Researchers reveal link between cryptocurrency coding and market behavior

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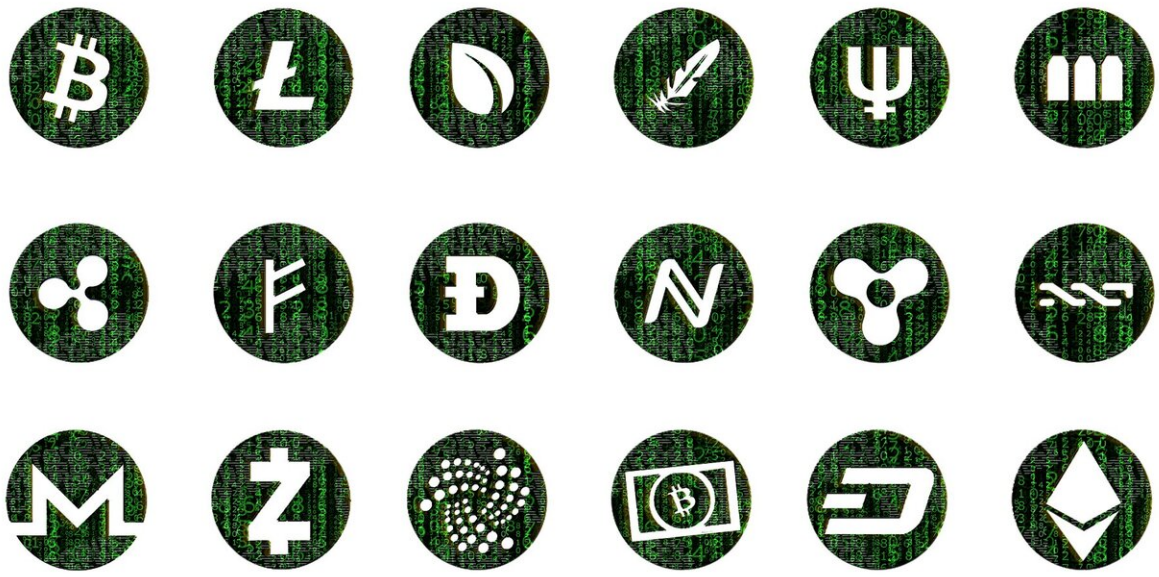

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A new study by Reader in City's Department of Mathematics, Dr. Andrea Baronchelli, published in the *Science Advances* journal, has revealed a connection between the coding of cryptocurrencies and their market behavior.

Dr. Baronchelli and his colleagues have analyzed 297 cryptocurrencies whose code is stored in GitHub, and whose daily trading volume has

averaged larger than US$100k during their lifetime.

The study demonstrates that 4 percent of developers—considered a significant fraction—contribute to the code of two or more cryptocurrencies. It further questions the transparency surrounding the coding process which creates individual cryptocurrencies.

"In our paper, we challenge the view that open code grants transparency to cryptocurrencies, even accepting that literate users do check it carefully," says Dr. Baronchelli, in "From code to market: Network of developers and correlated returns of cryptocurrencies."

Noting the "Code is law' operating principle in cryptocurrency generation, Dr. Baronchelli says the security, transferability, availability and other properties of a crypto-asset are determined by the code through which it is created. If code is open source, as it happens for most cryptocurrencies, this principle would prevent manipulations and grant transparency to users and traders. However, this approach considers cryptocurrencies as isolated entities and neglects the possible connections between them.

He maintains that the whole network of cryptocurrencies should be considered both by regulators and by professional investors aiming to maximize portfolio diversification.

Dr. Baronchelli and his colleagues discovered that 1668 out of the 2225 cryptocurrencies listed in CoinMarketCap as of 9 June 2019 shared their source code on GitHub. They then queried the GitHub Archive dataset storing all events on public repositories from 2011, through Google BigQuery. This step provided them with all events related to the development of cryptocurrency GitHub projects.

The authors specifically queried two types of events: "push events" and

accepted "pull request events." Finally, they removed all events triggered by GitHub apps (software designed to maintain and update the repositories), and removed from their dataset GitHub profiles whose name included the term "bot" so as to exclude noise from users that identified or were reported to be non-human. The authors also collected cryptocurrency daily price, exchange volume and market capitalisation from three different web sources: CoinGecko, CryptoCompare and CoinMarketCap (the latter only until the end of July 2018 due to updates in the website regulations).

Dr. Baronchelli says his work has broad implications, given the primacy of code as an important societal regulator that challenges traditional institutions, from national laws to financial markets:

"Cryptocurrencies are open source digital objects traded as financial assets that allow, at least theoretically, everyone to directly shape both an asset structure and its market behavior. Our study, identifying a simple event in the development space that anticipates a corresponding behavior in the market, establishes a first direct link between the realms of coding and trading. In this perspective, we anticipate that our results will be of interest to researchers investigating how code and algorithms may affect the non-digital realm and spark further research in this direction."

More information: Lorenzo Lucchini et al, From code to market: Network of developers and correlated returns of cryptocurrencies, *Science Advances* (2020). DOI: 10.1126/sciadv.abd2204

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cryptocurrency-coding-behavior.html