



*Scarcity in the Digital Realm*

**October 29**

**2020**

**REPORT TRIMESTRALE**

**2020 Q3**



# 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 crypto-commodity 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 through 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: Services

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

## Partnership Program



Becoming one of our [partners](#) 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 Program



We offer training and education about Bitcoin, crypto assets, blockchain, distributed ledger, smart contracts, and cryptography: the program is based on the [Bitcoin and Blockchain Technology](#) 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.



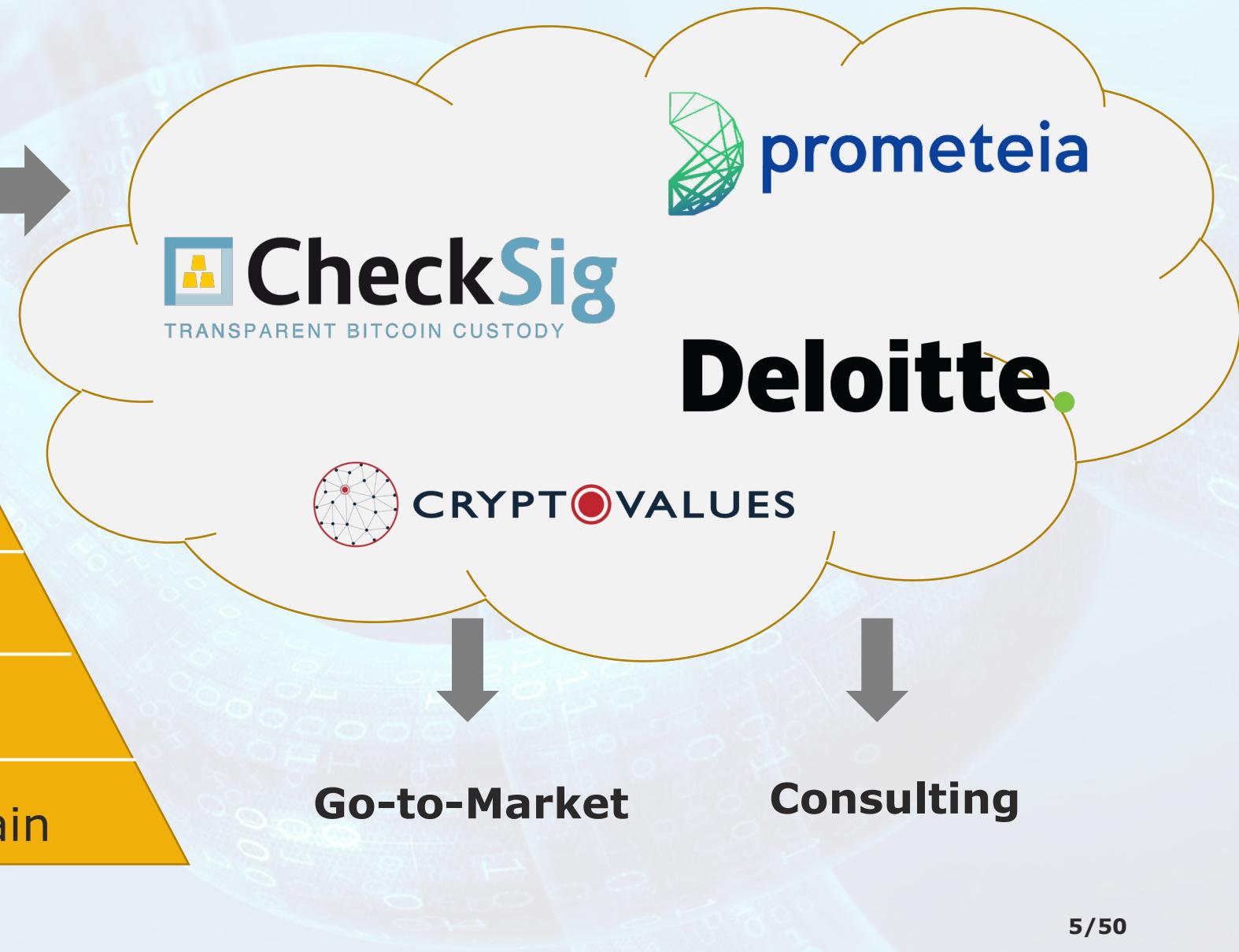
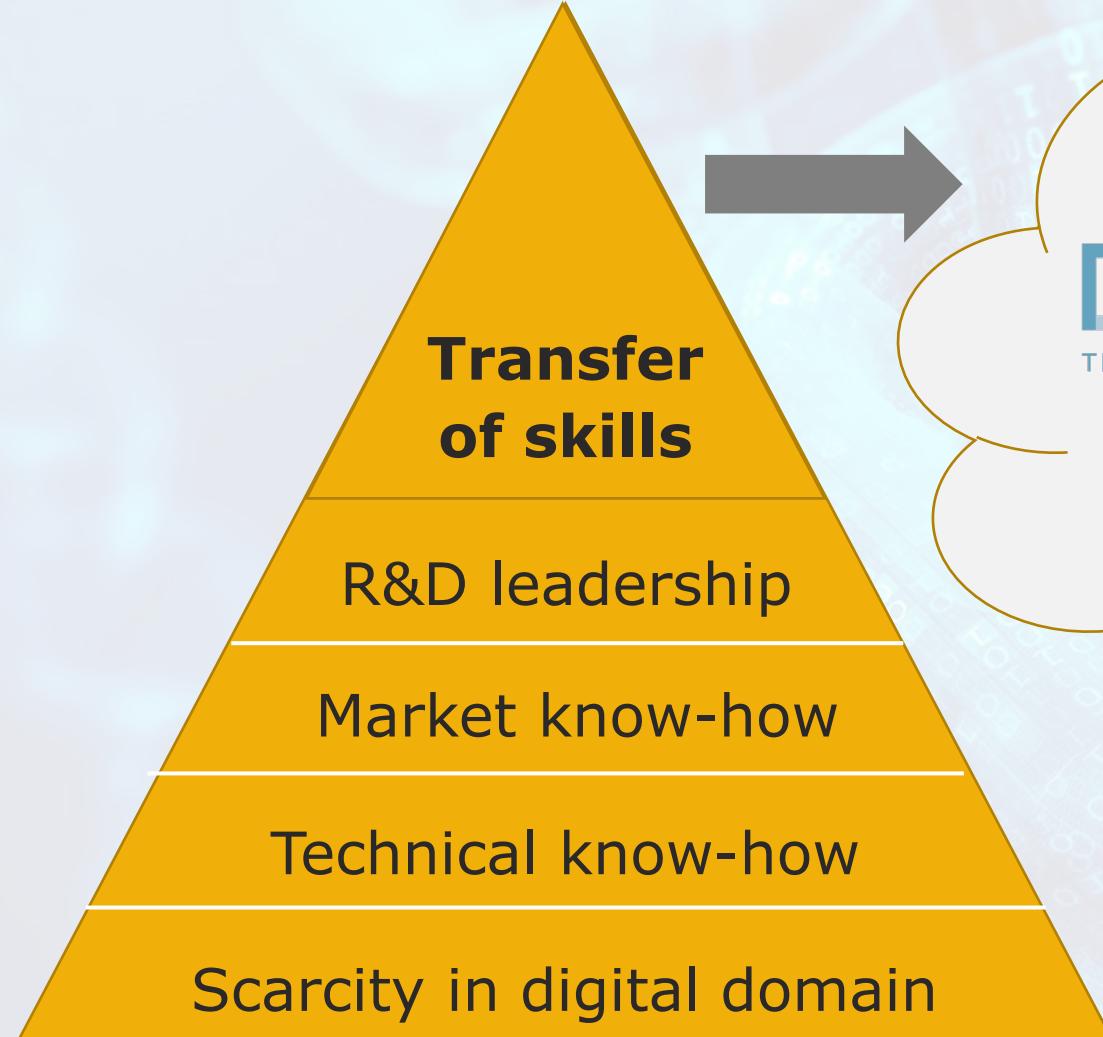
# The DGI Quarterly Report

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

- 1. Market**
- 2. Technology**
- 3. Regulation**
- 4. Ecosystem**
- 5. Updates from the Institute**



# DGI Institutional Partnership



# DGI Educational Partnership



**Harvard**  
Extension Student Environmental Club





DGI INSTITUTE



# DGI Research: Crypto Index



- Implementation started in 2019 by Digital Gold Institute
- It explains the relevance of Bitcoin, as it accounts for about the 77% of the index composition
- The index is developed in collaboration with CheckSig
- Available by the end of 2020

# DGI Research: Crypto Asset Lab

- 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.



# DGI Development: BTCLIB

- A Python library for 'bitcoin cryptography'
- Latest released: v2020.8.21
- Major changes includes:
  - added BlockHeader and Block data classes
  - added OutPoint, TxIn, TxOut, and TX data classes
  - added segwit\_v0\_sighash
  - added PsbtIn, PbstOut, and Psbt data classes for
  - partially signed bitcoin transactions (BIP174)
  - moved from unittest to pytest
- Relevant contribution on Tx, Block, and PSBT from **Giacomo Cironi**, former DGI trainee.



# DGI Training

- **Basic:**
  - Bitcoin as Digital Gold
  - Blockchain, Mining, and Distributed Consensus
  - Financial/Insurance Products and Services
  - Timestamping, Smart Contracts, ICO, and DLT
  
- **Advanced:**
  - Hash Functions, Elliptic Curves, and Digital Signature Algorithm
  - Key Encodings: Address and WIF
  - Deterministic Key Sequences
  - Transactions and Scripts

The image displays two promotional banners for the Digital Gold Institute's workshops. Both banners feature a dark background with a glowing blue Bitcoin symbol and binary code patterns.

**Banner 1 (Top):**  
Digital Gold Institute  
Scarcity in the Digital Realm  
**Bitcoin e Blockchain**  
**21 e 22 Luglio 2020**  
Due workshop rivolti a chi vuole approfondire Bitcoin e la tecnologia blockchain

**Banner 2 (Bottom):**  
Digital Gold Institute  
Scarcity in the Digital Realm  
**Bitcoin e Blockchain**  
**20 e 21 ottobre 2020**  
Due workshop rivolti a chi vuole approfondire Bitcoin e la tecnologia blockchain  
**EVENTO IN STREAMING**

# DGI Events

## CryptoValues Webinar

November 4-5, 2020

<https://dgi.io/2020/10/28/training-cryptovalues.html>



## 2020-Q4 Report Presentation

January 14, 2021

<https://dgi.io/reports/>

## Bitcoin and Blockchain

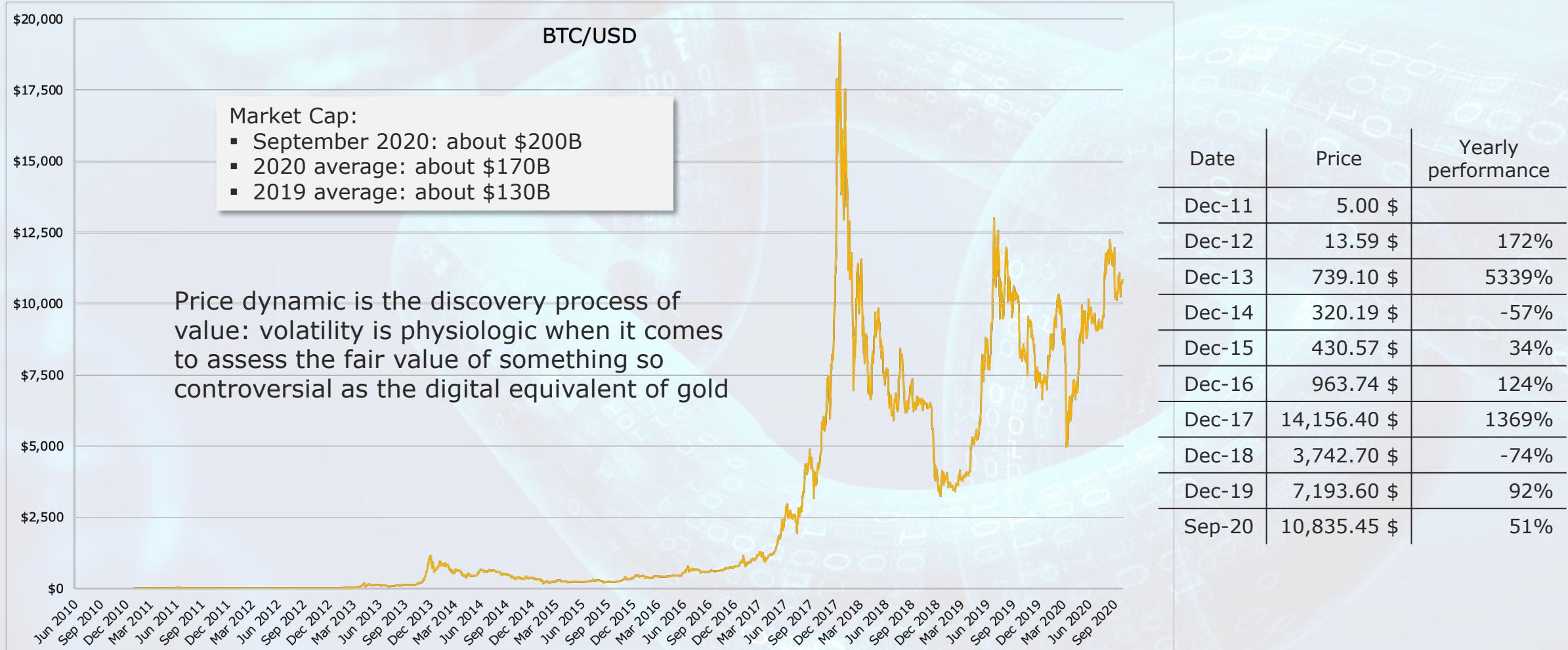
January 26-27, 2021

<https://dgi.io/workshop/>

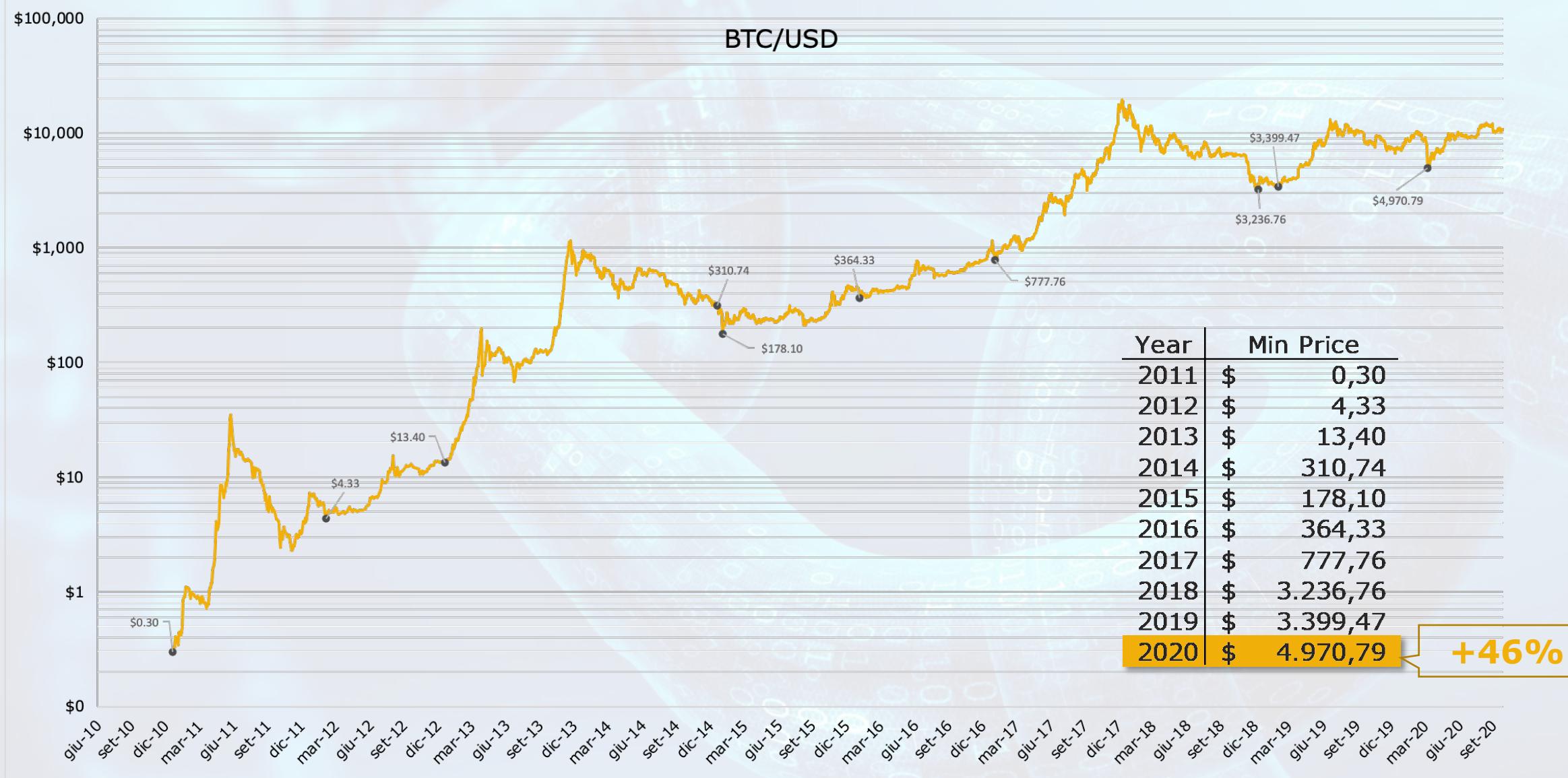


MARKET

# Bitcoin Performance

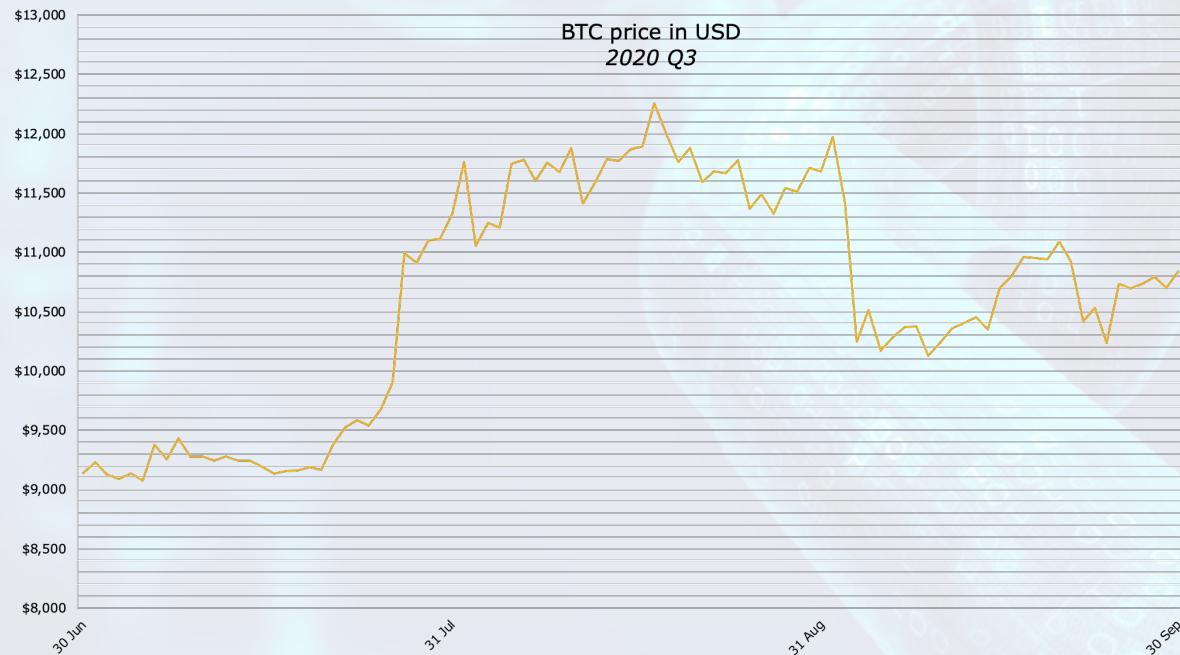


# Bitcoin Performance (Log Scale)

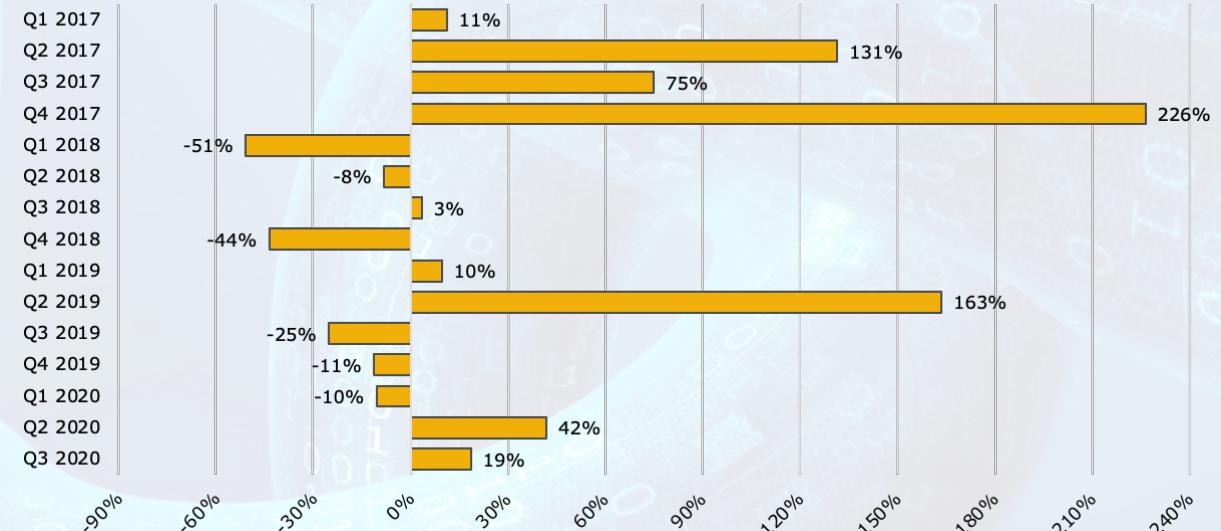




# Bitcoin Performance (2020 Q3)

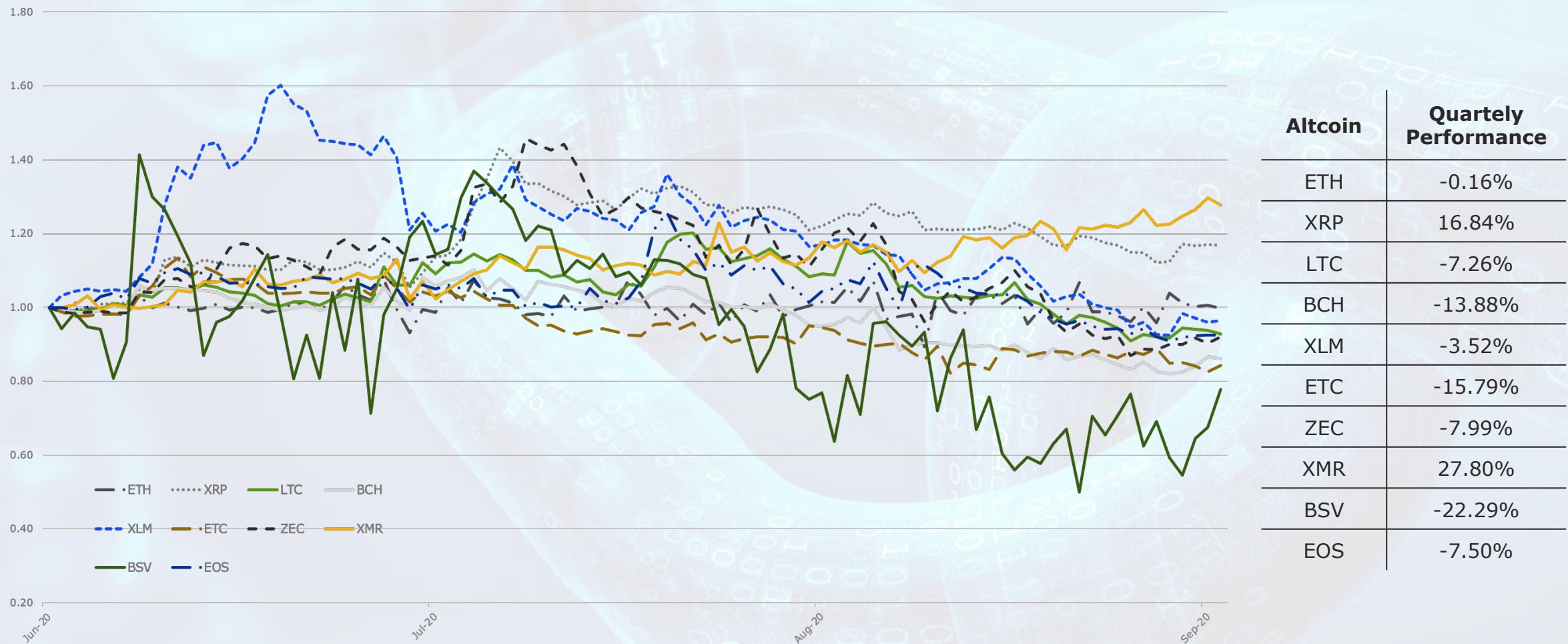


Quarterly performance from Q1 2017 to Q2 2020



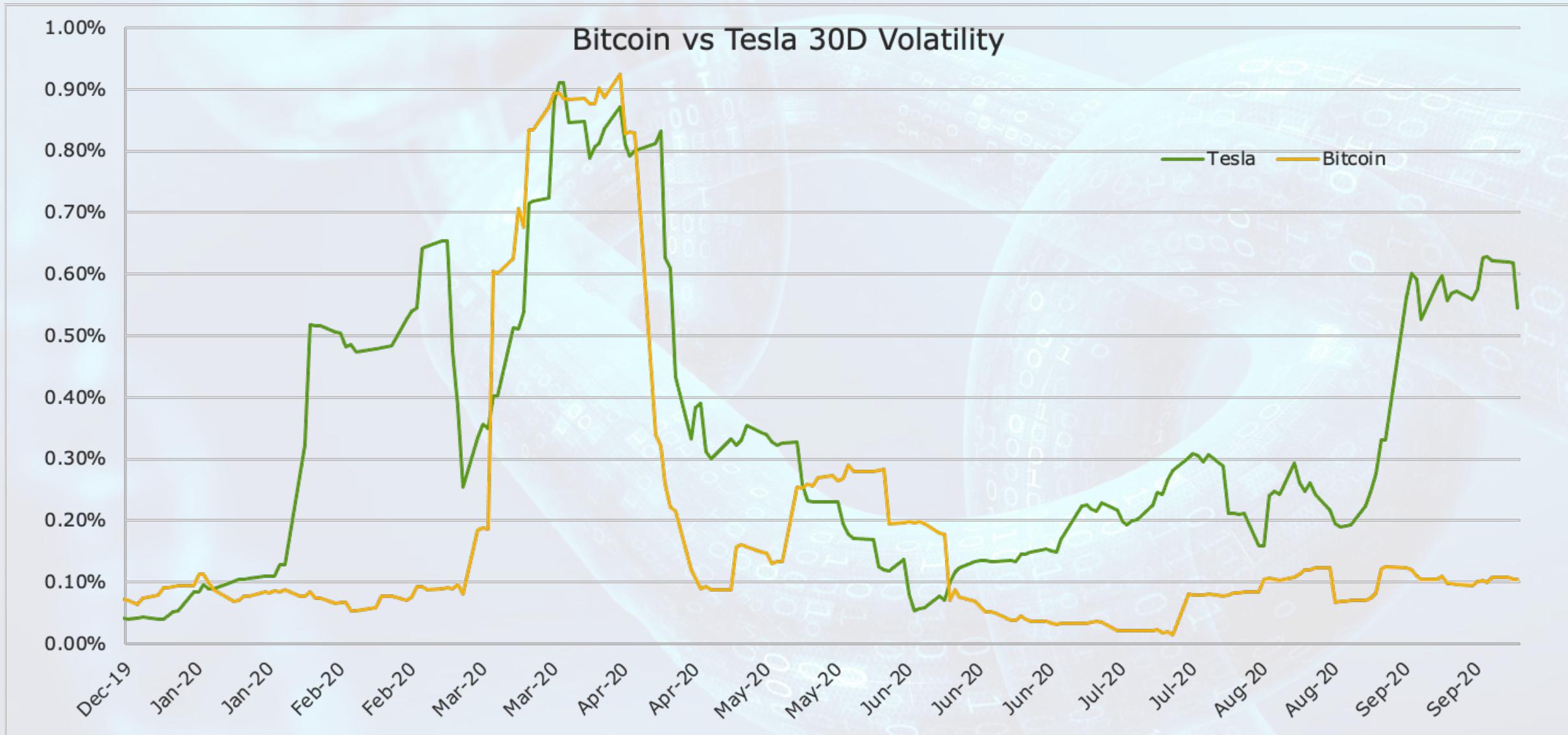


# Altcoin Performance vs Bitcoin

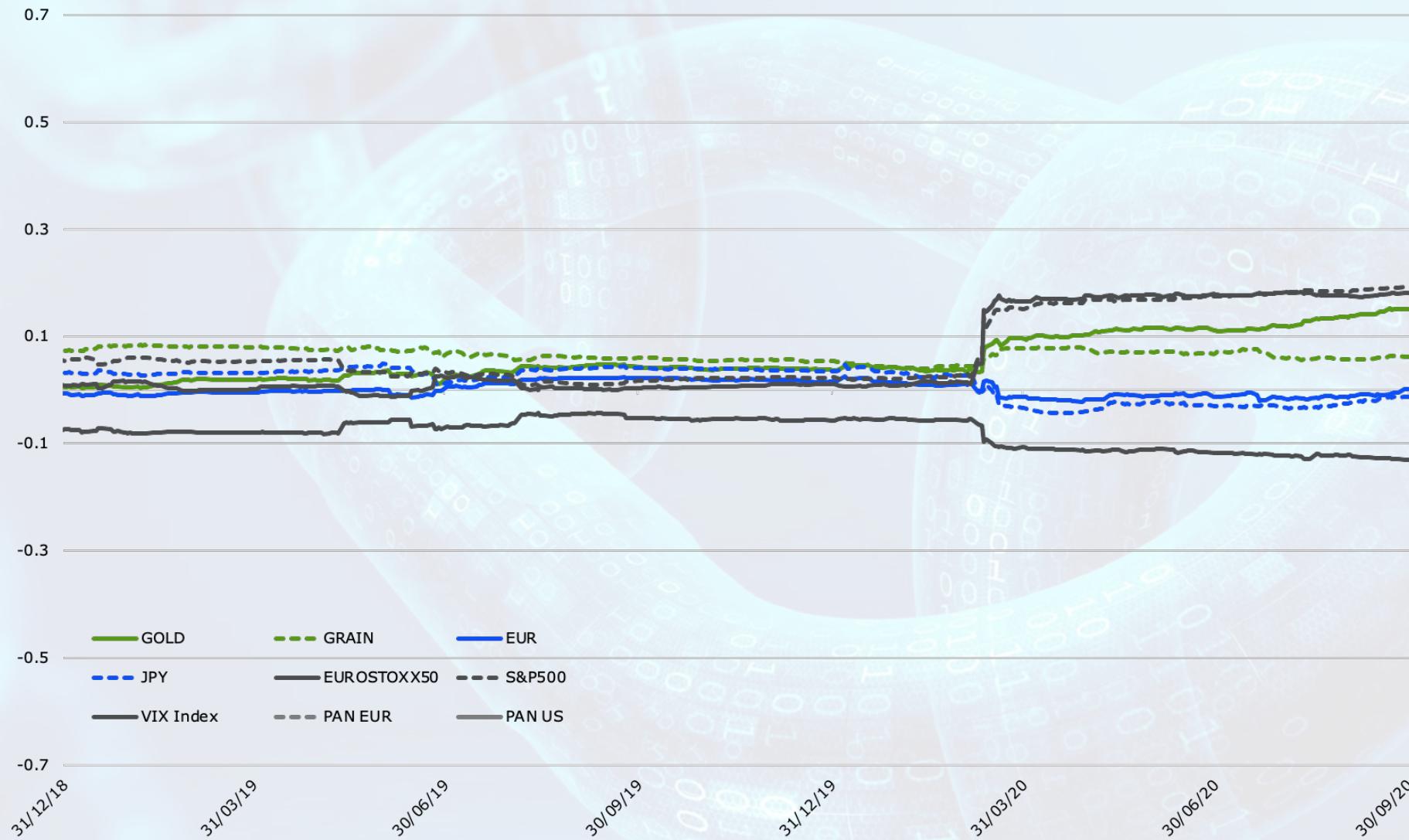




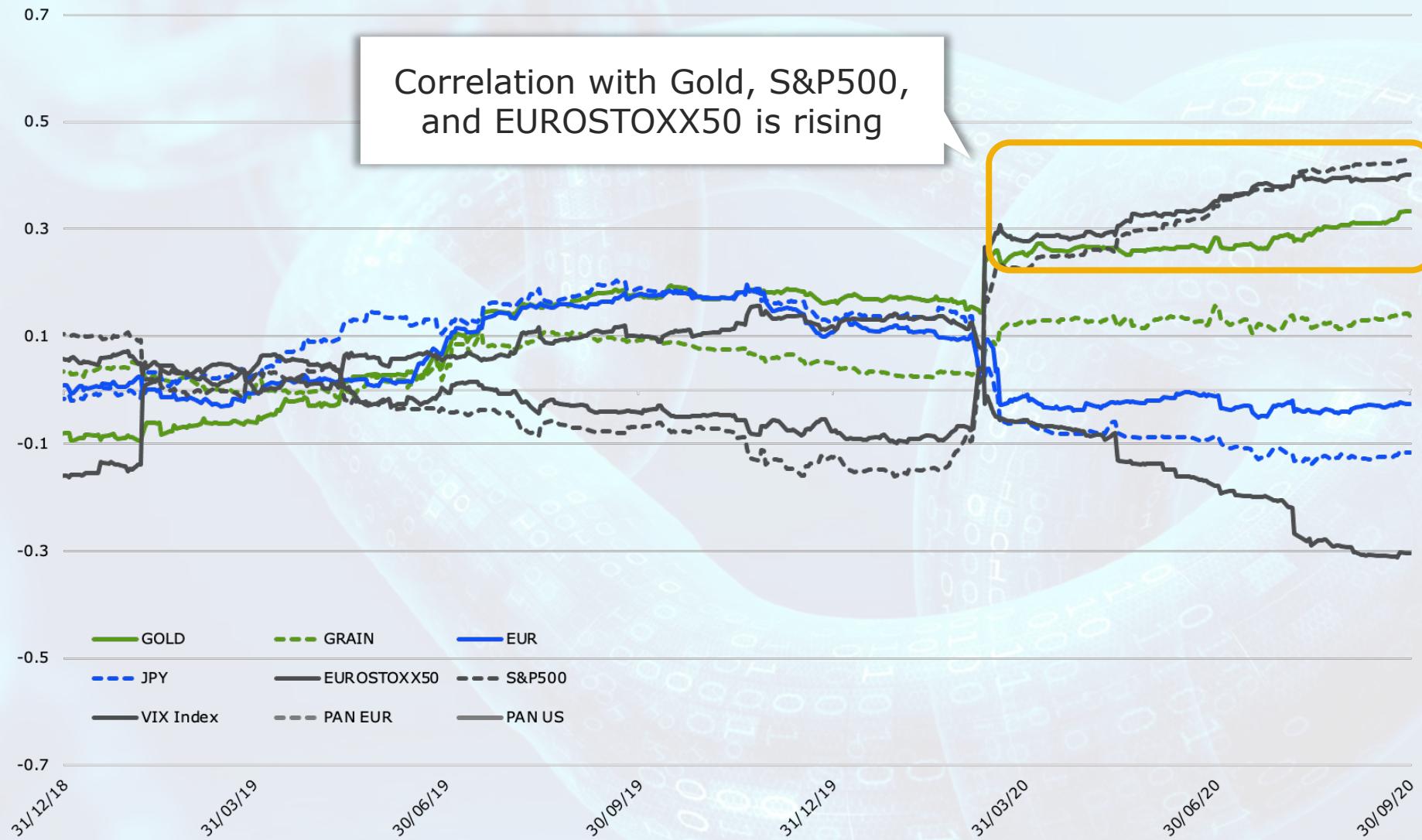
# Bitcoin High Volatility? True, but..



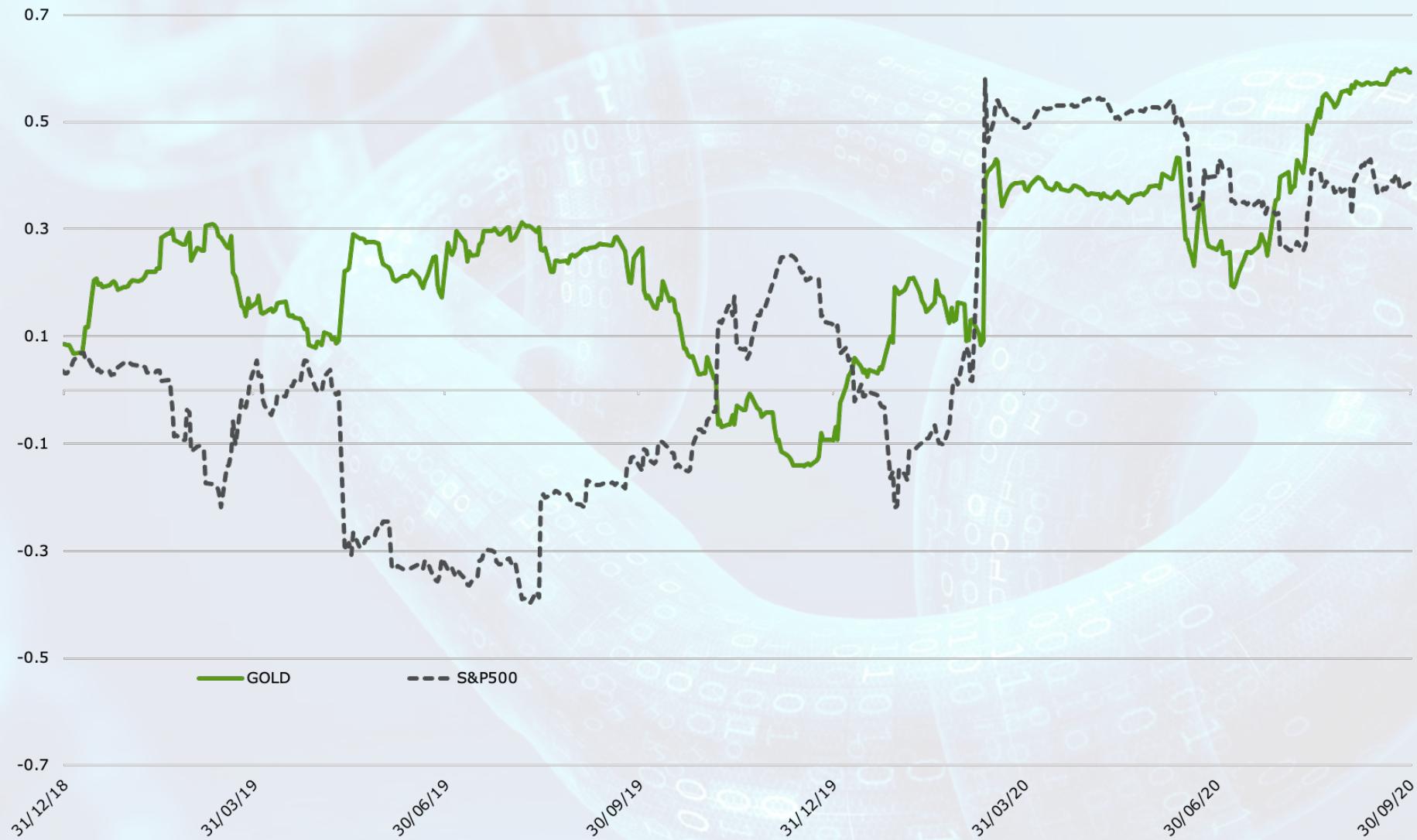
# Correlation with Bitcoin: 3Y rolling window



# Correlation with Bitcoin: 1Y rolling window



# Correlation with Bitcoin: 1Q rolling window

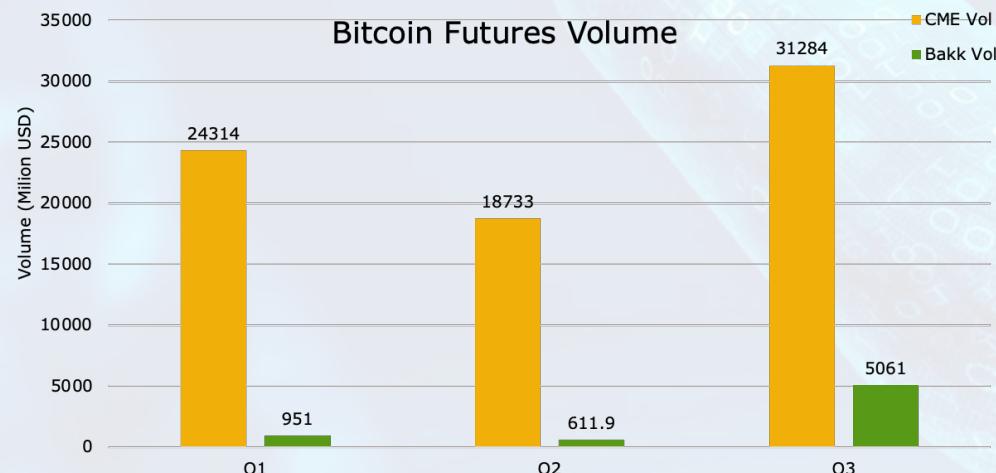
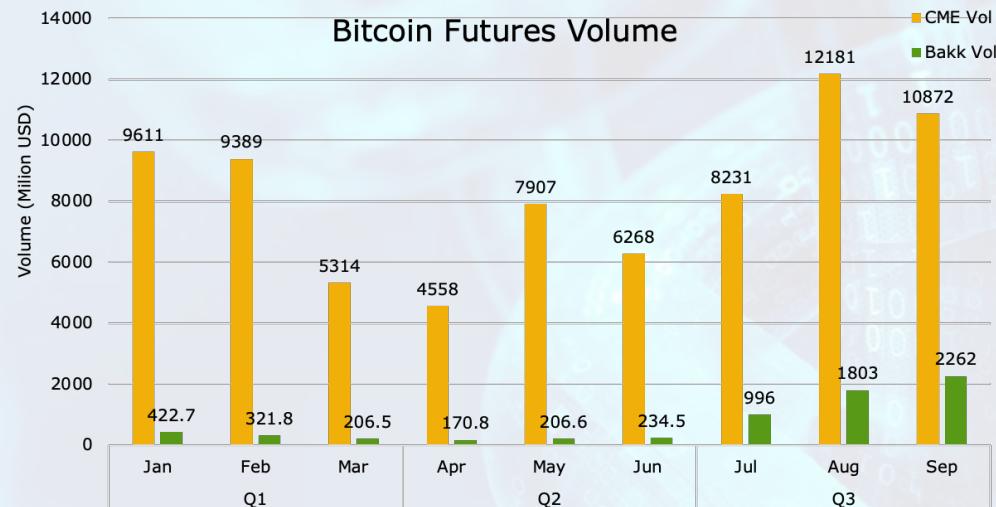




# Correlation Matrix: 1Y rolling window

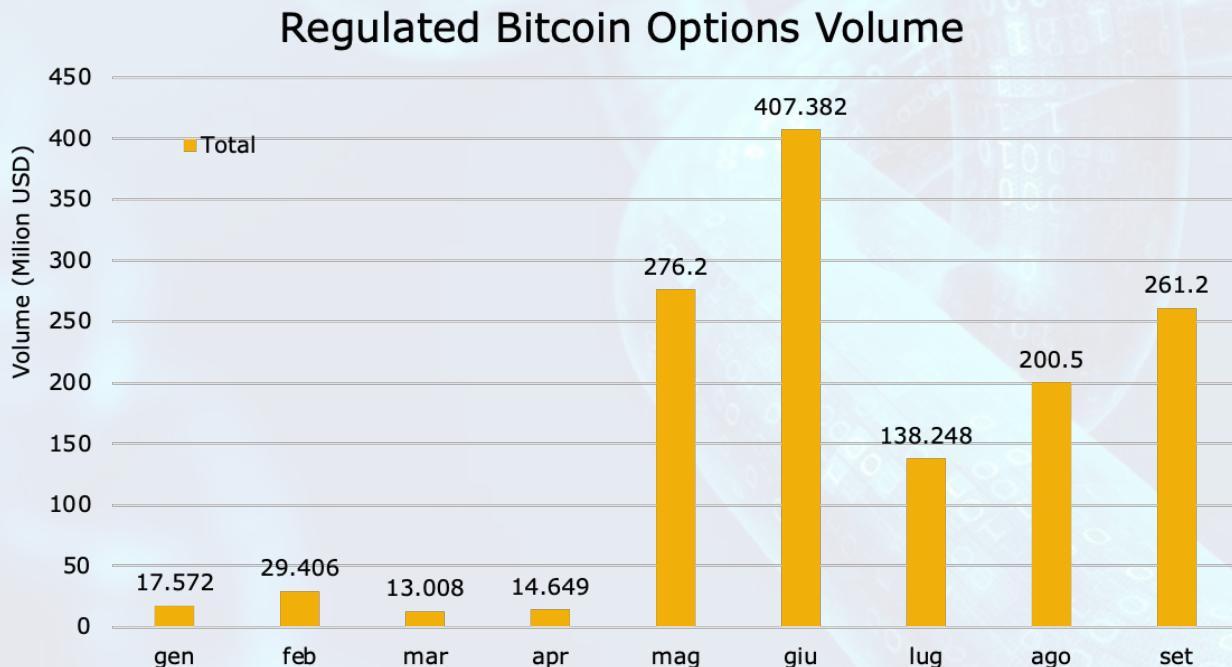
1Y	BTC	100.00%																		
	ETH	10.83%	100.00%																	
	LTC	10.52%	91.42%	100.00%																
	XRP	12.22%	88.11%	88.01%	100.00%															
	GOLD	33.27%	11.29%	10.16%	6.79%	100.00%														
	IND MET	16.75%	7.48%	5.29%	6.12%	-0.94%	100.00%													
	WTI	29.63%	5.14%	5.22%	4.74%	10.98%	23.73%	100.00%												
	GRAIN	13.58%	7.44%	3.27%	3.17%	3.14%	11.03%	21.32%	100.00%											
	EUR	-2.66%	12.78%	12.27%	11.49%	28.21%	20.08%	-15.28%	2.28%	100.00%										
	CHF	-6.50%	15.09%	15.33%	13.99%	32.54%	8.41%	-18.60%	-2.41%	86.13%	100.00%									
	GBP	14.85%	25.51%	25.31%	24.59%	29.21%	31.72%	8.14%	7.09%	57.86%	52.86%	100.00%								
	JPY	-11.72%	15.20%	15.01%	18.17%	27.12%	-7.66%	-32.11%	-18.68%	54.54%	61.63%	37.44%	100.00%							
	NASDAQ	45.12%	-11.30%	-11.94%	-12.65%	14.78%	39.59%	30.43%	22.29%	-10.60%	-17.16%	16.09%	-45.71%	100.00%						
	EURSX5E	40.11%	10.98%	8.99%	6.50%	15.01%	45.47%	26.41%	22.70%	-1.27%	-13.02%	25.52%	-30.17%	64.38%	100.00%					
	S&P500	42.89%	-9.63%	-10.05%	-11.68%	11.93%	41.77%	29.04%	21.08%	-6.78%	-14.90%	18.96%	-44.52%	96.87%	70.06%	100.00%				
	MSCIBRIC	30.01%	14.12%	10.57%	10.77%	13.81%	56.59%	25.89%	23.31%	9.15%	-0.03%	32.19%	-24.77%	61.98%	73.73%	64.65%	100.00%			
	VIX	-30.36%	8.14%	9.84%	8.01%	-0.82%	-31.62%	-25.18%	-27.01%	13.88%	25.11%	-8.52%	43.28%	-73.16%	-52.32%	-71.78%	-45.36%	100.00%		
	EURAGG	20.14%	17.41%	14.27%	16.36%	29.35%	-3.36%	7.53%	3.98%	9.74%	16.18%	29.10%	17.16%	11.90%	15.42%	12.29%	15.50%	-6.61%	100.00%	
	PANEUR	17.92%	22.46%	19.33%	21.09%	32.84%	2.70%	10.06%	4.99%	8.02%	16.06%	46.60%	20.82%	14.28%	20.07%	14.73%	22.60%	-9.19%	93.66% 100.00%	
	PANUS	1.32%	12.91%	14.45%	12.21%	39.67%	-5.93%	-0.42%	-8.52%	33.45%	40.57%	35.52%	49.15%	-16.40%	-6.00%	-17.51%	-8.90%	20.21%	50.56% 53.78% 100.00%	
	BTC	ETH	LTC	XRP	GOLD	IND MET	WTI	GRAIN	EUR	CHF	GBP	JPY	NASDAQ	EURSX5E	S&P500	MSCIBRIC	VIX	EURAGG	PANEUR	PANUS
	Crypto-currency				Commodity				Currency				Equity				Volatility			

# Bitcoin Listed Futures



- Q3 confirmed the **growth trend** in the regulated futures market started in May
- Q3 was a record quarter for both CME and Bakkt
- Open interest in CME Group's cash-settled bitcoin futures had hit an **all-time high of \$724 million** on July, 27<sup>th</sup>

# Bitcoin Listed Option



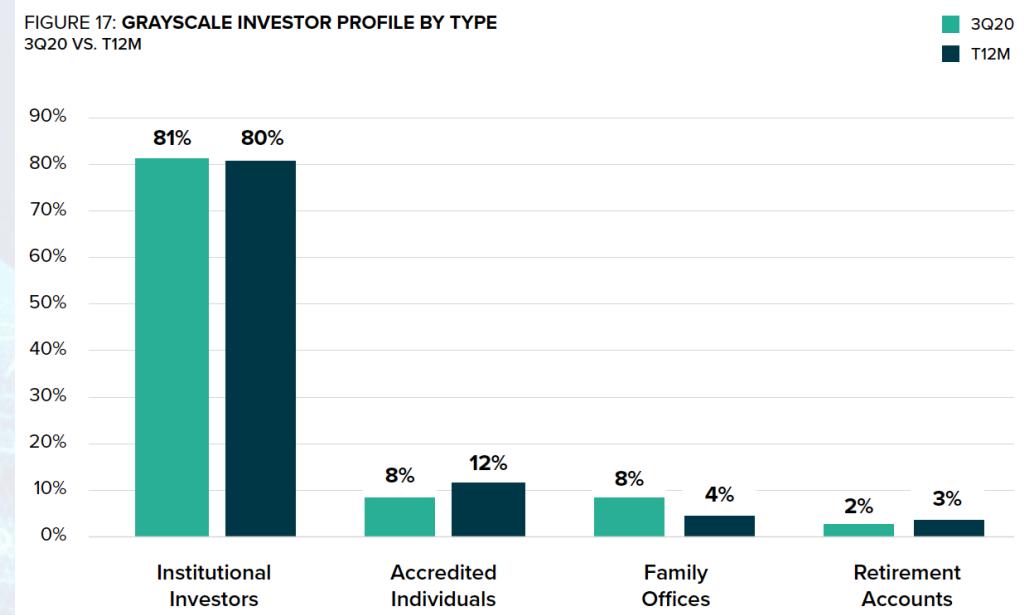
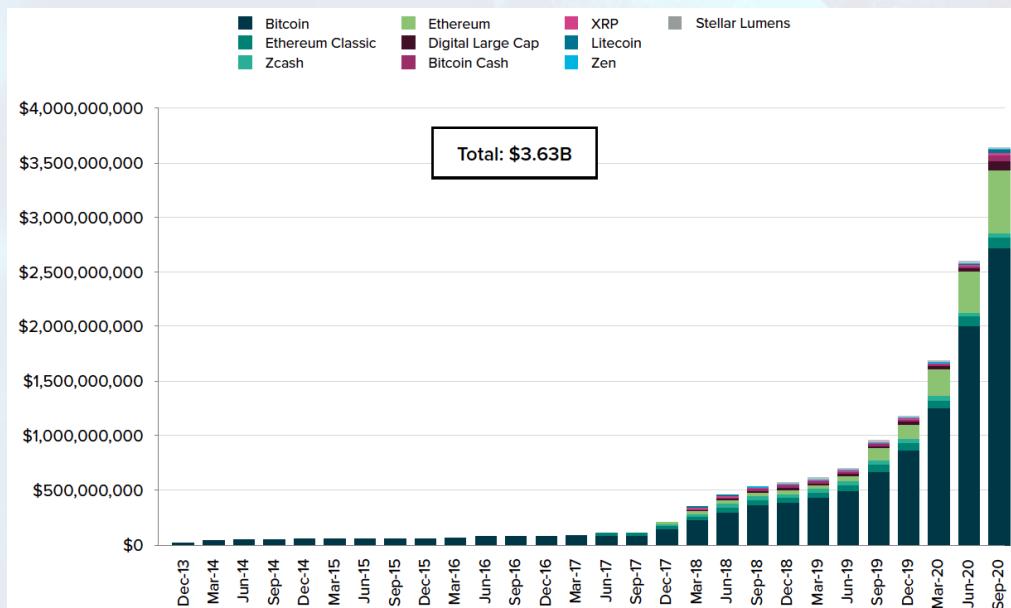
- Q3 confirmed the growth trend even in the regulated option market started in May
- Bakkt Options had **zero volume**
- CME, which is considered synonymous with institutional activity, **accounted for 13%** of the total open positions in options market, which also included not regulated options

# Grayscale: new all time high

- Q3 Total investment into Grayscale Products: \$1.05 Billion

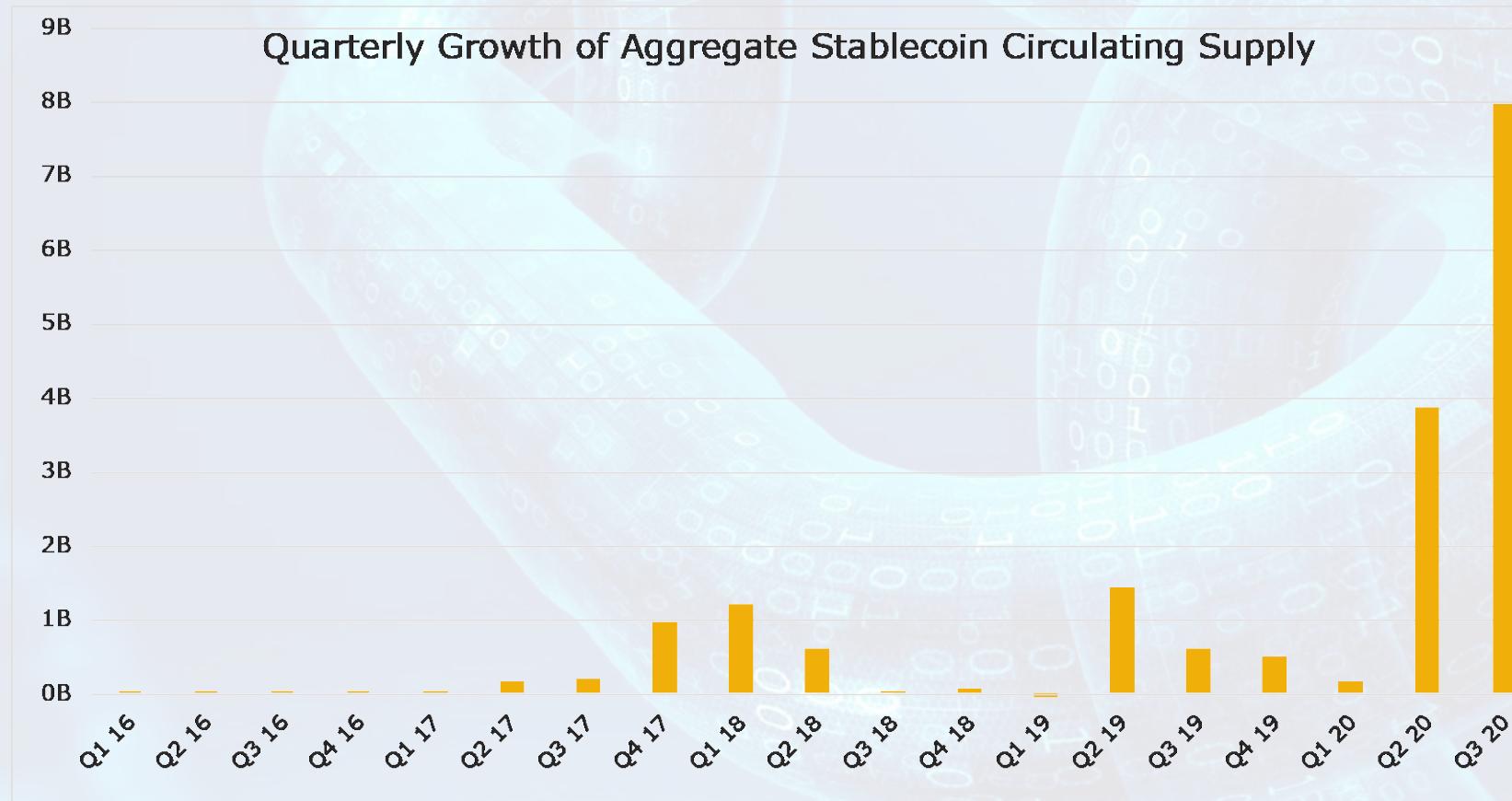
Trust	Q3 Avg weekly inv.	AUM
Bitcoin	\$ 55.3 Million	\$ 6.3 Billion
Ethereum	\$ 15.6 Million	\$ 0.9 Billion

77% of Bitcoin  
mined during  
Q3



# Stablecoin: volume record

- The total value of stablecoins has now **surpassed \$20 billion**
- Mainly due to DeFi growth and exchange trading arbitrage

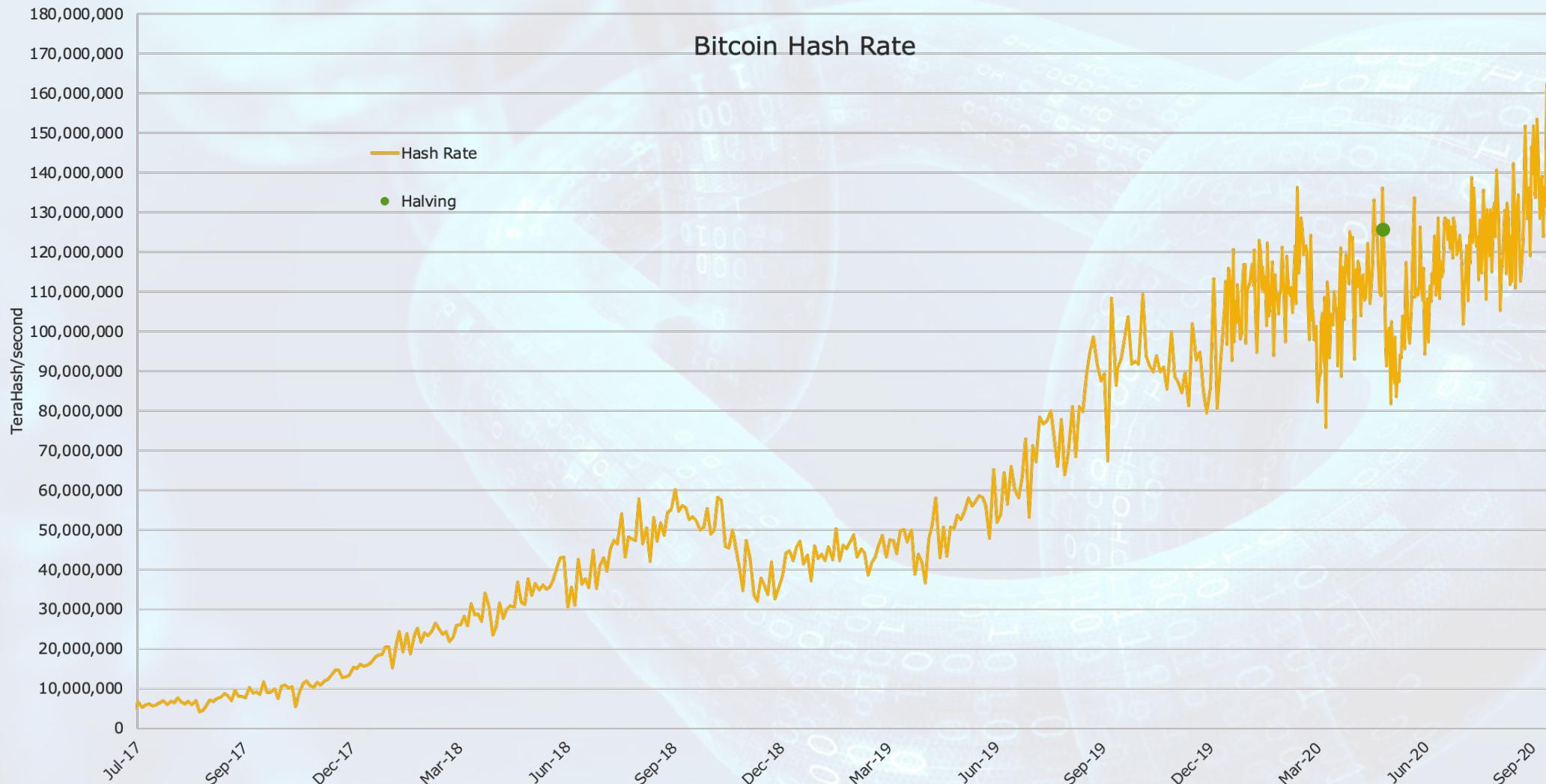




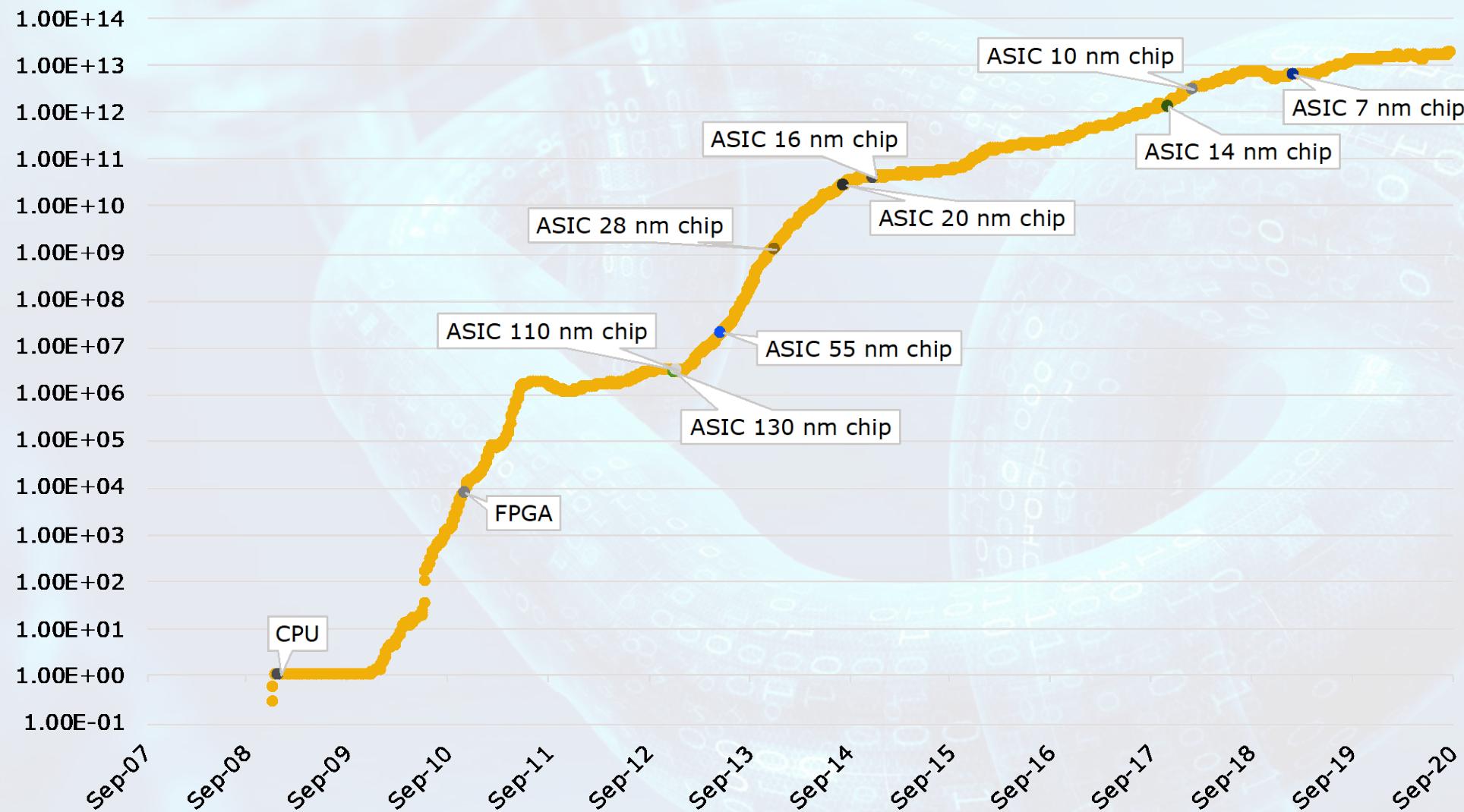
TECHNOLOGY



# Bitcoin - Mining (1/2)



# Bitcoin - Mining (2/2)



# Bitcoin – Protocol Update

- The 0.20.1 release was a minor one
- Work has been ongoing on Schnorr and Taproot: we do expect activation in 2021





# Ethereum

- Announced the release of the new version of Ethereum: Eth2
- Eth2 is a long-planned upgrade to the Ethereum network, giving it the scalability and security it needs
- The first stage of Eth2, called Phase 0, is planned to **launch by the end of 2020**
- Eth2 Testnet launched in August. It now has over 20,000 validators
- In the meantime, Ethereum miners **earned over six times more in fees** compared to those working on Bitcoin in September: **\$166 million** in September

# 51% Attack

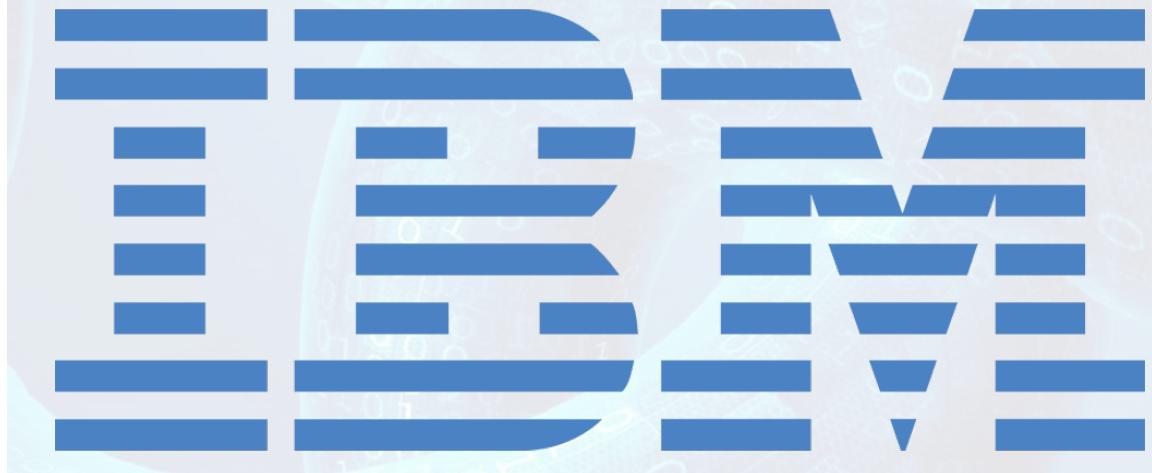


ethereum  
classic



# Blockchain

The *Patent Rush* see Alibaba ahead of IBM





## REGULATION

# Libra

- Libra Association hires **James Emmett**, former HSBC CEO
- Libra Association joint by **Blockchain Capital**
- Libra Co-Founder **Morgan Beller** departs to return to Venture Capital industry



# Central Bank Digital Currency 1/2

- Chinese Bank opened up a wallet service for China's CBDC to public users – but quickly disabled it after the feature gained widespread attention
- Former US Treasury Secretary Laurence Summers expects 'a ton of innovation' around stablecoins
- The U.K.'s Central Bank is discussing the possibility of launching a digital currency
- French Central Bank Chief Eyes Public-Private Partnership for Possible Digital Euro

# Central Bank Digital Currency 2/2

- BIS Seeking Blockchain Expert to Lead Digital Currency Research
- Digital Euro Would Provide Alternative to Cryptos, ECB President Lagarde Says
- Czech National Bank says CBDCs raise more questions than answers
- CBDCs Could Challenge US Dollar's Dominance: Deutsche Bank
- Goldman Sachs is seriously considering its own cryptocurrency, possibly a stablecoin



# Full Regulatory Framework for Crypto

- Bank of England Governor **Andrew Bailey** wants global regulations as stablecoins pick up steam: "**Stablecoins need global regulation**"
- European Ministers call on European Commission to regulate Stablecoins: **EC adopted new Digital Finance Package** including Digital Finance and Retail Payments Strategies, and legislative proposals on crypto-assets and digital resilience



BANK OF ENGLAND



**Proposed legislation will turn cryptocurrencies into a regulated framework**

# US Banks Can Offer Crypto Custody Services

- The U.S. Office of the Comptroller of the Currency announced in July that national savings banks and federal savings associations can provide cryptocurrency custody services to their customers.
- “Banks can continue satisfying their customers’ needs for safeguarding their most valuable assets, which today for tens of millions of Americans includes cryptocurrency”
- Kraken has obtained a bank licence
- Silvergate is Bitcoin bank
- Standard Chartered wants to offer Institutional crypto custody solution





ECOSYSTEM

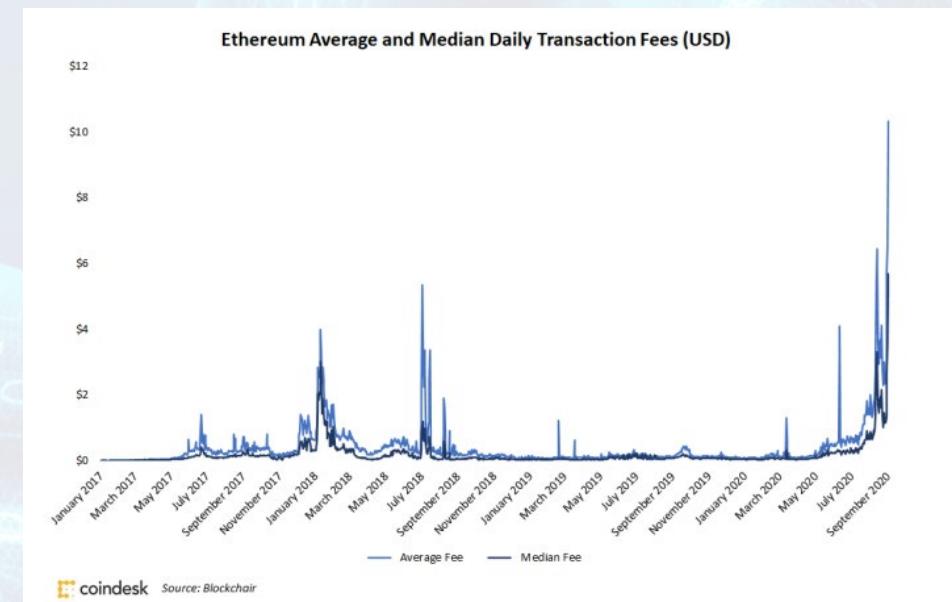
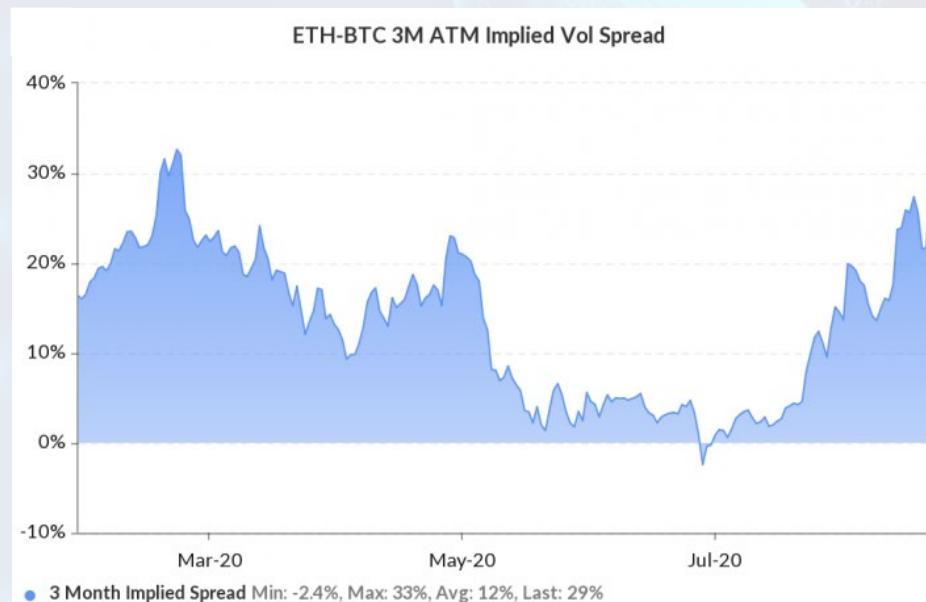


# Crypto Exchanges

- BitMEX 'Attempted to Evade' US Regulations: the Commodity Futures Trading Commission (CFTC) and federal prosecutors are charging the crypto trading platform with facilitating unregistered trading and other violations
- Cryptocurrency exchange Bitfinex will have to face allegations from New York State that it hid millions in lost funds
- Gemini, one of a handful cryptocurrency exchanges regulated in New York, has said users can now withdraw privacy coin zcash confidentially
- Coinbase's client base stands at 35 million across its institutional and retail business arms
- Digital Rock Holding S.p.A (The Rock Trading) has obtained €1.5M in crowdfunding

# Decentralized Finance 1/2

- Investors are expecting more volatility in ETH compared with BTC according to key metric, with the measure of risk at a six-month high amid a boom DeFi.
- Ethereum transaction fees set a record once again as DeFi becomes even pricier



# Decentralized Finance 2/2

- Algorand's Move Into DeFi Gives ALGO Price a Boost
- SushiSwap creator Chef Nomi returns \$14M dev fund



**Chef Nomi #SushiSwap** @NomiChef · Sep 11, 2020

Replies to @NomiChef

And there are probably hundreds of other people that I did not mention here, but well deserve an apology from me.

**Chef Nomi #SushiSwap** @NomiChef

I have returned all the \$14M worth of ETH back to the treasury. And I will let the community decide how much I deserve as the original creator of SushiSwap. In any currency (ETH/SUSHI/etc). With any lockup schedule you wish.

Ethereum Transaction Hash (Txhash) Details | Et...  
Ethereum (ETH) detailed transaction info for txhash ...  
etherscan.io

5:31 PM · Sep 11, 2020

3K people are Tweeting about this





# Investments

- Blockchain analytics firm Chainalysis adds \$13 million to its Series B funding round
- Fidelity holds over 10% stake in bitcoin mining firm Hut 8
- Q4 spoiler: Paypal is considering the acquisition of BitGo

# Hack: Twitter

Barack Obama @BarackObama

I am giving back to my community due to Covid-19!

All Bitcoin sent to my address below will be sent back doubled. If you send \$1,000, I will send back \$2,000!

bc1qxy2kgdygjrsqtzq2n0yrf2493p83kkfjhx0wlh

Only doing this for the next 30 minutes! Enjoy.

11:35 PM · Jul 15, 2020

Twitch

- **Twitter** subjected to "**coordinated attack**" in which high-profile accounts were used to tweet a Bitcoin scam.
- Obama, Biden, Musk: **Bitcoin scam takes over Twitter in massive hack**
- US Congressman Tom Emmer has tweeted: **"Bitcoin isn't the problem. Centralized control is."**



# Ledger Email Addresses Hack

- Crypto wallet maker **Ledger** loses 1M email addresses in **data theft**
- Email addresses have been used later in October for a social attack



Dear Fernando,

We regret to inform you that Ledger has experienced a security breach affecting approximately 86,000 of our customers and that the wallet associated with your e-mail address [REDACTED] is within those affected by the breach.

Namely, on Sunday, October 25th 2020, our forensics team has found several of the Ledger Live administrative servers to be infected with malware.

At this moment, it's technically impossible to conclusively assess the severity and the scope of the data breach. Due to these circumstances, we must assume that **your cryptocurrency assets are at risk of being stolen**.

If you're receiving this e-mail, it's because you've been affected by the breach. In order to protect your assets, please download the latest version of Ledger Live and follow the instructions to set up a new PIN for your wallet.

Sincerely,  
Ledger

[Download latest version](#)

# Bitcoin Startups (and) Politics

- Coinbase CEO Brian Armstrong offers severance package to employees unsatisfied with 'Apolitical' mission



*"It doesn't mean you have to agree with every aspects, but you should be at least able to disagree and commit to making this new direction a success."*

- Twitter's Jack Dorsey takes aim at Coinbase's apolitical stance

A screenshot of a Twitter post from Jack Dorsey (@jack). The post reads:  
#Bitcoin (aka "crypto") is direct activism against an unverifiable and exclusionary financial system which negatively affects so much of our society. Important to at \*least\* acknowledge and connect the related societal issues your customers face daily. This leaves people behind:

 **Brian Armstrong**  @brian\_armstrong  
[blog.coinbase.com/coinbase-is-a...](http://blog.coinbase.com/coinbase-is-a...)

11:51 PM · Sep 30, 2020 

 8.7K  2.7K people are Tweeting about this



INVITED SPEAKER

# Guest Speaker

## Daniele Bernardi

*CEO at DIAMAN Partners LTD*

*Writer, speaker, entrepreneur, inventor,  
crypto enthusiastic and innovator.*



## Stock to flow



***Scarcity in the Digital Realm***

*Nothing in this document constitutes an offer to buy or sell, or a solicitation of an offer to buy or sell, any financial instruments. It is not intended to represent the conclusive terms and conditions of any security or transaction, nor to notify you of any possible risks, direct or indirect, in undertaking such a transaction. No entity in Digital Gold Institute shall be responsible for any loss whatsoever sustained by any person who relies on this document.*

*Nessun contenuto presente in questo documento costituisce e deve essere inteso come offerta all'acquisto o alla vendita o sollecitazione all'investimento in relazione a strumenti finanziari e non è inteso a rappresentare i termini e le condizioni definitivi di ogni strumento finanziario ovvero di ogni offerta avente ad oggetto strumenti finanziari, né i rischi diretti od indiretti connessi alla stessa offerta. Nessuna entità di Digital Gold Institute è responsabile delle perdite sostenute da una persona che si affida a questo documento.*