Webinar

Chapter 3: Cryptoeconomic Patterns & Application domains

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Tokens: models & economic decomposition

It's all started with personal interest devoted to **understanding economic sense of tokens.**

My personal observations through entire crypto life:

1. Number of economic functions of tokens is quite limited
2. Tokens based on similar patterns are used in entirely different application domains
   (for example - governance tokens)
3. Research firms, government agencies, VCs created different versions of Token Taxonomies
4. We have lot of very solid works on token valuation in the space
5. But finally, we still lack understanding of value behind tokens [1].

This chapter is my attempt for classification of **value capturing mechanisms**, **implementation patterns, and application domains** in cryptoeconomic systems based on token-centric approach.

It's experimental stuff and I appreciate critics & feedback from the community

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[1]
https://www.coindesk.com/lack-rational-way-value-tokens

Decentralized networks as value networks

1985, Michael Porter - **value creation chain** for a firm
1998, Stabell and Fjeldstad - **value creation shops** & **value networks** [2], [3]
Now - value networks are decentralized networks & protocols

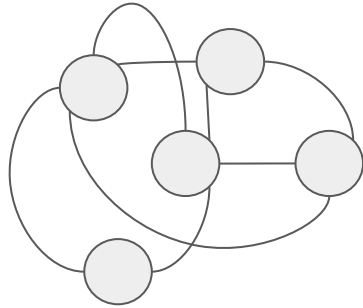Value in decentralized network: different value for different agents involved in its operation.

Jack Barker: Pied Piper's product is its stock (Silicon Valley series) **//** just a controversial statement

Intuition: value of protocol token should somehow be linked to protocol performance and size.

1. *How is the token integrated into the value creation cycle?*
2. *What issue it solves in the system?*
3. *How is the value captured by a token corresponding to the value produced by the system?*
4. *How can we classify analogies in token models of entirely different decentralized protocols?*

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Mindmap: structuring network value

Value network

Properties:
1. "Raw" (unstructured) coordination value
2. System goals & issues

Mechanism design/policies
solving issues + achieving network goals

Policies and mechanism design defining token functions are predictors for the **origins of its value**

Value Capturing Mechanism [**VCM] + VDM** (distribution)

Value Creation Patterns [**VCPs] //** set of implementations

Particular token model

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Definitions for VCM, VCP, VDM

Initial system -> Policies and mechanism design for a token -> Origins of value -> Value capturing mechanism -> Value creation patterns (set of implementations) -> Combination of composable VCPs as a particular token model

Value Capturing Mechanism: how token accrues value (describes interrelation of origins of value)

Value Distribution Mechanism: how value created in the network is distributed **//** often mixed with VCM

Value Creation Pattern: implementation of VCM

Chemical analogy

Origins *of chemical properties for an element: core [neutrons, protons] + shell [electrons] ->* ***Chemical properties*** *and reactivity ->* ***Set of implementations*** *[various valence states for an element, for example Fe+2, Fe+3] ->* ***Chemical compound*** *= Combination of elements in particular chemical states*

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Periodic table of VCMs

#	VCM name	Origins of value	VCPs	Asset examples
1	**Value transfer** **//**often it is defined by more common word such as "coin", "currency", "community inclusion currency"	Involvement in trades/settlements. Math: Fisher's equation MV=PQ	see exmpls	BTC, BAT, LINK(v1.0), CICs
2	**Work token ("staking")** **//**a token allowing to receive cashflow only in case of being used as a "risky deposit" - skin in the game in certain service or network	Cashflow based on the work provided to the network	FIL stk syst LPT stk syst	FIL, LPT
3	**Network consensus token** **//** the main purpose is securing decentralized network. Service to the end-user isn't provided directly	Cashflow based on participation in consensys Demand based on necessity of paying fees/holding native token to use resources of the network	BFT consensus, DPoS, ETH 2.0, dec. bridges	XTZ, ATOM, ETH2.0, STAKE; dec. bridges often charge in transferred assets

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Periodic table of VCMs

#	VCM name	Origins of value	VCPs	Asset examples
4	**Dividends** **//**a token allowing to receive cashflow without doing any work/carrying risks	Future cashflows Token value tied to fees generated by protocol and expectations regarding these fees	xSUSHI 1INCH governance	SUSHI, 1INCH, WHITE, HEGIC, LOOKS, veCRV
5	**Backing by another asset** **//** off-chain vs on-chain backing	Value is equal to what value you can receive redeeming it	DAI AMM LP USDC	DAI, AMM LP tokens, USDC, Synths,
6	**Discount tokens** **//** dividends paid only for active users of protocols, and they are proportional to this usage	If you save on something, you can account it as your income. If you save on service that you use often, discount is your profit.	discount on trading fees	Tokens of CEXes: BNB, GT, Huobi, FTT, CRO

Periodic table of VCMs

#	VCM name	Origins of value	VCPs	Asset examples
7	**Internal product governance** **//** it allows managing limited resources of the protocol: such as future development, liquidity mining policy, usage of DAO treasury holdings, etc	(1) actual amount of protocol resources to be managed (2) size of token holders stake	COMP gov MKR gov AAVE gov	UNI, COMP, AAVE, MKR
8	**Meta-governance (meta-pattern)** **//** proxy token, allowing to vote in several protocols (for example using assets locked in the protocol)	Value of such a token is the cumulative value of all voting power, locked in the protocol that offered such a function for a token.	Convex PowerPool INDEX	CVX, CVP, INDEX
9	**Hedonic Value/Memetic Value** **//** Value depending on context, personal and community opinion Social agreement	The right of ownership of unique/desired/legitimate object. Context, marketing, community popularity	NFTs, UniSOCKS CNN NFTs Metaverse items	NTFs, UniSOCKS, CNN historical NFTs Satoshi's BTCs (partly fungible?)-> theory of fungibility!

Examples: decomposition of tokens into VCMs

Tokens that could be described using one VCM: COMP(7), BAT(1), REN(3), NMR(2), ETH1.0(1), ETH2.0(3), LPT(2), LINK1.0(1), cDAI(5), YLA(5), DPI(5)

Tokens that are designed as a combination of two VCMs: MKR(4)(7), 1INCH(4)(7), SUSHI(4)(7), SNX(1)(7), FIL(1)(2), DAI(1)(5), BNB(3)(6), SOCKS(5)(9)*, OXT(1)(2)

formally, the famous [UniSocks token](#) can be described by these two VCMs

Three-VCM tokens are quite rare since there aren't many combinations of VCMs that can complement each other. The main examples of such tokens are in the Defi sector, combining ***internal product governance*(7)**, ***dividends*(4)** in different forms, and ***work token*(2)** or ***meta-governance*(8)**.

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A case study

Gitcoin's token is here

GTC is a governance token with no economic value.

GTC governs Gitcoin, where we work to decentralize grants, manage disputes, and govern the treasury. With your help, we're accelerating progress towards the mission of building & funding digital public goods and decentralizing from web2 to web3. Let's see what this thing can do.

GTC is deployed on the Ethereum mainnet at
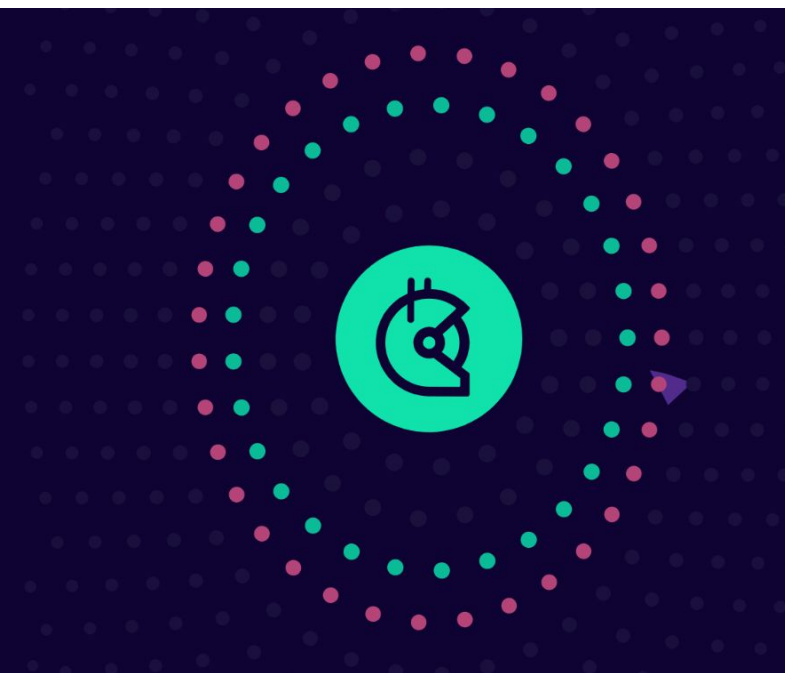
Hello!

<u>Before</u> crypto background: Ph.D. in Chemistry devoted to lithium intercalation in complex 3D inorganic structures, 5 scientific articles and two patents.

Crypto journey & achievements

- Crypto enthusiast, miner since late 2013
- Full time in crypto since 2017, employee and advisor positions, helping projects with WP/"tokenomics"/project analysis
- Defi research since 2018 (early employee in Akropolis)
- Active member of TE Community, prize on first Token Engineering Hackathon ever (Diffusion 2019, Berlin, by Outlier Ventures)
- Found economic vulnerability in bZx token model, 2019
- AMM research & modeling, Balancer Simulations Group, successfully completed grant from Balancer Labs as a part of TE Team
- DAO-elected Head of Research in PowerPool protocol building structured Defi products powered by on-chain automation

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