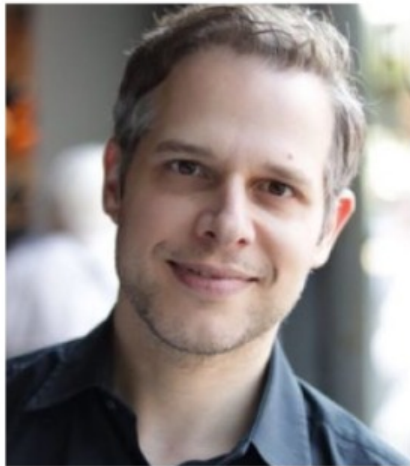


Practitioners' Insights: Crypto Assets, Now and the Future



Marcos C. Veremis
Managing Director
Evanston Capital Management

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Time: 5:30 pm to 6:30 pm IST



**CFA Society
India**



Part I: Overview on the World of Cryptos: Technology, Stakeholders



- Bitcoin is the first blockchain system.
- White paper “Bitcoin: A Peer-to-Peer Electronic Cash System” published in October 2008
- Laid out concept of a peer-to-peer network to cryptographically secure transactions, which can be executed outside the traditional financial system and **without the need for a centralized third-party**
- Bitcoin and most cryptocurrencies are “mined” by computers completing a complex algorithm; those that solve it successfully are paid in bitcoin (“proof-of-work”).
- The technology runs on a blockchain, a distributed open ledger that tracks all prior transactions.
- “Cryptoeconomics” (a form of game theory) is essential to the operation of the blockchain; incentives and disincentives are established, which support the entire self-regulation mechanism of the network.

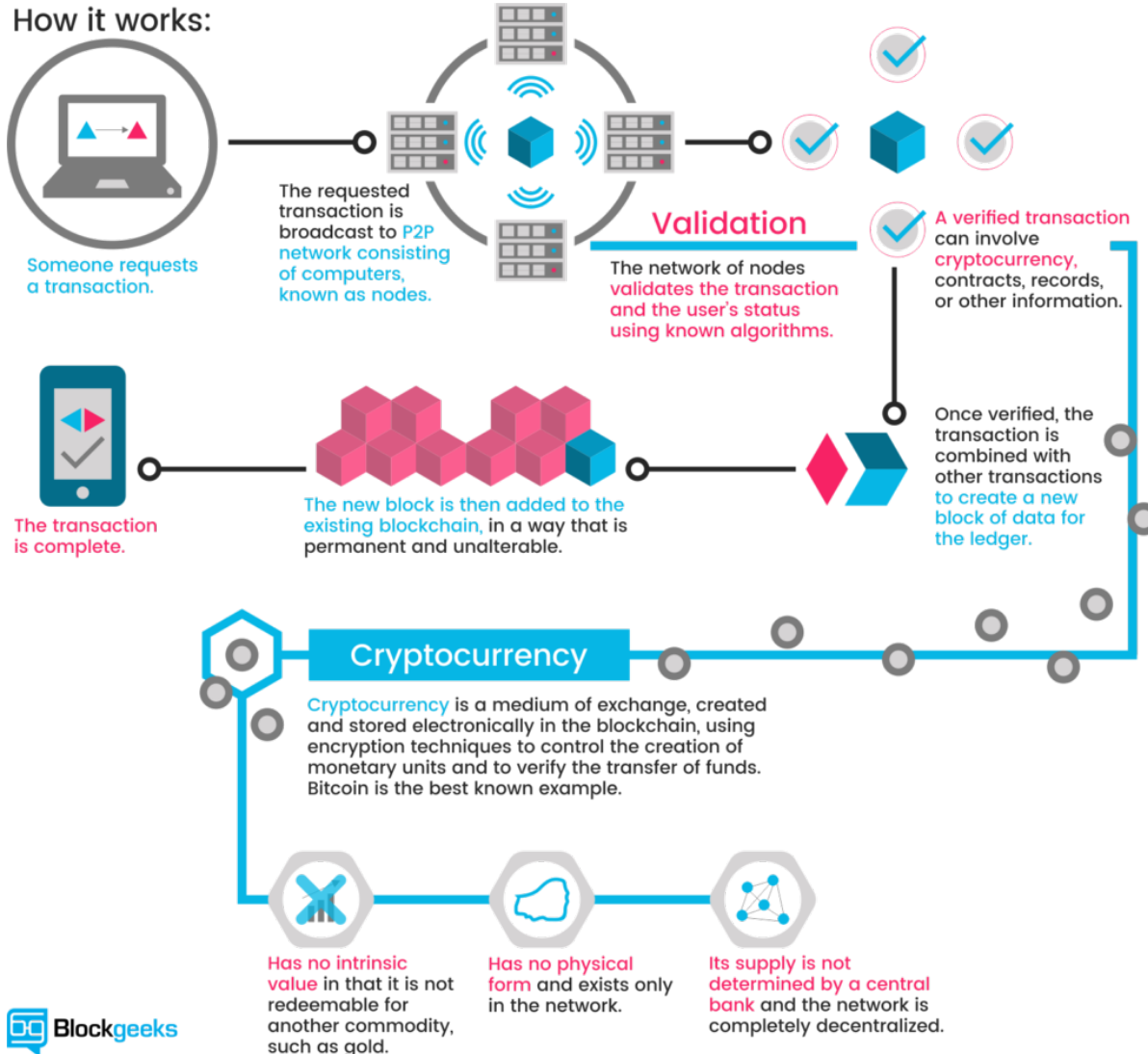
THE TECHNOLOGY: THE TRANSACTION MECHANICS FOR A BITCOIN

- Bitcoin 101:
 - Each bitcoin address has a public and private key. Anyone can send bitcoins to a public key but you need a private key to send bitcoins
 - The bitcoin blockchain keeps track of all bitcoin transfers (i.e. ledger)
 - All bitcoin transactions are irreversible
 - Bitcoins (i.e. the private keys) are usually stored in digital wallets but can be stored on offline hard drives or vaults

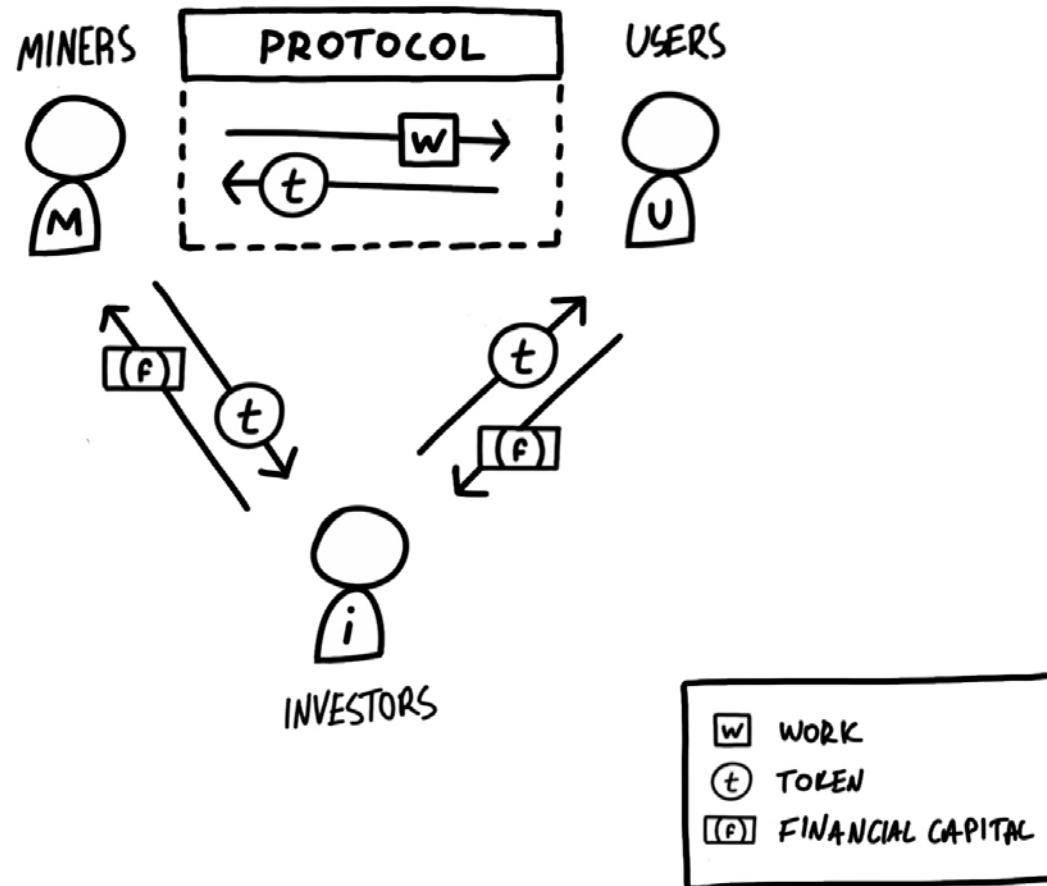


- Private Keys/Public Keys: insert the private key into the SHA-256 (secure hashing algorithm) designed by NSA and you get a public key.
- However, it is computationally infeasible to compute the private key from the public key. This design ensures security.

THE TECHNOLOGY: HOW IT WORKS...



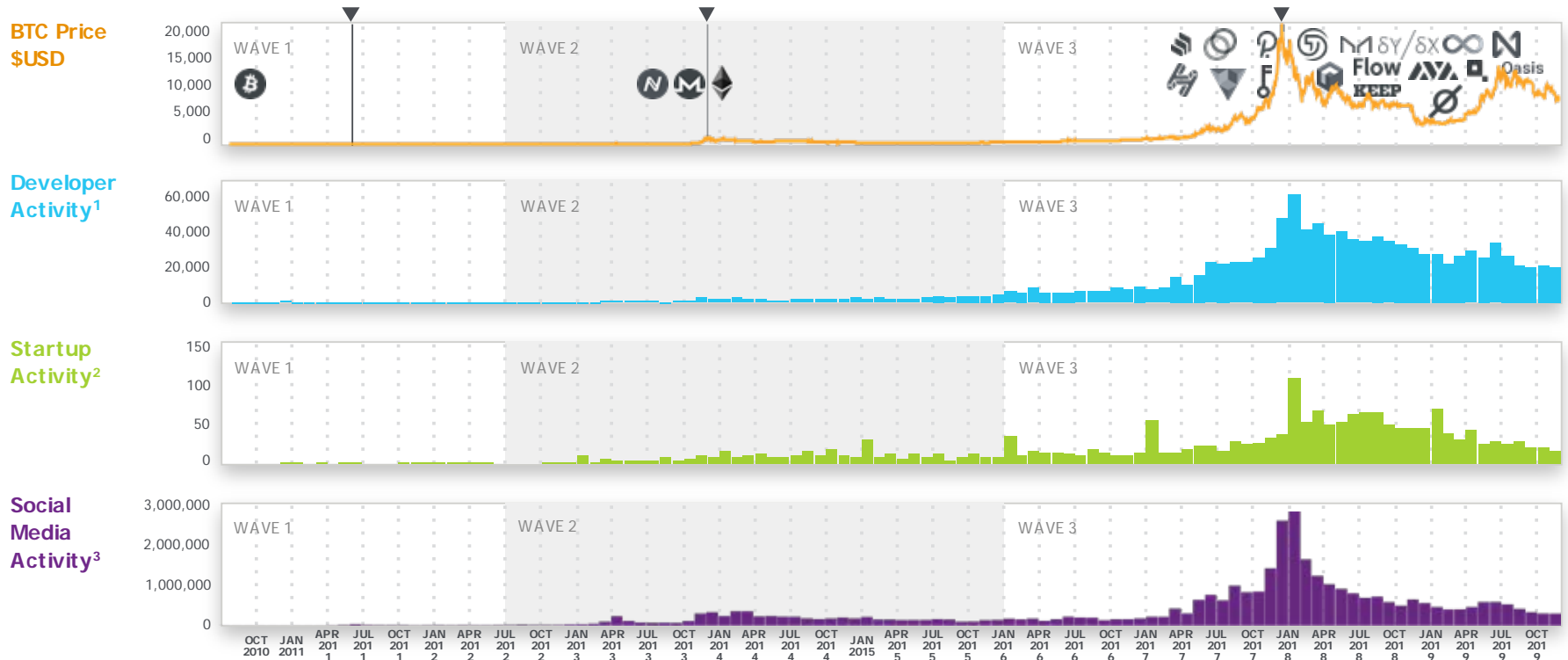
THE STAKEHOLDERS OF A PUBLIC BLOCKCHAIN NETWORK



Source: Placeholder Capital, <https://www.placeholder.vc/blog/2019/1/5/the-cryptoeconomic-circle>

CRYPTO INNOVATION WAVES

Crypto progresses in waves that from the outside look chaotic but have an underlying order.



Source: Andreessen Horowitz, <https://a16z.com/crypto-startup-school/>

¹ Developer activity based on crypto stars on Github ² Startup activity based on crypto first rounds funding via Pitchbook ³ Social media activity based on comments on crypto-related subreddits

THE TECHNOLOGY: WHY DOES THIS ALL MATTER?

- One way to think of blockchains is as a new type of virtual computer built on top of a decentralized network of physical computers. Blockchains provide game-theoretic trust guarantees that the code they run will continue to operate as designed.
- Based on breakthroughs in cryptography and decentralized design, blockchain technology introduces scarcity to the digital world, making the concept of internet-native value possible.
- It opens up a new avenue for designing, implementing and monetizing open peer-to-peer computer networks and allows developers to design and build a wide range of new digital primitives & services (e.g. digital assets, digital money, digital goods, community owned and operated digital services where the network participants accrue the value through tokens, decentralized finance applications and many more).
- It offers the potential to streamline processes across a number of industries, such as inter-bank settlement and auditing.
- Finally, it holds the hope for a new, more decentralized version of the internet, where users can control their privacy and monetize their data (in similar fashion to Bitcoin where users control their bitcoins by holding their private keys).



Part II:
Parallels Between Crypto/Blockchain and the Internet:
Is This a Venture Bet?



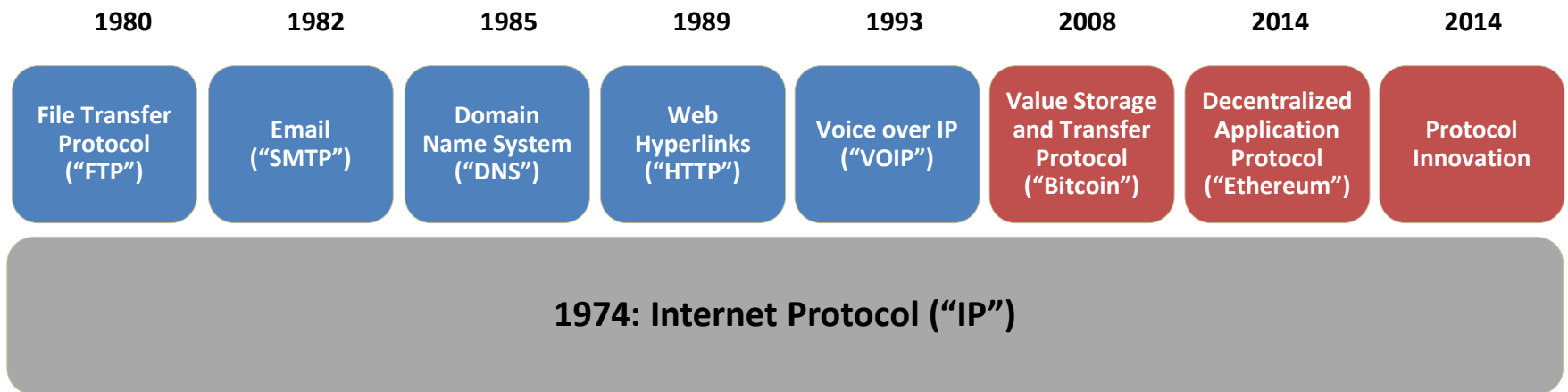
- While the internet promised to enable the decentralized and efficient creation and exchange of information, the crypto/blockchain space is promising to enable the decentralized and efficient creation and exchange of value in multiple forms.

- **NEWSWEEK MAGAZINE, 1995:**

<https://www.newsweek.com/clifford-stoll-why-web-wont-be-nirvana-185306>

“...we'll order airline tickets over the network, make restaurant reservations and negotiate sales contracts. Stores will become obsolete. So how come my local mall does more business in an afternoon than the entire Internet handles in a month? Even if there were a trustworthy way to send money over the Internet—which there isn't—the network is missing a most essential ingredient of capitalism: salespeople.”









- Protocol evolutions are gradual but have historically led to transformations in the way we share data.



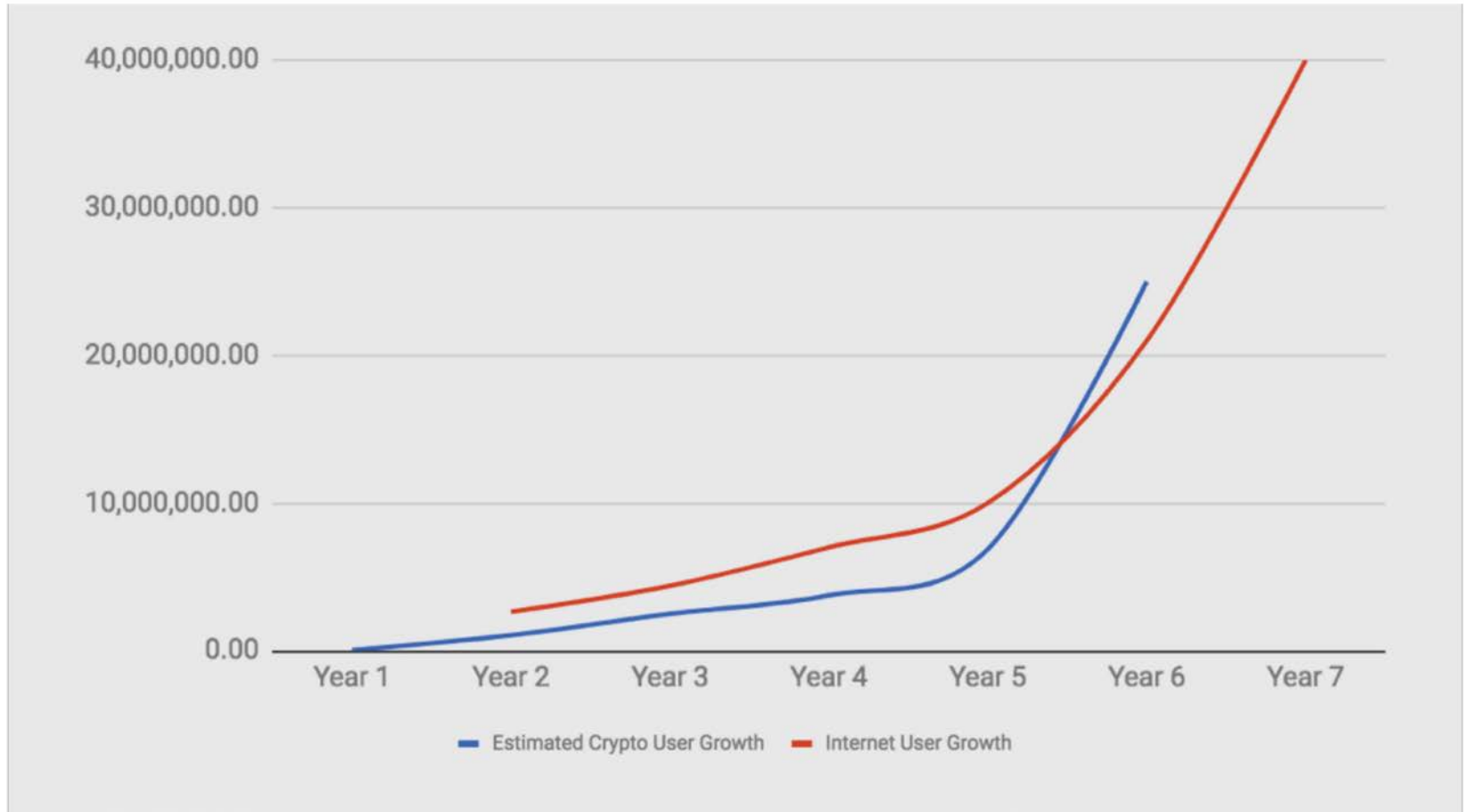
Existing protocols lack proper incentive structures to motivate developers to maintain/update standards. This responsibility often fell on non-profit organizations or government-sponsored groups.

	BLOCKCHAIN	INTERNET	DETAILS
Throughput	Low	High	Blockchains are low transactions per second relative to centralized systems
Distribution / Scale	Low	High	Blockchain has 50M users (including Coinbase, Binance) Internet has 3000M
Immutability	High	Low	Blockchains are immutable by design
Seizure Resistance	High	Low	Public-private key encryption means an individual controls the key to their assets
Privacy	High	Low	Cryptographic primitives such as zero-knowledge proofs enable privacy from counter-parties and third-parties

CRYPTO WILL REACH MARKETS NOT YET DISRUPTED BY THE INTERNET

	BANKS	BROKERAGES	DERIVATIVES	PRIVATE PAYMENTS
CENTRALIZED	 \$110B REVENUE	 \$9B REVENUE	 \$3B REVENUE	 \$1.6T IN CIRCULATION
CRYPTO ENABLED	 ANCHORAGE A modern bank: Self-custody of digital assets, backed by A16Z.	 Coinbase has an \$8B valuation. NYSE/ICE is building an exchange.	 Open source digital derivatives and lending platform.	 Send money instantly with cryptographic privacy.

ESTIMATED CRYPTO USERS (2013-2018) VS. INTERNET USERS (1990-95)



BLOCKCHAIN & VENTURE CAPITAL

Generalist VCs in Crypto



Illustrative Crypto Exposure





Part III:
Review the “Cryptos as Money” Debate and the Various
Different Types of Crypto Assets



STORE OF VALUE: SEIZURE-RESISTANT, PRIVATE, EASY TO TRANSPORT

STORE OF VALUE FEATURE	DETAILS / EXAMPLE	CRYPTO	GOLD	US DOLLAR	NON-USD CURRENCY	FINE ART	LAND IN COUNTRY	LAND OUTSIDE COUNTRY
Difficult to seize	An oppressive government cannot easily take it from a citizen	Yes	No	No	No	No	No	Yes
Private	Your neighbors and your government do not know how much you own	Yes	Yes	Somewhat	Somewhat	Yes	No	Yes
Easy to transport	Can flee Nazi Germany, etc. and take (some) wealth with you	Yes	Somewhat	No	No	No	No	No
Easy to acquire	Can buy in a private-party transaction	Yes	Yes	No in most countries	No	No	Yes	No
Easy to transfer	Can be made liquid in case of need	Somewhat	No	Yes	Somewhat	No	No	Yes
Uncorrelated with other assets	Useful in portfolio and against black swan events	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Limited Volatility	Relative to alternatives, volatility may be acceptable	No	Yes	Yes	No	Yes	Yes	Yes

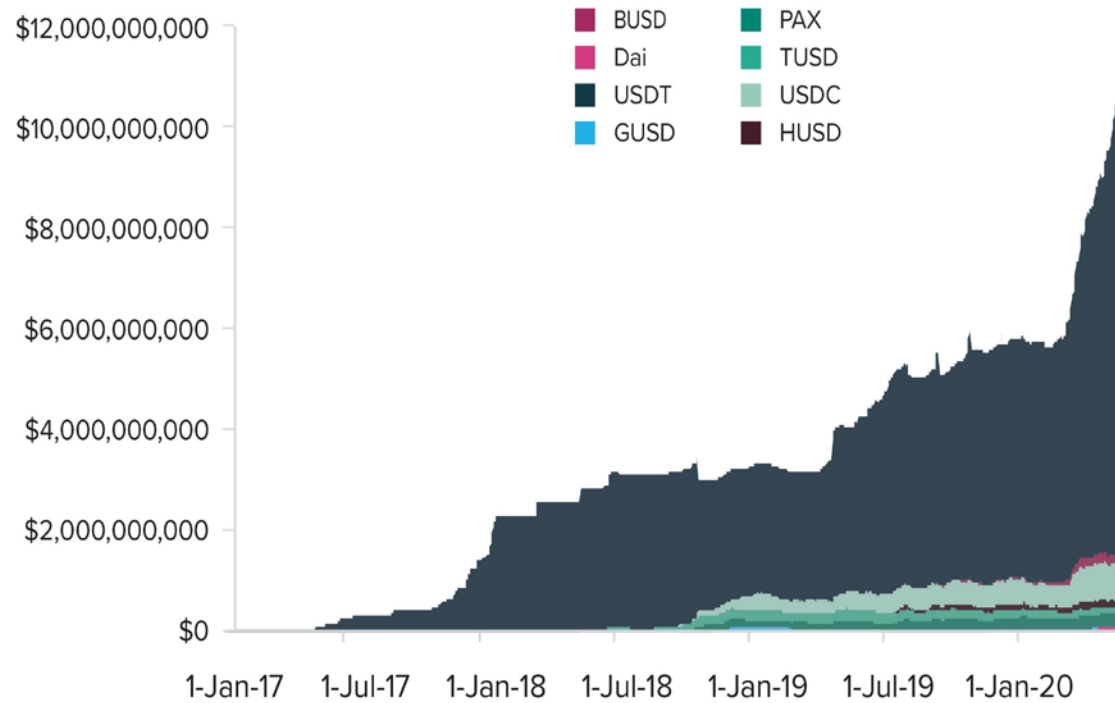
STABLECOIN SUPPLY HAS GROWN TO \$10 BILLION

STABLECOIN GROWTH

1/1/17 - 5/17/2020



INSIGHTS



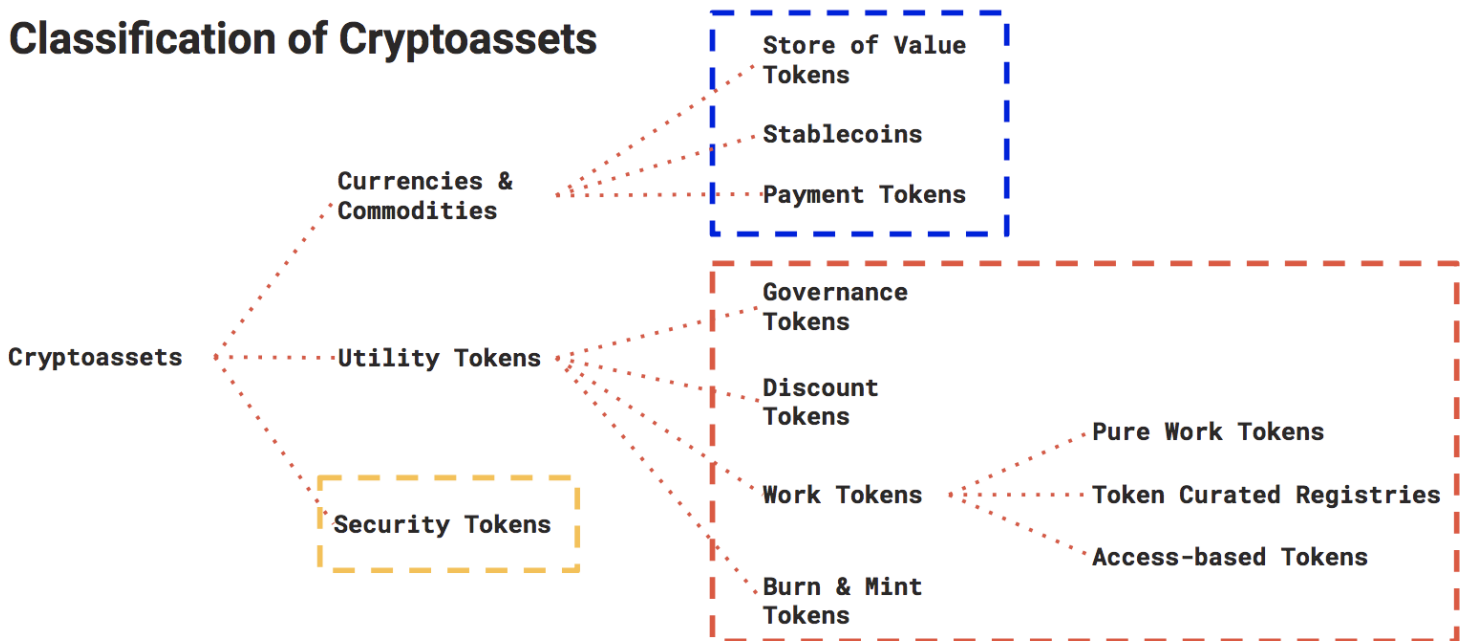
Total Value Locked (USD) in DeFi

[TVL \(USD\)](#) | [ETH](#) | [BTC](#) | [DAI](#)

All | [1 Year](#) | [90 Day](#) | [30 Day](#) | [7 Day](#)



Classification of Cryptoassets



Utility tokens capture the value of trustless coordination of actors within a network.

Currencies & commodities focused on payments and store of value will converge towards Bitcoin, Ethereum, ZCash, Monero and Stablecoins.

Security tokens represent the value of the underlying off-chain asset with a markup for liquidity, divisibility and access.



Part IV: Regulations



Crypto Regulations by Country

How do different countries around the world approach crypto-regulations?



The light-to-tight regulation scale is based on the following criteria: are Cryptocurrency Exchanges and ICOs banned, regulated or operating in a grey area? Ban = 3 points, regulated = 2 points, grey area = 1 point. Legal Tender? Yes = 1 point, No = 0 points. Is there any planned legislation to increase crypto regulation? Yes = 1 point, No = 0 points. Data collected by ComplyAdvantage should be used as a guide and never taken as legal advice.



Resources & Legal Disclosures



- General Background: <https://medium.com/@marcos717/the-promise-s-of-crypto-9343fa6328dd>;
<https://dealbook.nytimes.com/2014/01/21/why-bitcoin-matters/>;
<https://www.nytimes.com/2018/01/16/magazine/beyond-the-bitcoin-bubble.html>;
<http://continuations.com/post/148098927445/crypto-tokens-and-the-coming-age-of-protocol>;
<https://www.nickgrossman.is/2018/cryptonetworks-and-why-tokens-are-fundamental>
- Cambridge Associates paper on investment landscape:
<https://www.cambridgeassociates.com/research/cryptoassets-venture-into-the-unknown/>
- A16z Crypto Canon & Start-up School: <https://a16z.com/2018/02/10/crypto-readings-resources/>;
<https://a16z.com/crypto-startup-school>
- 1confirmation Newsletter: <https://www.1confirmation.com>
- Multicoins Blog: <https://multicoins.capital>
- Placeholder Blog: <https://www.placeholder.vc/blog>
- Books: “Mastering Bitcoin” by Andreas Antonopoulos <https://www.amazon.com/Mastering-Bitcoin-Unlocking-Digital-Cryptocurrencies/dp/1449374042>
- Podcasts- <https://podcasts.apple.com/us/podcast/base-layer/id1445373535>;
<https://podcasts.apple.com/us/podcast/on-the-brink-with-castle-island/id1480586463>
- LIBRA: <https://a16z.com/2019/06/18/libra/>; <https://www.usv.com/blog/why-usv-is-joining-the-libra-association>; <https://medium.com/@marcos717/the-importance-of-libra-f6ca87e8a1a7>

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