



Modular
Asset Management

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AGENDA

1. Crypto refresher – Blockchain 101

The potential of blockchain and overview of the different types of digital assets

2. Valuation methodologies for Crypto

A review of the latest valuation models for cryptocurrencies

3. Picking the winners and losers – which crypto currencies will survive?

What are the key characteristics different cryptocurrencies that will determine if they will be sustainable and survive?

4. What to Watch

Key market events and developments to watch over the coming months

5. Q&A

AGENDA

1. Crypto refresher – Blockchain 101

The potential of blockchain and overview of the different types of digital assets

CRYPTO REFRESHER - BLOCKCHAIN 101 – A QUOTE

“I developed a new open source, peer-2peer e-cash system, called Bitcoin. It is completely decentralized, with no central server or trusted parties, because everything is based on crypto proof instead of trust.”

Satoshi Nakamoto

CRYPTO REFRESHER - BLOCKCHAIN 101 – DOUBLE SPENDING PROBLEM

- If you receive a piece of data representing one unit of virtual cash, you can make one (or multiple copies) and pass it to different people.
- Traditional finance has resolved this issue by introducing intermediaries (banks) to keep track of payments in and out of an account.

CRYPTO REFRESHER - BLOCKCHAIN 101 - DEFINITIONS

- A blockchain records data in a sequential archive (Yermack, 2016)
- Blockchain combines mathematical cryptography, open source software, computer networks and incentive mechanisms (De Filippi et al, 2016)
- A blockchain can remove the need for trust, and therefore enable a secure transfer of value and data directly between parties (OECD)

CRYPTO REFRESHER - BLOCKCHAIN 101 – A HASH

Text

Some text
Some text
Some text
Some text
Some text
Some text
Some text

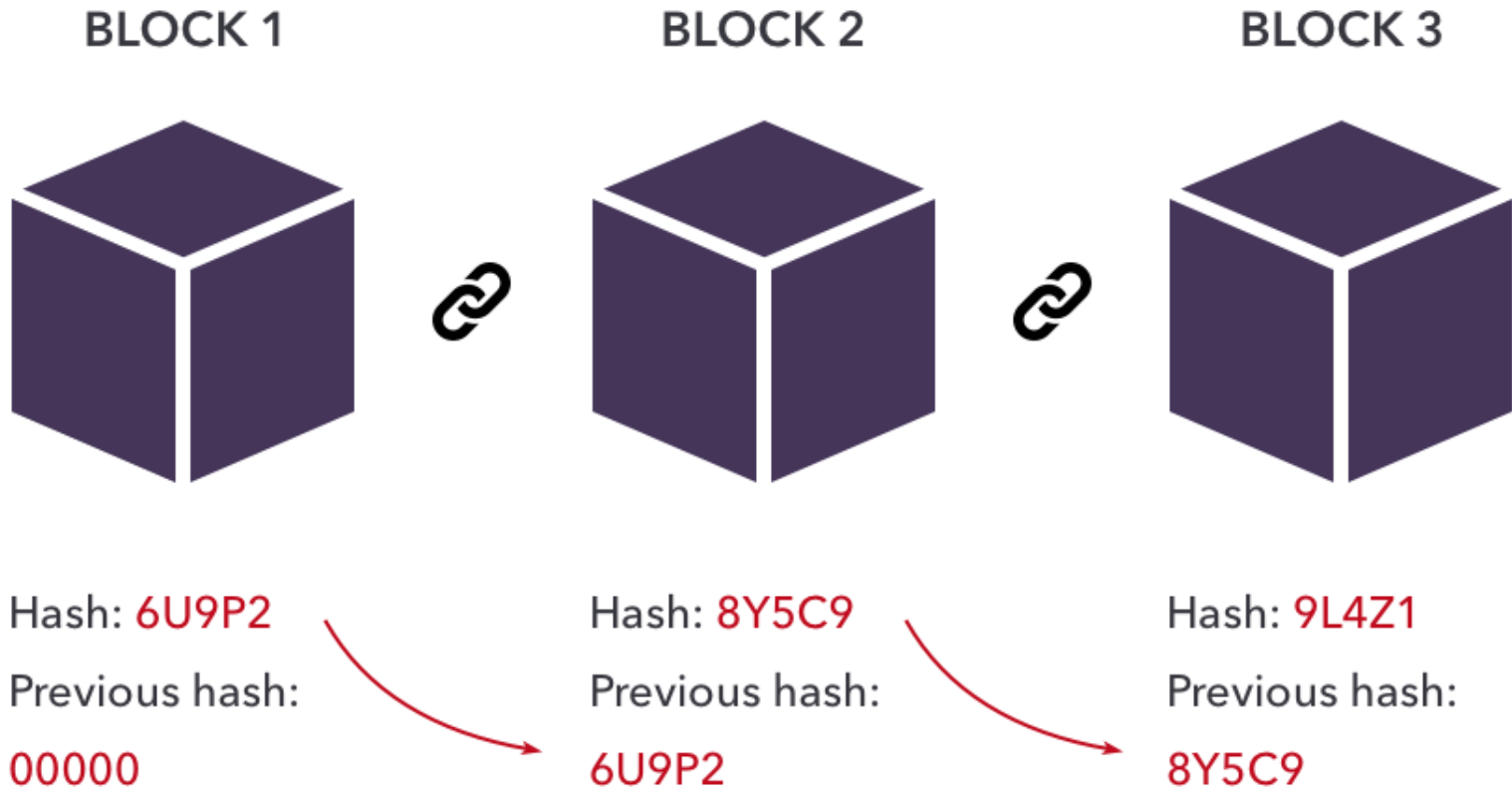
Hash function



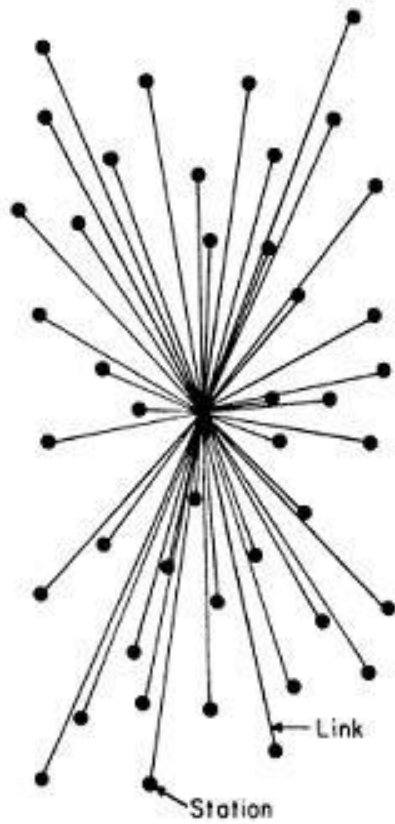
Hash value

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8bdc6688c6f37e97cfbc2
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6a8866ad7f0e17c02b14
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aeb6b733a1

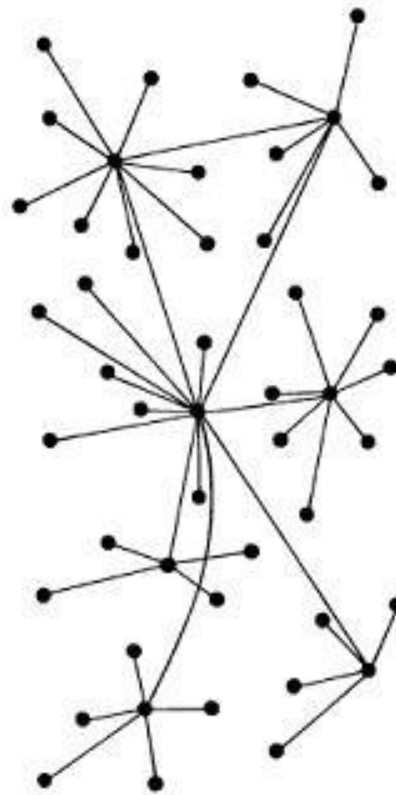
CRYPTO REFRESHER - BLOCKCHAIN 101 – A CHAIN OF BLOCKS



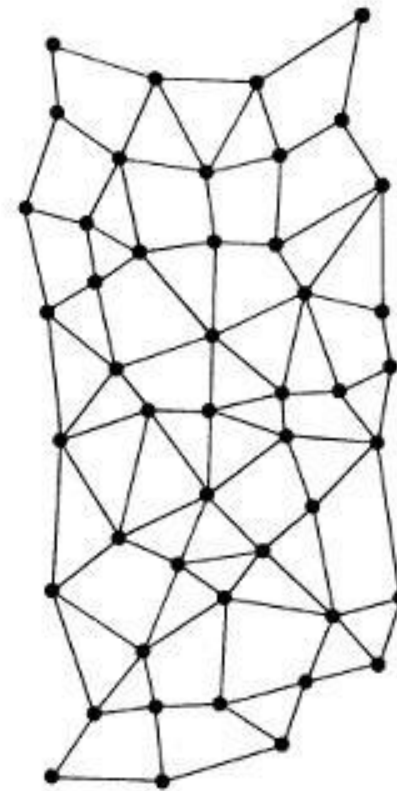
CRYPTO REFRESHER - BLOCKCHAIN 101 – DECENTRALIZATION



CENTRALIZED
(A)



DECENTRALIZED
(B)




DISTRIBUTED
(C)

CRYPTO REFRESHER - BLOCKCHAIN 101 – CONSENSUS MECHANISM

Proof of Work VS Proof of Stake




Mining capacity depends on computational power



Validating capacity depends on the stake in the network




Miners receive block rewards to solve a cryptographic puzzle



Validators do not receive a block reward, instead, they collect transaction fees as reward



Hackers would need to have a computer powerful than 51% of the network to add a malicious block, leading to 51% attack



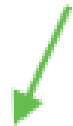
Hacker would need to own 51% of all the cryptocurrency on the network, which is practically impossible and therefore, making 51% attacks impossible.

CRYPTO REFRESHER - BLOCKCHAIN 101 – A WALLET (OR PUBLIC / PRIVATE KEY PAIR)

Bitcoin Address



Public Key



1M3RLrXve5wcT2ZcJu8WXoXjdh4WXcWQA9

Private Key (Wallet Import Format)

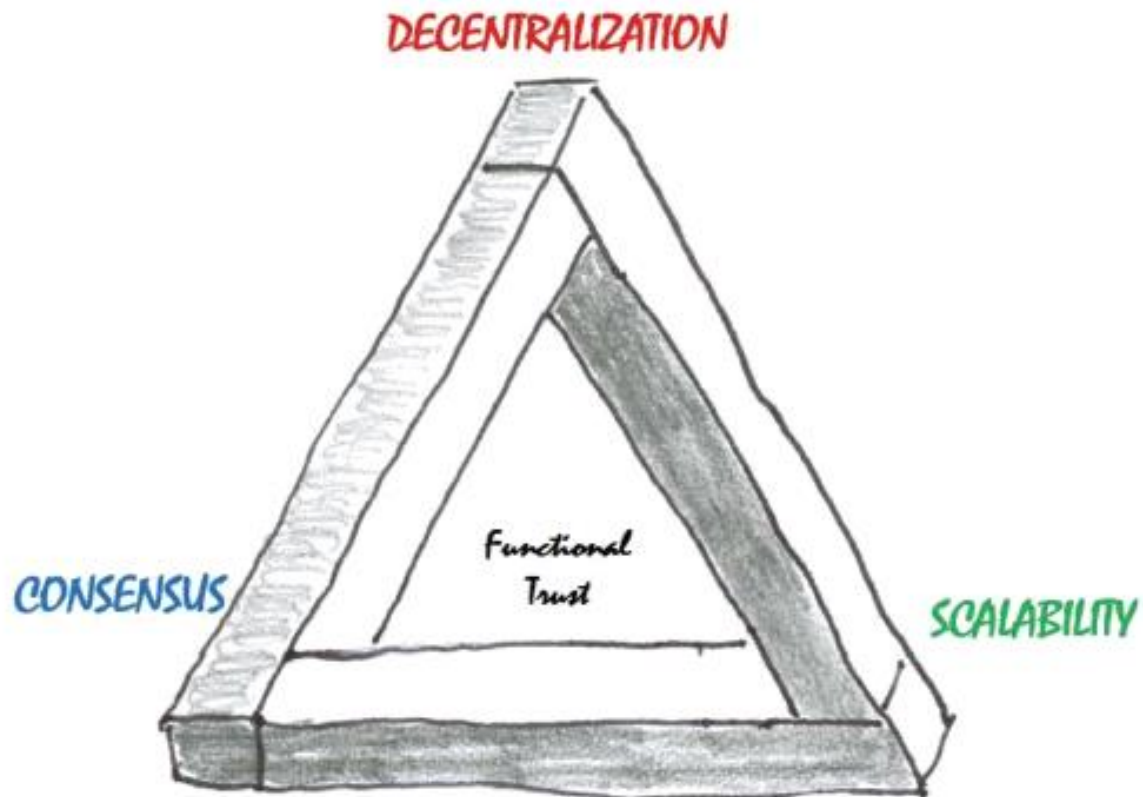


Private key



5K8BwE76VsatQiRa5wJpGng7758FAz4vLkMxAry8QnyZTdQJxPn

CRYPTO REFRESHER – BLOCKCHAIN TRILEMMA



CRYPTO REFRESHER – USE CASES BEYOND CRYPTO

- Supply-chain monitoring (think food safety)
- Payment processing (think cross border payments)
- Digital identity (think healthcare records)
- Governance (think voting)
- Non-Fungible Tokens (think art ownership)
- Securities register (think capital raising and capital markets efficiency)
- Notary (think land register)

CRYPTO REFRESHER – DIFFERENT DIGITAL ASSET TYPES

	Security token	Cryptocurrency / Utility token
What	A security token is a digital representation of an investment product	A utility token is a consumptive right to access a product or service
Why	The security token is bought by the investor with the expectation of profit	The utility token is mainly used to spend it in a community-based ecosystem. It has similar features to a voucher.
Who	For-profit entity	Not-for-profit entity

AGENDA

2. Valuation methodologies for Crypto

A review of the latest valuation models for cryptocurrencies

PS: ... none of them are perfect...

VALUATION METHODOLOGIES FOR CRYPTO – 1. METCALFE’S LAW

- A network’s value (V) will be proportional to the square of the number of connected users (n) of the system:

$$V \sim n^2$$

- Works well for BTC and ETH, 54% R², not so much for the rest.
- Likely to vary across use-cases.
- New address issue...



VALUATION METHODOLOGIES FOR CRYPTO – 2. DIGITAL GOLD

What speaks for the idea that BTC is digital gold:

- Can be argued because of the scarcity (21m coins)
- Durability, divisibility, transportability, homogeneity, rarity

Example calculation:

Global Wealth: 446tr
Gold share: 3.4% or 15tr
Gold/Bitcoin split: 90/10

-> Gold 1,270 (currently ca. 1755) and BTC 72,270 (currently ca. 21,550)

But what is the split supposed to be?

Sidenote:

- Satoshi never thought of Bitcoin as digital gold.

Also, it is a big assumption:

IS Bitcoin the new digital gold

VALUATION METHODOLOGIES FOR CRYPTO – 3. STOCK-TO-FLOW

What is it:

Ratio of new currency creation to the stock of currency

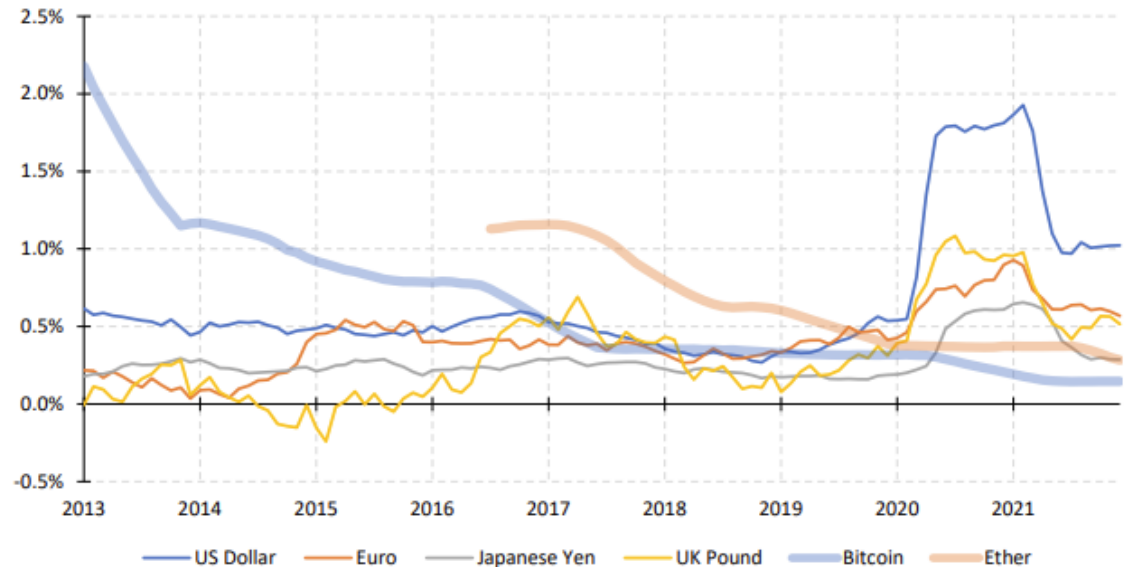
BTC and ETH (see graph) have very low values -> if the ratio gets closer to average FIAT currencies this suggests substantial appreciation.

Issue:

Bitcoin flow eventually will reach zero -> self serving, weak model.

Exhibit B: Historic Flow-to-stock Ratios

The chart shows the average flow-to-stock ratio, on a monthly periodicity, with a one-year lookback. For USD we use M2, for EUR and JPY M3, and for GBP M4; we find these measures to be roughly equivalent in their stipulations. For bitcoin we take the number of units in circulation on a monthly basis from blockchain.com. Otherwise data are all from Bloomberg.



AGENDA

3. Picking the winners and losers – which crypto currencies will survive?

What are the key characteristics different cryptocurrencies that will determine if they will be sustainable and survive?

PICKING WINNERS AND LOSERS – WHICH CRYPTOCURRENCIES WILL SURVIVE?

What are the **characteristics** of a blockchain that forecast the token price:

Aleh Tsyvinski, Professor of Finance, Yale University (and co-authors):

- 3 factor model: Market (return), Size, Momentum (strong)
- Investor attention (as measured by Google search of a cryptocurrency like “Bitcoin”)
- Price-to-new-address ratio explain 8% of cryptocurrency returns

Will Cong, Associate Professor, Cornell University (and co-authors):

- Add *value* and *network* factors to a pricing model:
- Example datapoints:
 - Value: Transaction(no of)-to-market(capitalization) ratio
 - Network: Total addresses with balance

PICKING WINNERS AND LOSERS – WHICH CRYPTOCURRENCIES WILL SURVIVE?

Qualitative considerations, examples:

1. **Environmental risk:**

- Energy efficiency will have to be reported in the EU, a accelerant for tokens in our portfolio?

2. **Social issues:**

- Broader distribution of wealth on a platform linked to excess return (own research with WeiYi Zhao of Tsinghua University)

3. **Governance risk:**

- Miner/validator collusion and hacking (Ronin Bridge Hack)

PICKING WINNERS AND LOSERS – WHICH CRYPTOCURRENCIES WILL SURVIVE?

Other qualitative considerations, examples:

1. Stability:

- Platform outages are a serious concern (example: Solana)

2. Fairness:

- Miner-extractable-value compromises fairness through “front-running”.

3. Cost-effectiveness

- Gas wars (Yuga Labs sale, 14k gas fees for 6k item)
- Different mechanisms ensure predictably low prices (requirement for Financial Inclusion use-cases)

AGENDA

5. What to Watch

Key market events and developments to watch over the coming months

WHAT TO WATCH – KEY MARKET DEVELOPMENTS AHEAD

- The Merge (done)
- Regulatory developments (SEC, MAS, MiCA, etc.)
- Adoption by entrepreneurs and corporations
- New use-cases
- The Bitcoin halving
- Privacy and Tornado cash
- Decentralized Finance (incl. Insurance)

AGENDA

5. Q&A