Introduction

By 2025, 10% of global GDP to be stored on Blockchain [World Economic Forum] Asset classes: crypto currencies (Bitcoin, Ethereum) and instruments built on public/private decentralized ledgers secured by cryptography (sidechains). "Inefficiency or misallocated cash flows" [Miller, Scholes]; in a decentralized system that executes transactions and contracts, in theory, trust is not needed. Smart contracts: blockchain-based programs that can establish and enforce fiduciary relations between parties. Auditable by parties and regulators. "The DAO"; a Decentralized Autonomous Corporation: first decentralised investment fund conceived to finance proposals on other decentralised applications [Dapps]. Listed by default. Largest crowd-funding event in history (and an attack target due to a flaw in code logic): a shareholder moved funds (decieving balance checks): $300M raised in 1st month, $500M compromised 3 weeks after for (comparison, Bangladesh central bank had $91M stolen due to the SWIFT exploit). Unwound 2 months after launching, effectively creating 2 competing cryptocurrencies with different mining profitability, hashing capacity and price. Crypto tokens as bearer shares: exposure from intrinsic cost factors and governance structure. But what about trust on an asset class? the code (itself)? And, even if a "replicated, shared ledger" [Gendall] offers full code and transactional visibility – are the signals/market preferences encoded in other value flows?

Irrational exuberance? "The DAO" (top) and "The DAO" (bottom)

Methods

Value. The fair value of the coin [Blunden] as the present discounted value of the variable mining cost with a probability p of a fatal risk event in any period. Using a n-year horizon, $\text{Value} = \sum_{i=0}^{\infty} p_i \cdot \frac{1}{(1+r)^i}$

Where: $p_i = \text{riskless bond rate}$ and $r = \text{risk premium}$

Cost. Equilibrium fair cost of work per block, for Bitcoin [Aste].

Risk. We use financial signal processing to study volatility (estimation and analysis) and market events (spectra); network correlations expressed in graph form for asset correlations, and vector fields to map flows. We compare assets at a similar level of complexity using a simplified form of Fields/Rank [Venegas, Krabec and Cizikova], an information theoretical value measure extract after lawyer's [Krabec] Expected Force Network Centrality; given a set of traffic value probabilities $p_i$, the absolute information entropy is taken to be, $H(p) = -\sum_{i} p_i \log(p_i)$

Conclusions

A Triviality premium. In Blockchains "the cost is a security measure" [Aste]: high cost for (miners) and high probability of fatal risk have a material effect on value. Even in a programmatic setting, investors are forced to trust in the design (Code is Law), and human governance structures. Exposure increases in cryptoassets (smart contracts have larger attack surfaces than cryptocurrencies)– in the internet-of-things every device can run a smart contract, and "a wealth of information creates a poverty of attention" [Simon]). Flows, and their morphological network, may therefore serve as a skeletal, simplified representation of the flow [Weinkauf]. By identifying sectors of the streamlines and may therefore serve as a skeletal, simplified representation of the flow [Weinkauf]. By identifying sectors of different flow behavior it may be possible to embed robust control [Sargent, Hansen] to deal with uncertainty in portfolio selection.

Attention economy. The topology of the velocity field of a flow can be condensed as a condensed representation of the streamlines and may therefore serve as a skeletal, simplified representation of the flow [Weinkauf]. By identifying sectors of different flow behavior it may be possible to embed robust control [Sargent, Hansen] to deal with uncertainty in portfolio selection.

Attention economics and the Field approach. Trading (Exchanges) data and voting (Fund) mechanisms can not reflect all changes on risk profile of decentralised applications, in the period of uncertainty while the Dapp is pusising funding, it is useful to use "the market as a voting machine" [Graham] The value web and the web of information are intertwined: Microsips sedeckse asign a transaction price to "call" [on]"URLs (a channel keeps fees low to users), in such marketplaces, traffic flows are, literally, cashflows. Vector fields are scalable, fit to analyze arbitrarily high numbers of securities (critical since in the internet-of-things every device can run a smart contract, and "a wealth of information creates a poverty of attention" [Simon]). Flows, and their morphological network components' possible areas of research: Machine learning (pathfinding optimization), Watermarking [Kiyavash] and steganography: we found potentially misleading rankings, where proposals with high score and vote showed no actual sign of demand.

Feature-based data analysis (network detail). The topology of the velocity field of a flow can be condensed as a condensed representation of the streamlines and may therefore serve as a skeletal, simplified representation of the flow [Weinkauf]. By identifying sectors of different flow behavior it may be possible to embed robust control [Sargent, Hansen] to deal with uncertainty in portfolio selection.

Mesh network. The progression in portfolio positions is now depicted using a network form (May is the top layer, same as the previous vector field that was rendered using Line Integral Convolution; the other layers show the build-up period since March). Clusters in this "fabric" of value flows reveal a mixture of "hidden market trends". There is a visible break-up (of uniform increase) towards a new equilibrium on April (\(t < 0\)), but still Security_B remains among the most stable assets in the portfolio.


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References


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