

Scarcity in the Digital Realm



**Deloitte** 

February 5

2021



## **Digital Gold Institute: Vision**

R&D center of excellence focused on teaching, training, consulting, and advising about scarcity in digital domain (bitcoin and crypto-assets) and the underlying blockchain technology

#### **Bitcoin: Digital Gold**



The most successful attempt at creating *scarcity* in the digital realm without a trusted third party. Bitcoin is the digital equivalent of gold, disruptive for our current digital civilization and the future of money and finance. More a cryptocommodity than a crypto-currency, Bitcoin aims to be world reserve asset.

#### **Beyond Bitcoin: Timestamping**



A timestamp demonstrates that a document existed in a specific status prior to a given point in time. Digital data can be securely timestamped though the attestation of its hash value in a blockchain transaction. What jewellery is for gold, Timestamping could be for bitcoin: not essential but effective at leveraging its beauty.



#### **Blockchain: Hype or Reality?**

Blockchain requires an intrinsic native digital asset to provide the economic incentives for the blockchain maintainers to be honest. Without the seigniorage revenues associated to its native asset, a blockchain system would need to select and appoint its maintainers, ultimately resorting to central governance.

#### **Financial Services for Crypto**



The most promising field, instead of technological applications of blockchain, is the development of financial services for crypto assets: those tools, practices, and facilities needed by institutional investors and high net worth individuals. Finance might not need blockchain, but the blockchain economy needs new financial services.

## **Digital Gold Institute: Activities**

R&D center of excellence focused on teaching, training, consulting, and advising about scarcity in digital domain (bitcoin and crypto-assets) and the underlying blockchain technology

#### Consulting



Becoming one of our <u>partners</u> means empowering your business with a proper understanding of Bitcoin, crypto assets, and blockchain technology. It is a strategic choice that will allow you to leverage unique opportunities while avoiding the irrational hype that pollutes these topics.

#### Research



Our research activity includes quarterly reports on the bitcoin and blockchain ecosystem and the thesis works of our students. Anyway, the bulk of the activity is happening at the Crypto Asset Lab (CAL), a joint research initiative with the University of Milano-Bicocca.

#### **Training**

We offer training and education about Bitcoin, crypto assets, blockchain, distributed ledger, smart contracts, and cryptography: the program is based on the <u>Bitcoin and Blockchain Technology</u> course taught at Milano-Bicocca and other universities.

#### **Development**



We write code and love to get our hands dirty in programming and technology. Check out our OpenTimestamps calendar free facility and btclib, an open-source Python library intended for teaching/learning/using bitcoin, its blockchain, and the associated elliptic curve cryptography.

## **DGI Quarterly Report**

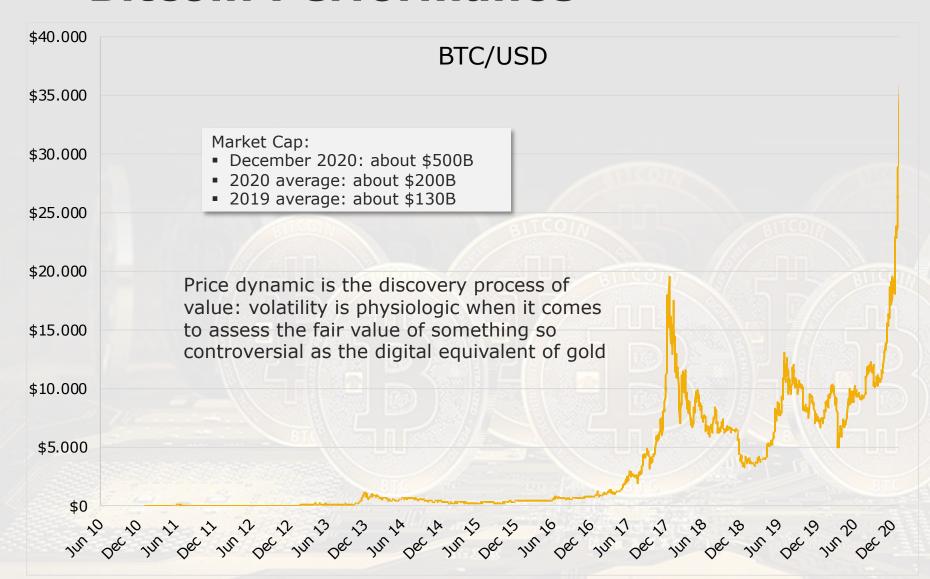
A quarterly update on the crypto assets world with a focus on:

- 1. Market
- 2. Technology
- 3. Regulation
- 4. Ecosystem
- 5. The Institute





### **Bitcoin Performance**

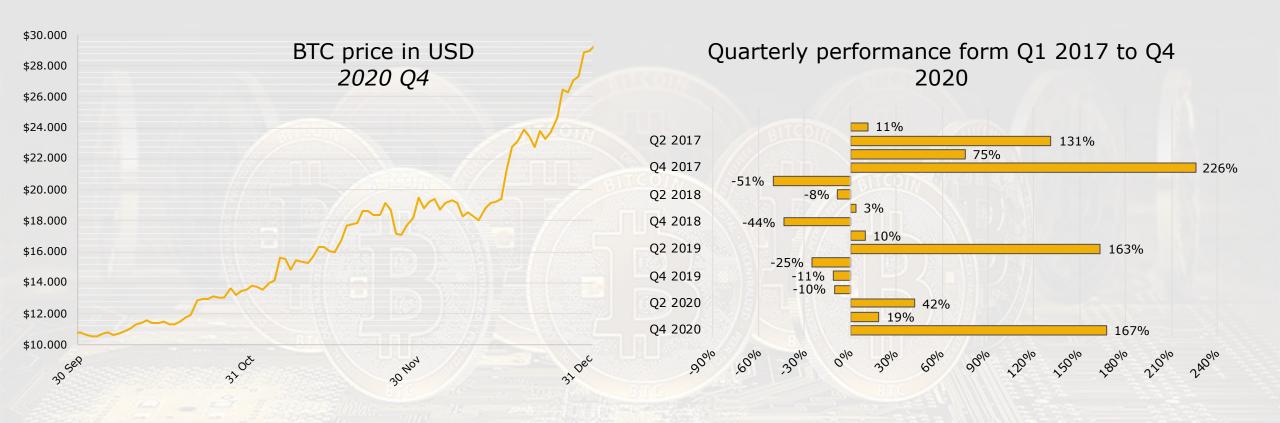


Date	Price	Yearly performance
Dec 11	5.00 \$	
Dec 12	13.59 \$	172%
Dec 13	739.10 \$	5339%
Dec 14	320.19 \$	-57%
Dec 15	430.57 \$	34%
Dec 16	963.74 \$	124%
Dec 17	14,156.40 \$	1369%
Dec 18	3,742.70 \$	-74%
Dec 19	7,193.60 \$	92%
Dec 20	28,946.00 \$	303%

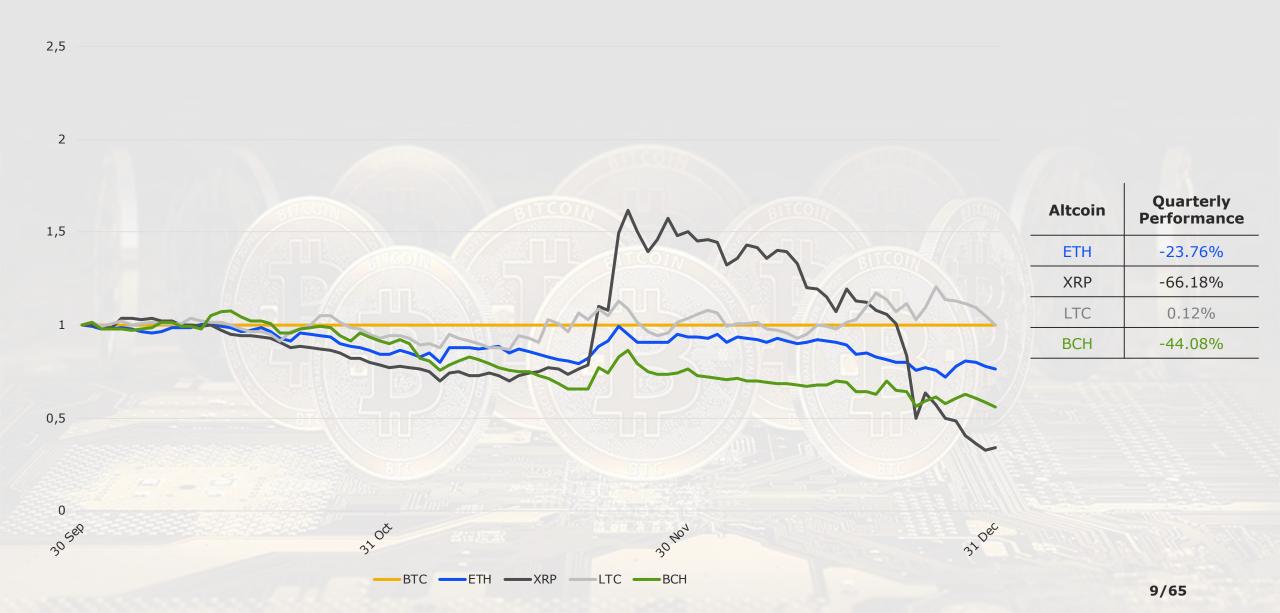
## **Bitcoin Performance (Log Scale)**



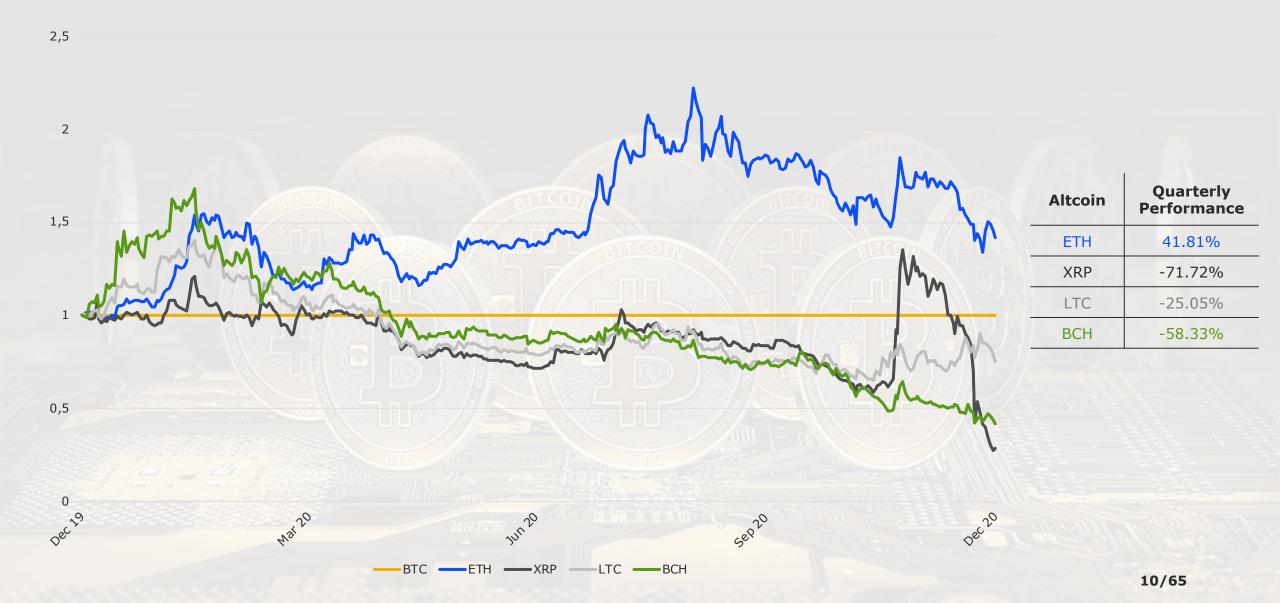
## Bitcoin Performance (2020 Q4)



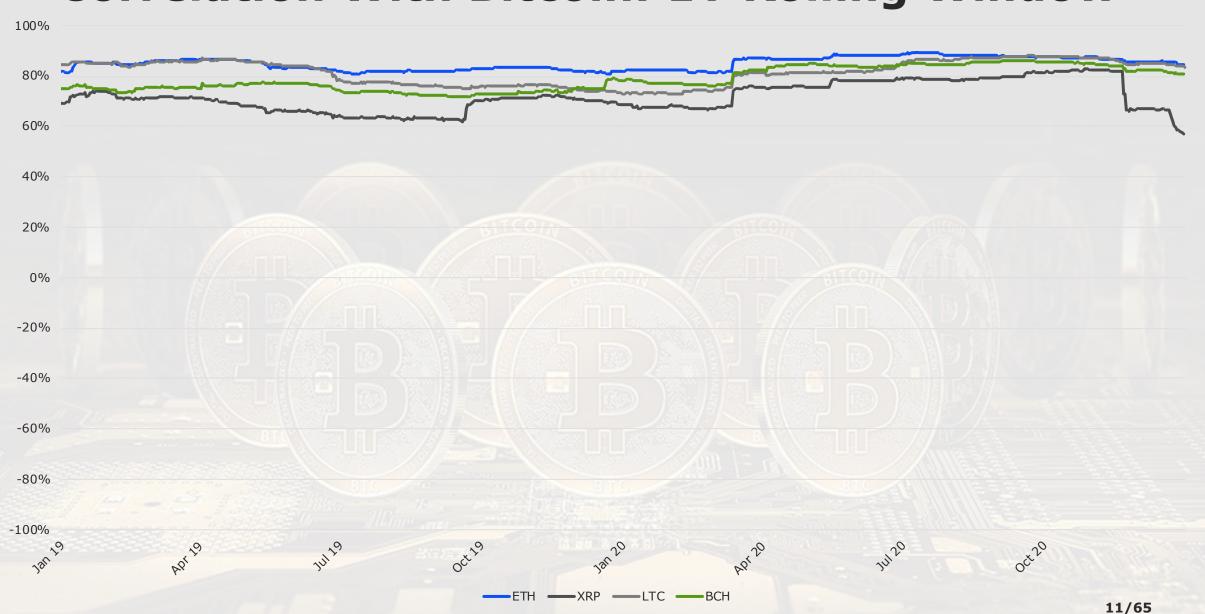
## Altcoin vs Bitcoin (2020 Q4)



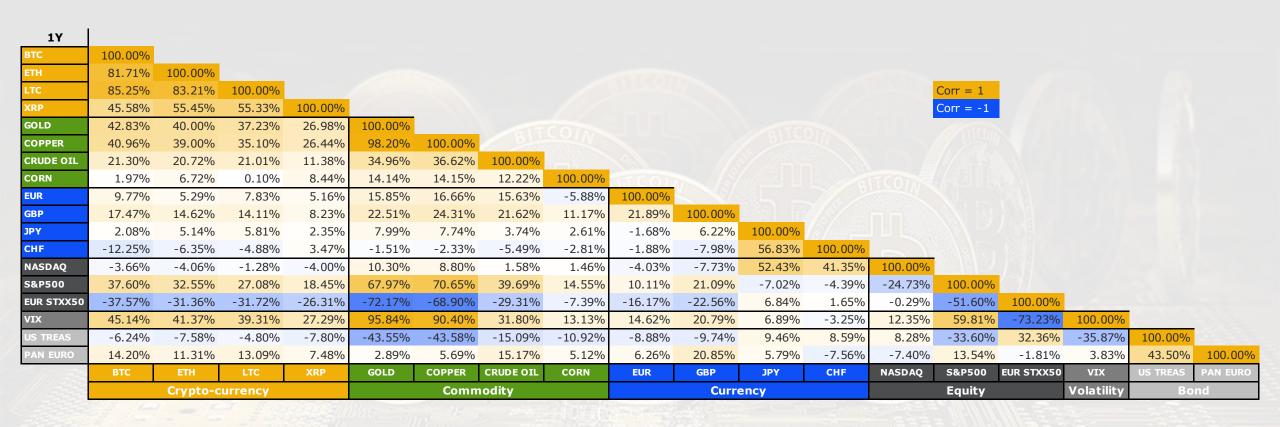
## Altcoin vs Bitcoin (2020)



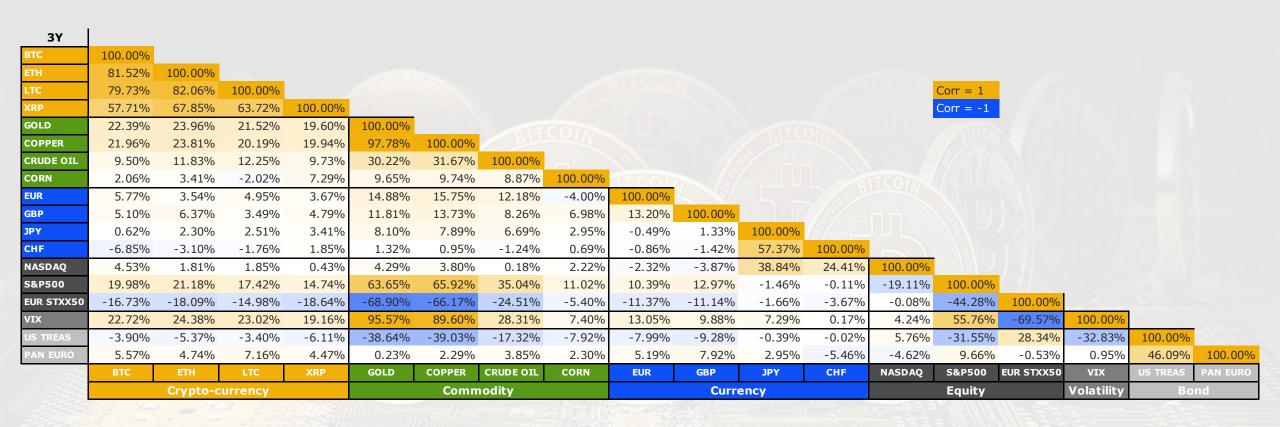
# **Correlation With Bitcoin: 1Y Rolling Window**



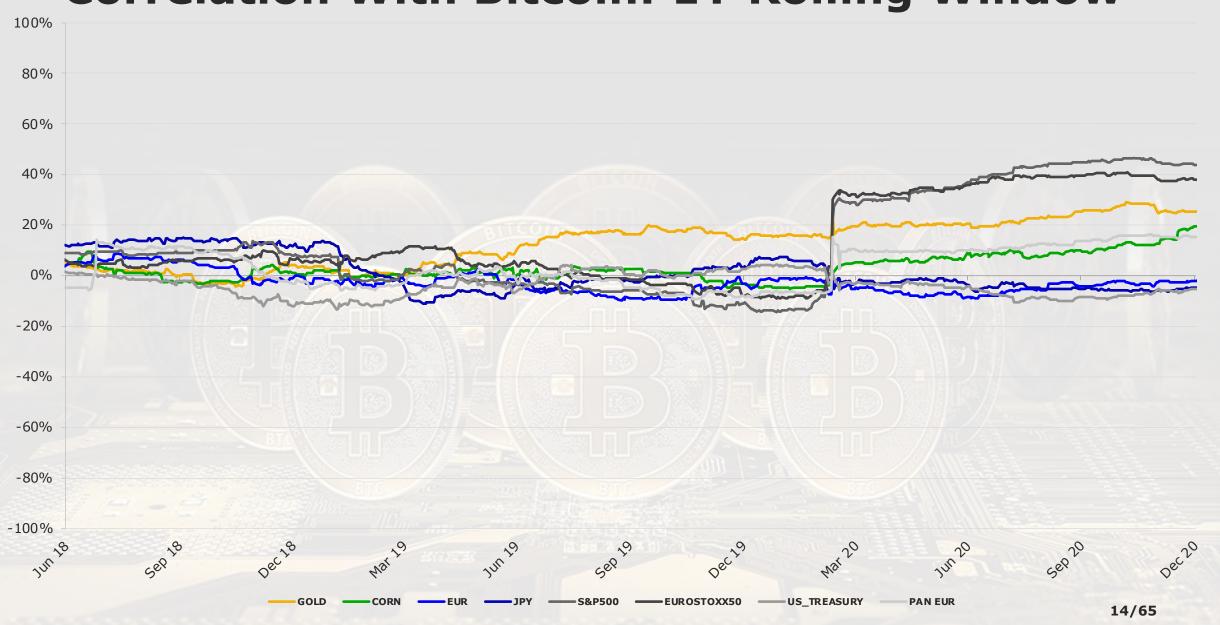
### **Correlation Matrix: 1Y**



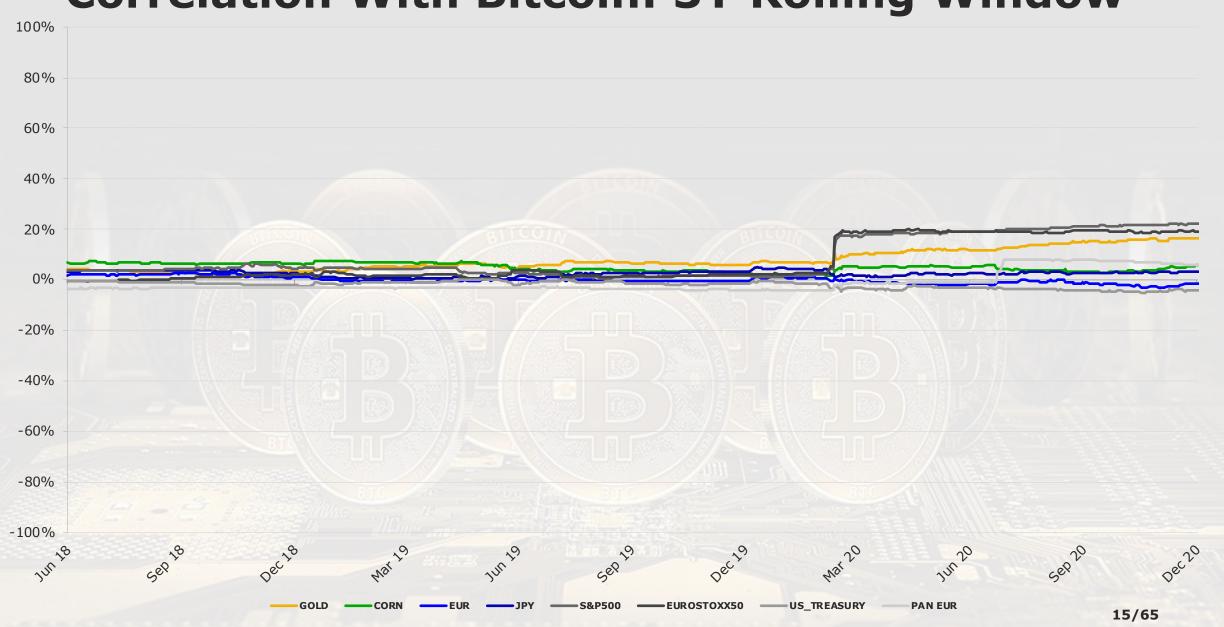
### **Correlation Matrix: 3Y**



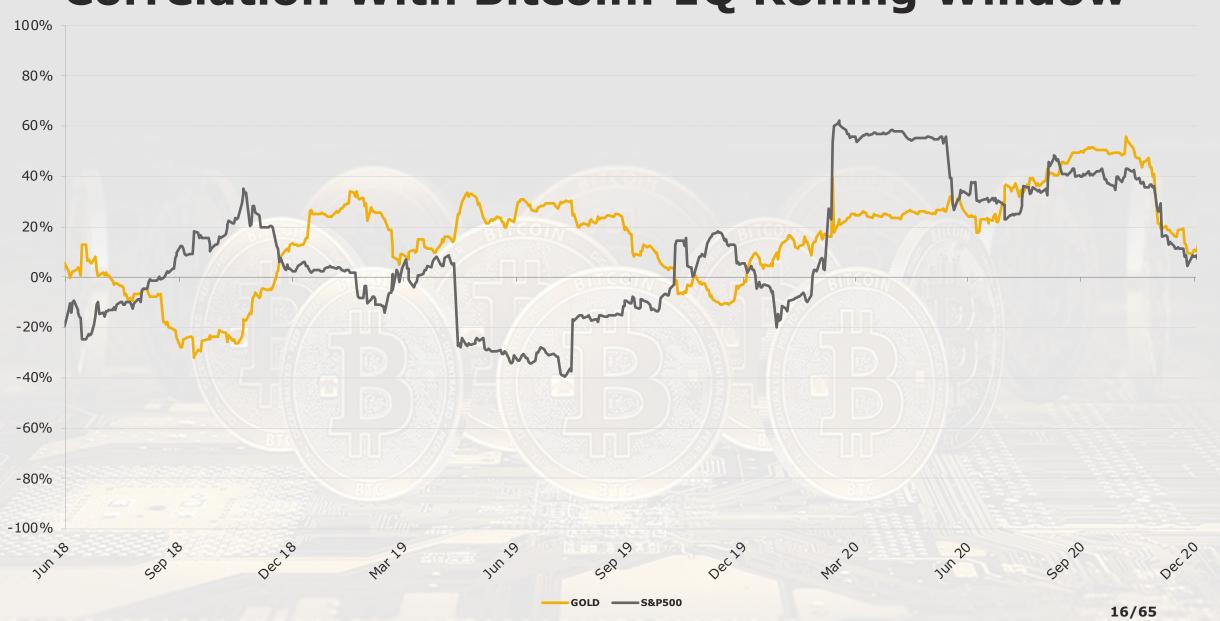
## **Correlation With Bitcoin: 1Y Rolling Window**



## **Correlation With Bitcoin: 3Y Rolling Window**



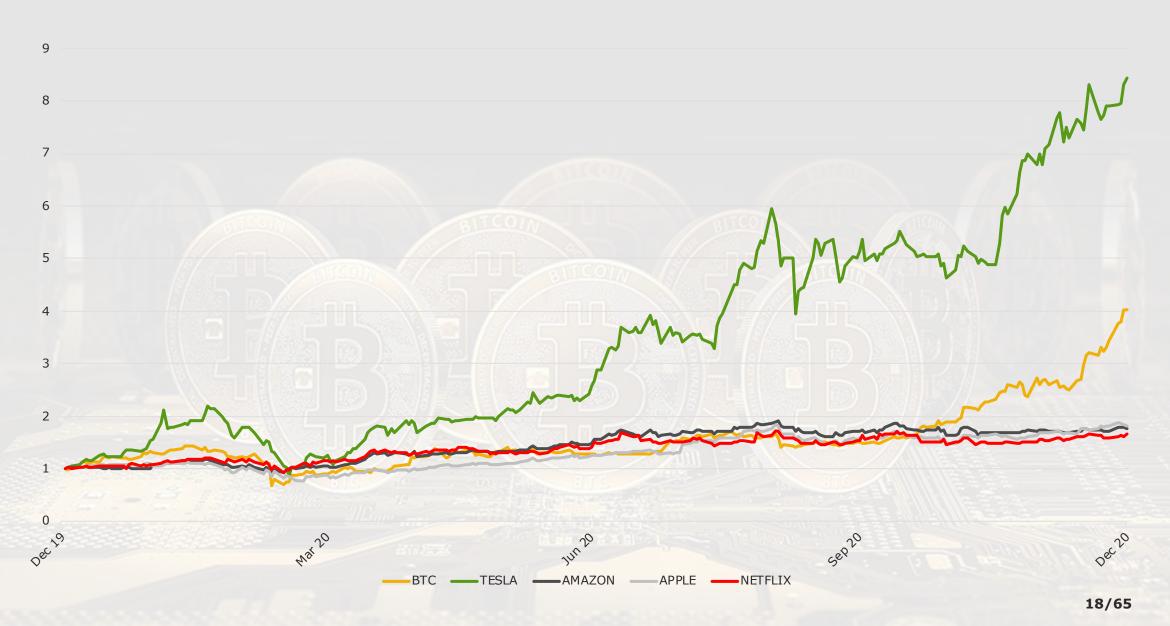
# **Correlation With Bitcoin: 1Q Rolling Window**



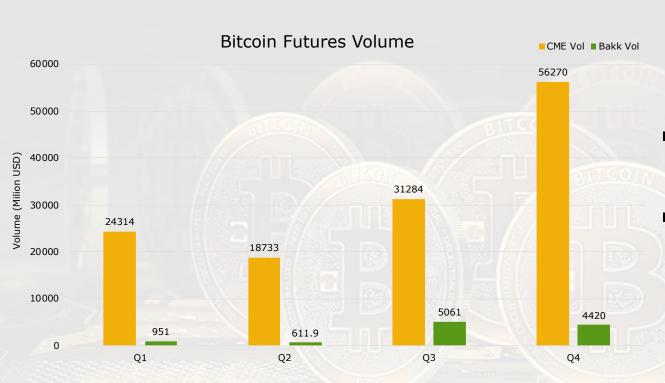
## Bitcoin High Volatility? True, but....



### **USD Denominated Performance**

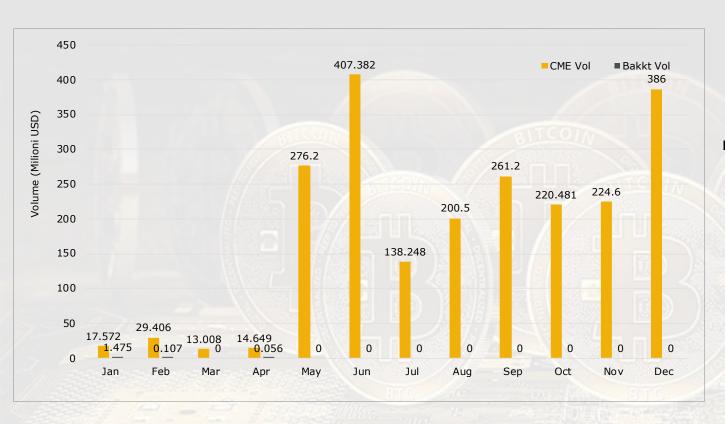


### **Bitcoin Listed Futures**



- Q4 confirmed the growth trend in the regulated futures market started in May
- Q4 was a record quarter for both CME
- Open interest in CME Group's cash-settled bitcoin futures had hit an all-time high of \$724 million on July 27
- CME has announced Ether futures in 2021-Q1

## **Bitcoin Listed Option**

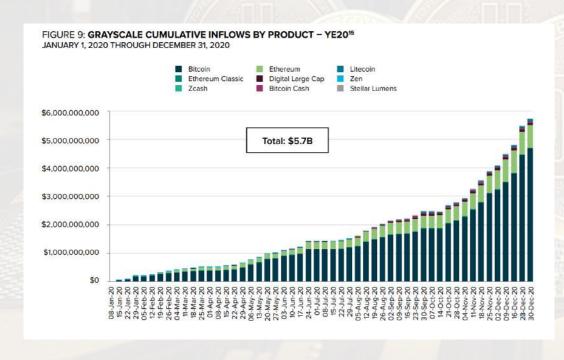


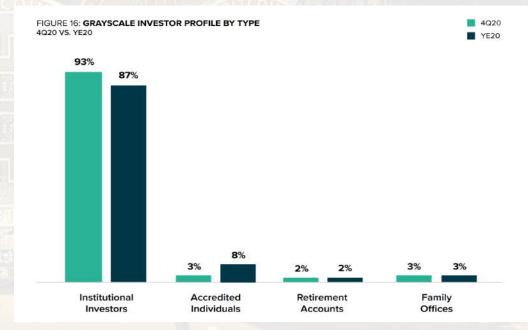
- Q4 confirmed the growth trend even in the regulated option market started in May
- cME, which is considered synonymous with institutional activity, accounted for around 10% of the total open positions in options market, which also included not regulated options

## **Grayscale: New All Time High**

Q4 Total investment into Grayscale Products: \$5.7 Billion

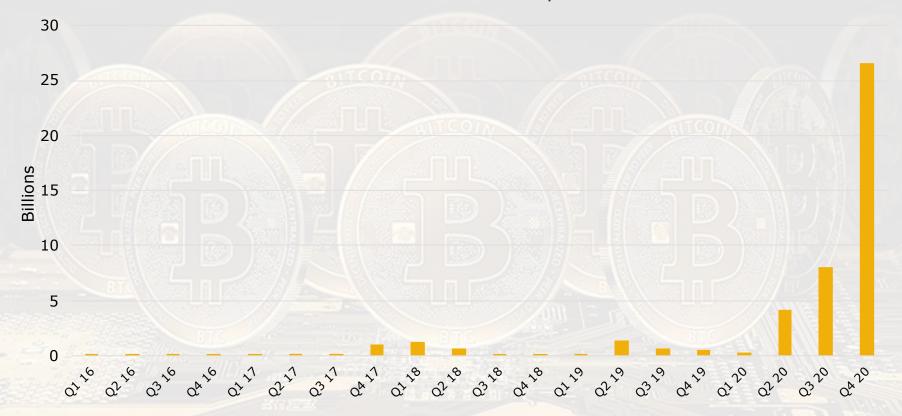
Trust	Q4 Avg weekly inv.	AUM
Bitcoin	\$ 217.1 Million	\$ 17.5 Billion
Ethereum	\$ 26.3 Million	\$ 2.5 Billion





### **Stablecoin: Record Volume**

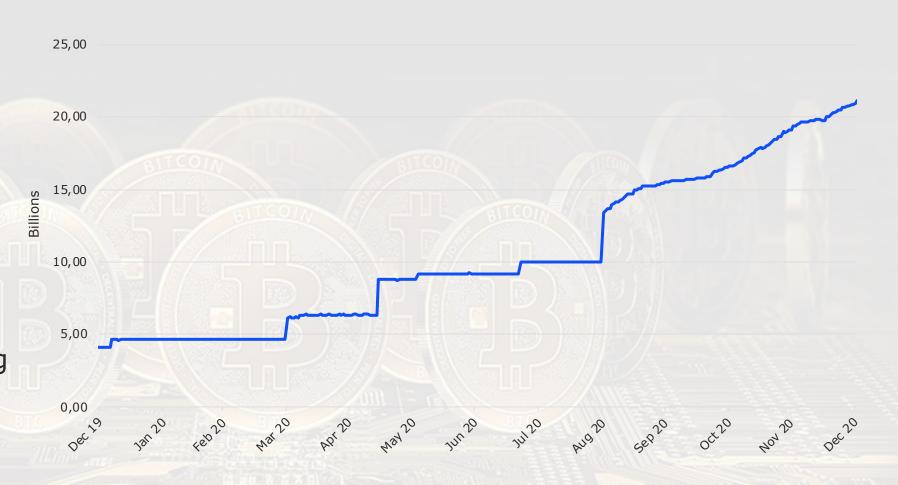
- The total value of stablecoins has reached about \$26 billion
- On-chain volumes have crossed the \$1 trillion mark in 2020



## **Tether: Huge Supply Increase**

Tether accounts for 80% of all stablecoins, having reached about \$20 billion

The massive Tether emission has started in September leading to a 100% increase in its total supply





## BlackRock: Bitcoin Is Here to Stay!

 BlackRock's CIO Rick Rieder, said that "Bitcoin is here to stay", thanks to millennials' openness to cryptocurrency and digital payments. Rieder also said that Bitcoin could "replace gold to a large extent"

 BlackRock is opening two of its funds to the possibility of investing in bitcoin futures



### **Institutional Bitcoin Price Prediction**

- JPMorgan strategist said that gold will suffer in the long-term as more institutional investors adopt bitcoin
- JPMorgan Predicts Bitcoin Price Could Rise Over \$146K in Long Term: "Bitcoin's market capitalization of around \$575 billion would have to rise by 4.6 times -- for a theoretical price of \$146,000 -- to match the total private sector investment in gold via exchange-traded funds or bars and coins"

https://www.bloomberg.com/news/articles/2021-01-05/jpmorgan-sees-146-000-plus-bitcoin-price-as-long-term-target?sref=3REHEaVI

 A leaked report from Citibank said that the price of Bitcoin could hit \$300,000 by December 2021 J.P.Morgan



## 2020-Q4: Institutional Investors Enter the Arena

- 2020 has been the beginning of a major portfolio diversification trend into bitcoin
- Hedge funds, insurances, and pension funds have started to flow capitals into bitcoin
- Massachusetts Mutual Life Insurance Co. bought \$100
   million of Bitcoin for its general investment account





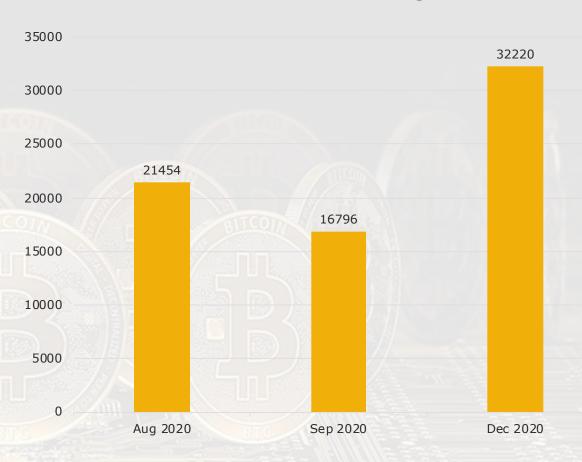


## MicroStrategy Adopted Bitcoin as Reserve

#### Number of Bitcoins bought

- MicroStrategy, the largest independent publicly-traded business intelligence company, adopted Bitcoin as primary reserve asset
- As of December 21, 2020, the Company holds an aggregate of approximately 70,470 bitcoins, which were acquired at an aggregate purchase price of approximately \$1.125 billion and an average purchase price of approximately \$15,964 per bitcoin, inclusive of fees and expenses





## PayPal: US Users to Buy, Hold and Sell Bitcoin



- PayPal announced the possibility to their clients to buy, hold and sell cryptocurrencies
- PayPal's service does not allow bitcoin or other cryptocurrencies to be withdrawn or deposited. Once you buy the coins, they stay in your account until you sell
- Initially, the service supports Bitcoin (BTC),
   Bitcoin Cash (BCH), Ether (ETH) and Litecoin (LTC)
- Does not allow to send crypto to family or friends, use Crypto Assets to pay for goods or services, or withdraw Crypto Assets from your Cryptocurrencies Hub to an external cryptocurrency wallet

### **PayPal: the Strategy**

#### PayPal strategy:

- Building understanding and adoption of cryptocurrency
- Increasing the utility of cryptocurrency in digital commerce
- Exploring and investing in the next generation of financial services infrastructure
- Technology to make financial services and commerce more convenient, affordable, and secure

"I think that there'll be more and more use cases for cryptocurrencies," that make bitcoin more widely accepted, more stable and probably "more valuable" over time."

Dan Schulman, PayPal CEO



### **Banca Generali: Coni Lead Investor**

#### **Conio investment rounds:**

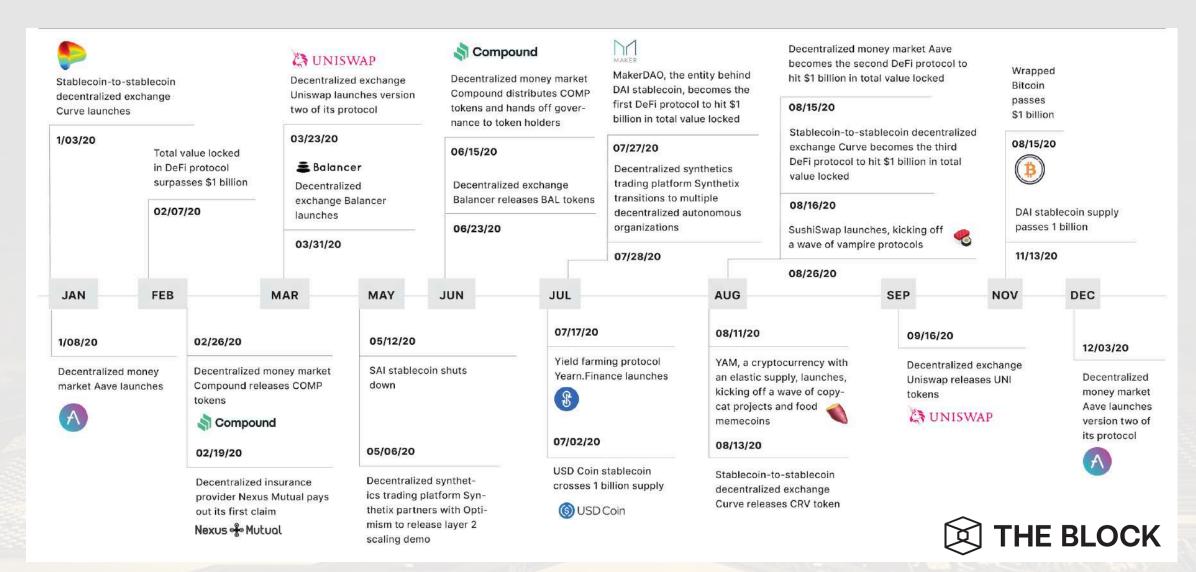
- 2015: \$3 million in seed investment at the end of 2015 led by Poste Italiane
- 2018: \$3.5 million from various investors including Banca Sella
- 2020: \$14 million investment round lead by Banca Generali



Gian Maria Mossa CEO & General Manager

Christian Miccoli Co-Founder & CEO

### The Rise of Decentralized Finance: 2020



## Decentralized Finance (1/2)

DeFi refers to different applications that allow individuals to conduct transactions outside of a third-party mediator or institution:

- 1. Lending and borrowing
- 2. Payments
- 3. Decentralized Exchanges (DEX)
- 4. Asset Management (smart portfolios)
- 5. Derivatives

## Decentralized Finance (2/2)

- In 2020, decentralized finance took off, going from \$700 million locked into DeFi smart contracts at the start of the year, to \$15 billion
- Yield farming took DeFi to new heights in 2020, though Bitcoin's recent bull run has diverted attention away from it
- Wrapped Bitcoin (WBTC an ERC-20 token pegged to bitcoin) has passed \$1b. It lets bitcoin holders access the Ethereum-based DeFi ecosystem

Is the **DeFi Bubble** Going to Burst?

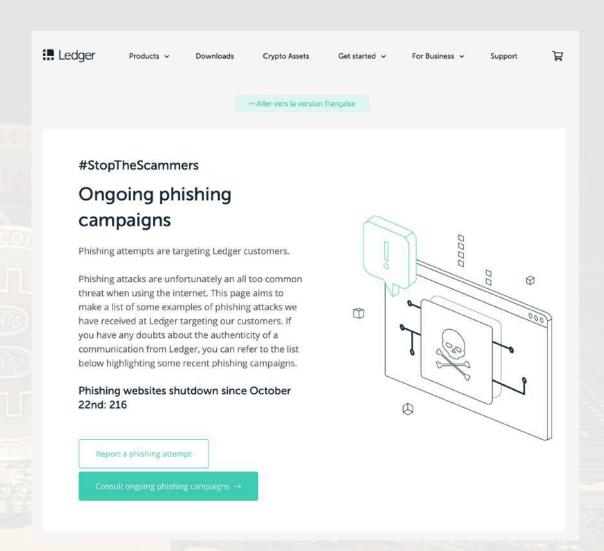
## **Chainalysis: Cryptocurrency Forensic**

- Chainalysis, is the blockchain analysis company. They provide data, software, services, and research to government agencies, exchanges, financial institutions, and insurance and cybersecurity.
- Governments, banks, exchanges, regulators and investigators are clamoring for crypto tracing tools
- After a \$45 million series B round in July, Chainalysis rose \$100 million in a series C round.
- This Series C round was led by Addition, with participation from previous investors including Accel, Benchmark, and Ribbit
- The company valuation is now over \$1 billion, reaching a unicorn status



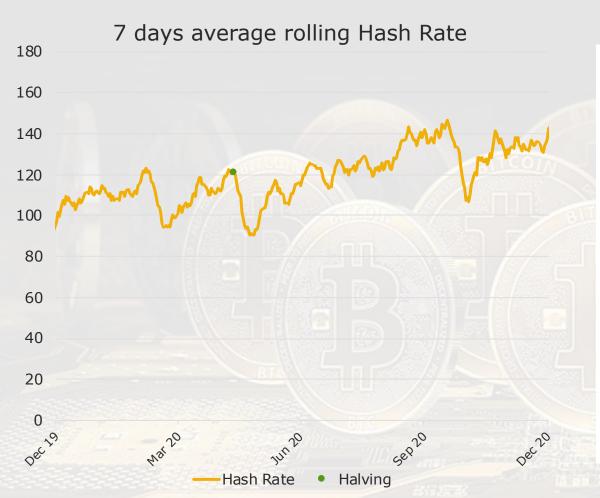
## **Ledger Data Breach**

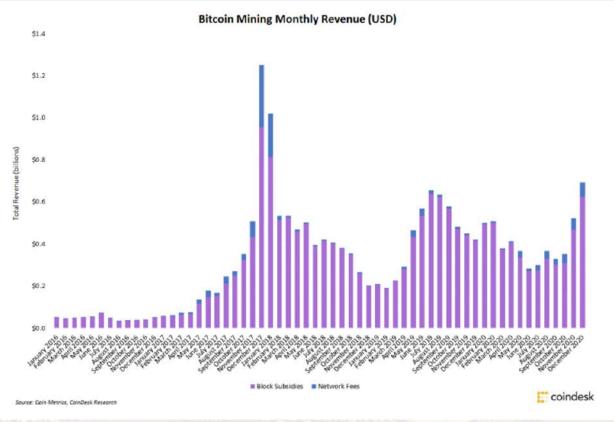
- Ledger revealed that in July 2020 the customer information had been compromised, the company estimated 9,500 customers had been affected by the hack
- In December 2020, a data dump exposed 1 million email addresses and 272'000 names, mailing addresses and phone numbers belonging to people who had ordered Ledger's devices
- The first attack was linked to the company's e-commerce while the release of more sensitive data has resulted in upgraded phishing attacks





# **Bitcoin – Mining**





# **Bitcoin - Major Protocol Update**

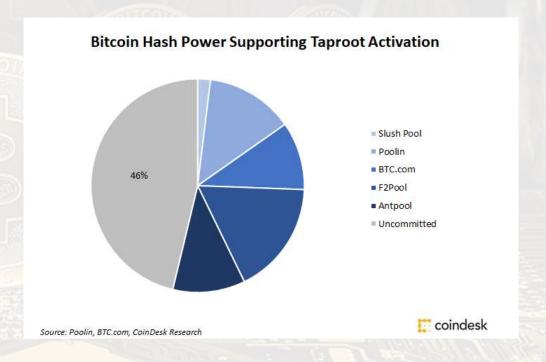
#### **Schnorr**

New Interactive multi-signature scheme: MuSig2



#### **Taproot**

More than 85% of the network's current hash rate has signaled support for the protocol update Taproot



## **Bitcoin Grants**

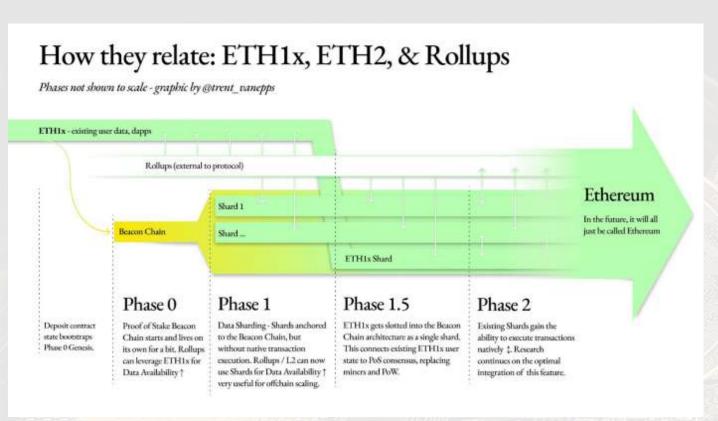
- A lot of companies are launching Grants to support Bitcoin development:
  - Coinbase: Announced a Bitcoin Core Development Grant in December

- SquareCrypto: the Italian Blockstream engineer Riccardo

Casatta, one of the OpenTimestamps protocol maintainers, has received a Grant from Square to work on the Bitcoin Development Kit. The Bitcoin Development Kit is a collection of tools and libraries that developers can utilize as a base for Bitcoin software, namely wallets

https://www.btctimes.com/news/blockstream-engineer-riccardo-casatta-receives-grant-from-square

# Ethereum 2.0: A (too) Long Journey



- Eth2.0 is the next evolution of the Ethereum blockchain, and the entire community has been preparing the large-scale upgrade for many years
- Developers claim that Eth2.0 will improve scalability through proof of stake (PoS) and a series of other technological upgrades

## **Grin: 51% attack**

- Privacy-centric blockchain network Grin (GRIN), once called Bitcoin 2.0, underwent a 51% attack
- In this attack an unknown miner(s) grabbed control of 57.4% of the network's hash power and takes control of the Grin protocol's website



## **Blockchain**

No Data Available

Missing in Action

Warning: Risk of Extinction



## Libra -> Diem

- Libra cryptocurrency and Association changed their name to Diem to distance itself from Facebook
- Facebook's Calibra wallet renamed to Novi
- The Diem Association has been hiring top financial execs
- Rumors have a Diem dollar planned for 2021-Q1 in Latin America or India or even US (unlikely)



# **Central Bank Digital Currency (CBDC)**

- China has already begun some real-world trials of a digital yuan, controlled and issued by the People's Bank of China
  - e-commerce firm JD.com is the first online platform to accept it
  - 20 million yuan (\$3m) distributed in a lottery for residents in Suzhou
- Lagarde says ECB will adopt digital currency in twofour years
- Regulators are considering what role digital currencies issued by central banks could play in simplifying domestic and international payments
- There are concerns about the impact of future central bank digital currencies, which could dramatically reduce households' willingness to hold money in traditional bank accounts
- "Our job is not to protect bank business models"

Bank of England Deputy Governor Jon Cunliffe



# Markets in Crypto Assets: MiCA Regulation

- EU Commission published its proposal on September 24. It will have to go through the EU legislative process (about 18-24 months)
- Apply to any cryptoasset not already subject to EU regulation, i.e., not to security tokens or CBDC
- Impacted services:
  - custody and administration
  - trading platform
  - cryptoassets / fiat exchange
  - cryptoassets / cryptoassets exchange
  - execution of orders on behalf of third parties
  - placement of cryptoassets
  - reception and transmission of orders
  - advice on cryptoassets



# **US FinCen Proposed Regulation**

 Filed on December 18 with a 15-day comment period, as "midnight rulemaking" by Steven Mnuchin, the Trump administration secretary of the Treasury



- The Crypto Industry has fought this 'Arbitrary' Treasury Rule, which has received a 60 days extension notice
- Biden administration's financial regulators are expected to be crypto savvy: Gary Gensler, the nominee for chairman of the Securities and Exchange Commission, has taught courses on blockchain and digital currencies at MIT

## **SEC vs Ripple**



Ripple Labs Inc. and its top executives have been accused by the US Securities and Exchange Commission of misleading investors in XRP, the world's third-largest cryptocurrency, by selling more than \$1 billion of the virtual tokens without registering with the agency

#### As a result:

- Cryptocurrency exchanges Coinbase, Bitstamp and Binance halted XRP trading and deposits for all US customers
- Grayscale Investments has begun dissolution of its Grayscale XRP Trust, cash proceeds from the trust's liquidated XRP will be nevertheless distributed to shareholders

# **Coinbase Going Public**



- The Cryptocurrency Exchange Coinbase announced that it had filed a confidential S-1, an initial step to listing its shares on a national stock exchange through an IPO
- Going public would subject exchanges to closer regulatory scrutiny from the SEC that:
  - may be able to dictate precisely which tokens the exchange can list
  - may decide that crypto trading platforms need clearer procedures for how they list or delist different cryptocurrencies

# **Anchorage**

- In the last quarter of 2020 Anchorage's trust company unit has applied to the Office of the Comptroller of the Currency (OCC) to convert to a national bank
- In January 2021, the OCC has provided conditional approval for a national trust charter:
  - first crypto company to get a national bank charter, explicitly allowing it to do business in all 50 states of the US
  - banking charter gives Anchorage the clear authority to act as a qualified custodian for institutional investors under SEC rules





# **DGI: Empowering Know-How**



#### **Institutions & Corporate**

- Partnership opportunities
- Consulting services
- Software solutions
- Academic research



#### **Individuals**

- Training program
- Internship program
- Job opportunities (CheckSig):
  - Technology Officer
     www.linkedin.com/jobs/view/1712976252
  - AML Officer
     www.linkedin.com/jobs/view/2395928602/

## btclib: a Python library for bitcoin cryptography

Latest release: v2020.12.19

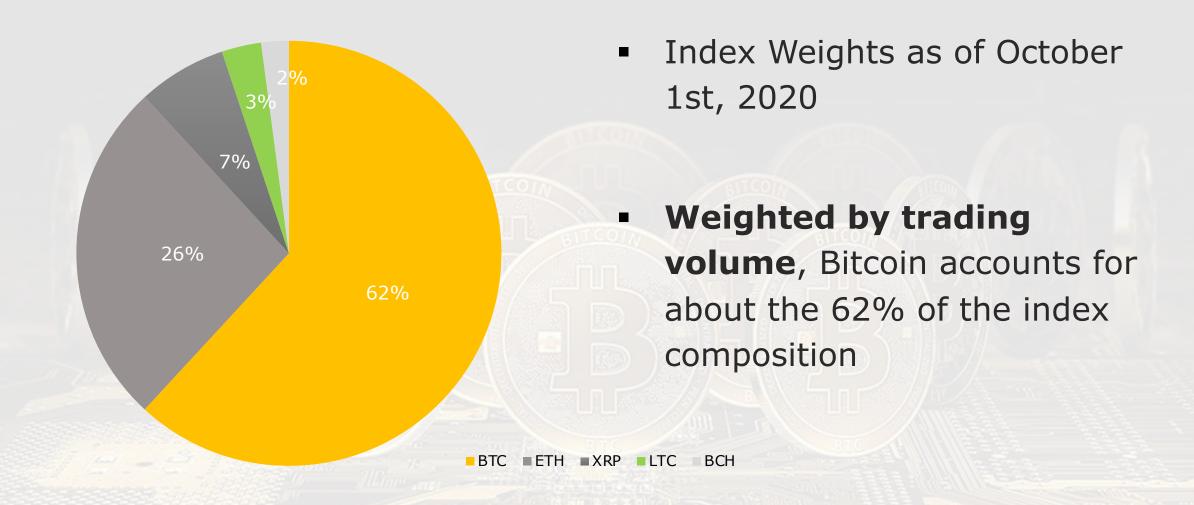
- Major changes include:
  - added secp256k1 point multiplication based on efficient endomorphism
  - fixed ssa batch verification functions' logic
  - enforced snake\_case variable naming convention, e.g., 'script\_pub\_key', etc.
  - added BIP32KeyOrigin, BIP32KeyPath, and BIP32KeyPaths
  - adopted str instead of bytes as default type for BIP32 keys, bms sigs, PSBTs, addresses, and WIFs; base58 and bech32 encodings keep returning bytes, like base64
  - cleaned up and refactored all dataclasses, now using serialize/deserialized and possibly b58encode/b58decode, b64encode/b64decode, etc.
  - renamed TxIn.witness as TxIn.script\_witness
  - fixed Witness management in TxIn and Tx, including equality operator
  - consolidated sig\_hash code into sig\_hash module
  - added more script\_pub\_key functions: assert\_p2pkh, is\_p2pkh, etc.



# **DGI Crypto Index: Index Value**



# **DGI Crypto Index: Index Weights**



# **CAL2021: Upcoming next September**

The bulk of our research activity is happening with the Crypto Asset Lab (CAL), a joint research initiative with the University of Milano-Bicocca

 CAL promotes the yearly conference on bitcoin and crypto assets: investment, banking, finance, monetary economics, and regulation CAL Conference Is Organized By









https://cryptoassetlab.diseade.unimib.it/calconf/

# **THE DIGITAL RUSH: A Bitcoin Documentary**

- THE DIGITAL RUSH presents a proper representation of the bitcoin idea: cypher-punk roots, technological choices, monetary impact, and cultural relevance
- A short documentary by Paolo Aralla and Ferdinando M. Ametrano



https://youtu.be/6\_kNeztZPM0\_

# **Institute Insights**



Report 2020-Q3, presented on October 29

https://dgi.io/2020q3



Bitcoin e Blockchain Workshop, October 20-21

https://dgi.io/workshop



**CryptoValues Webinar, November 4-5** 

https://cryptovalues.eu/

#### **Interviews**



#### **Interview by Alessio Trappolini**

https://www.focusrisparmio.com/news/bitcoin-lo-consiglieresti-al-tuo-cliente/



#### **News by Ferdinando M. Ametrano**

https://www.agendadigitale.eu/cittadinanza-digitale/pagamenti-digitali/perche-bitcoin-ha-quotazioni-record-e-crescera-ancora/



#### **Blockchain&CO** by Federico Morgantini

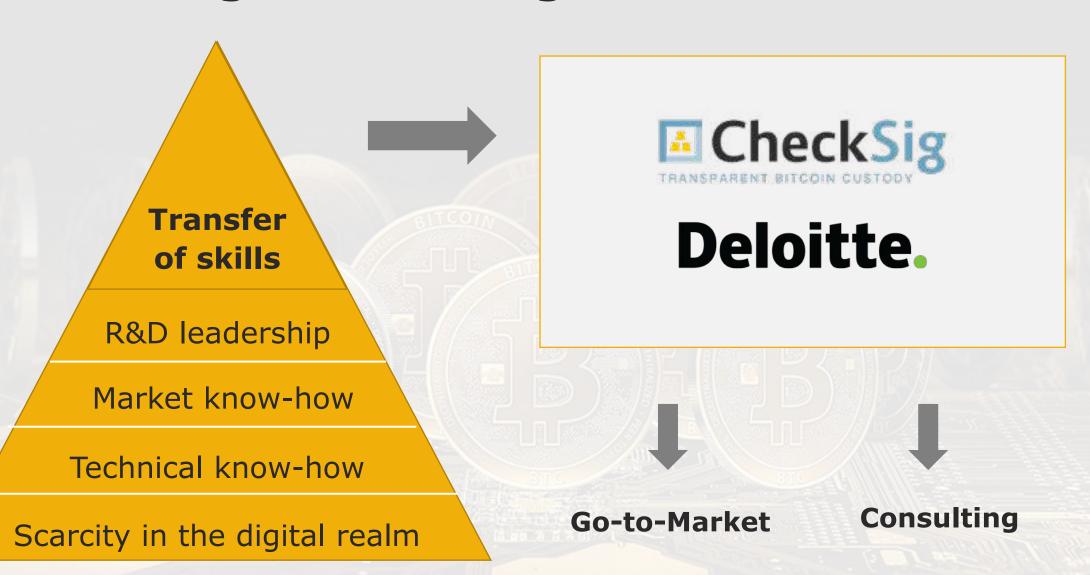
https://bfcvideo.com/2021/01/18/blockchainco-puntata-45/



#### **Interview on SPORTELLO ITALIA**

https://www.raiplayradio.it/audio/2020/12/SPORTELLO-ITALIA-fe803d68-a3ab-4c45-b051-5e0b596465be.html

# **Consulting and Training for Institutions**



## **Education Partners**













# **Next Training Sessions**

- Entry-level and Advanced Training
- Focus: Bitcoin, crypto asset, blockchain, distributed ledger, smart contract and cryptography
- Next sessions:
  - 16-17 marzo 2021
  - 15-16 giugno 2021
  - 14-15 settembre 2021
  - 14-15 dicembre 2021





# **Guest Speaker**

## **Andrea Medri**

Founder and CFO
The Rock Trading S.R.L.



Bitcoin market: 2017 vs 2020

# Digital Gold Institute Scarcity in the Digital Realm

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