from the community pool (Airdrops, Staking, Yield rewards, etc.)

Evolution of Token Distribution. The above diagram explains the Token Distribution Model right from innovation. The ICOs and SAFTs were in motion from 2013-2017. Another model not added is the Protocol Owned Liquidity model pioneered by Olympus DAO through Bonding Curve mechanism. The Voting Escrow model was also introduced by Curve Finance in 2020. It had been famous since then.

The fifth process of Tokenomics fundamentals that aligns with the Financial incentive Token Design is EARNING. It is a natural phenomenon by which projects share benefits or profits with stakeholders. The reasons are:

1. To incentivise the miners (In PoW consensus models)
2. To secure the Network. (In PoS or similar consensus models)
3. To hedge against inflation.

Rewards are earned through the following ways;

- Mining
- Staking and farming.
- Running masternodes.
- Liquidity exchanges.
- Airdrop activities, etc.

Visit https://www.stakingrewards.com/, you would find a details of allocations to staking, masternodes, mining, and other features for several DeFi projects. The separated token pool allocated to the team and advisors is organized by signing a Token Option Agreement. This determines the token vesting mechanism (A Calendar schedule of the accrual of tokens) and the Key Performance Indicator (KPI). This is an important research check while reviewing Tokenomics. After

token vesting is completed, a token lockup is often provided for a certain period to avoid token supply or token demand imbalances. Especially when the employees token becomes liquid and they want to sell the token on Exchanges.

To conclude the journey, I'd list below the red flags of tokenomics. They are:

- Unlimited Supply (ceteris paribus).
- Unfair vesting schedule.
- Unfair Token Distribution.
- Inflationary Tokens.
- Possibility of Unwanted changes in the future.
- Non transparent Tokenomics.
- Centralized Mechanisms.
- Non-Optimal token issuance.
- Lack of use cases.

Unlimited Supply can be a red flag and as well might not be the same. We all want to have unlimited assets in our possession such as unlimited internet, buffet, and so on. Here in Tokenomics, it can be a negative phenomenon.

A token with unlimited supply means that new tokens are being minted always. There's no measure of token shortage which affect the demand and supply equation. This is because a constant rise in supply would overtake demand leading to a fall in price of the token. More importantly, causes inflation. Worst scenario, Hyper Inflation.

However, the Tokenomics plans of a project with unlimited token supply determines its inflationary and deflationary mechanisms. This is why unlimited supply might be a good fit as well. Ethereum ($Eth) is a perfect example, with an unlimited token supply. It had a burning mechanisms such as EIP-1559. This indicates that a token with an unlimited supply leaves behind a justifiable reason for its action. Dogecoin, a meme coin also has unlimited supply.

There is a lot to tokens as regards it's creation, existence, evolvement and involvement in the economic activities of Web 3 in general. You can read up the article on Medium, while you match up images.

Thank you.