

April 17
2020

REPORT TRIMESTRALE

2020 Q1



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 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: 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.

Digital Gold Institute: Partners

Educational Program Partner



Partner



The DGI Quarterly Report

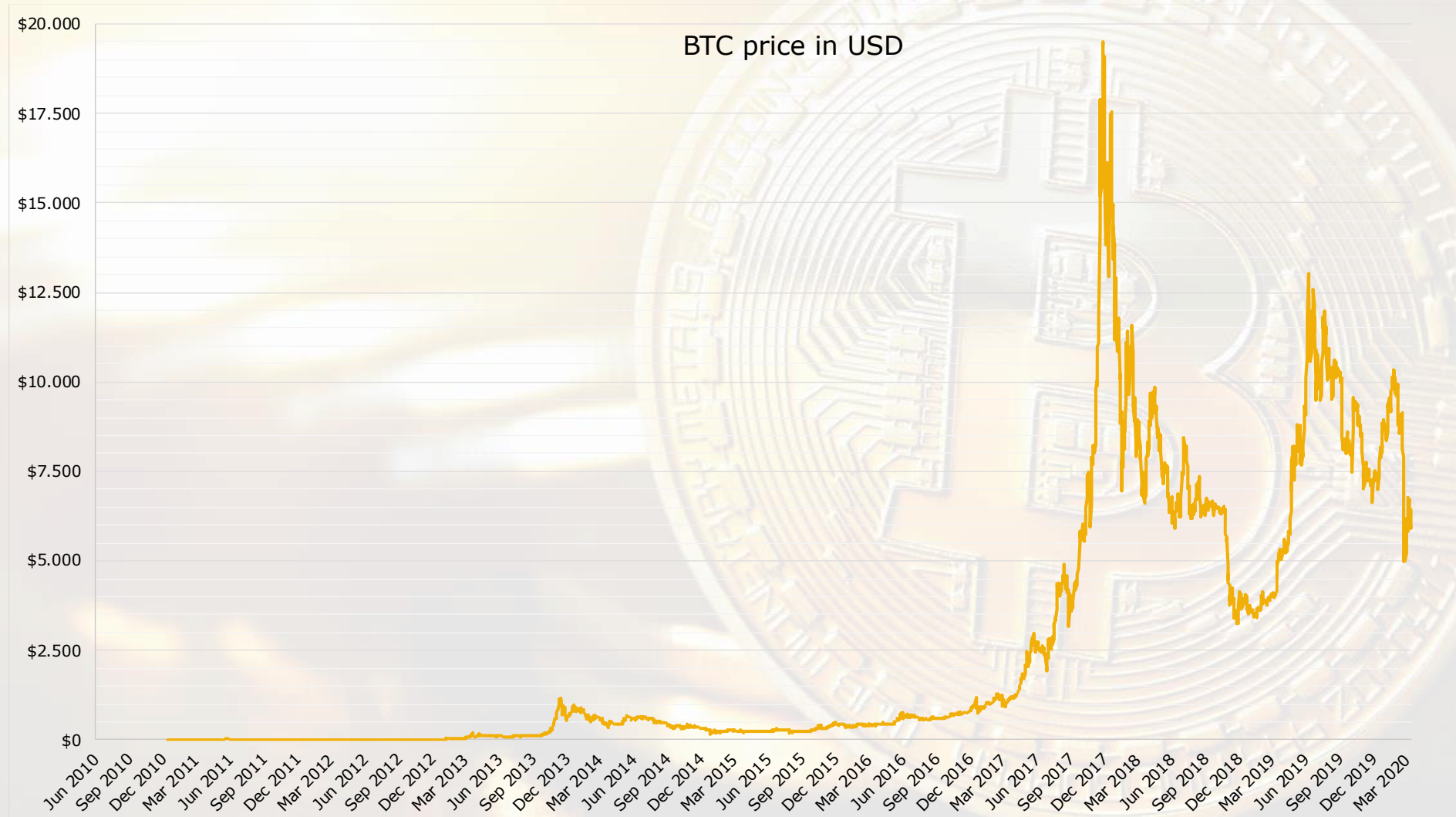
- Exclusive for our partners and their guests
- A quarterly update on the crypto assets world with a focus on:
 - **Market**
 - **Technology**
 - **Regulation**
 - **Ecosystem**
 - **Updates from the Institute**



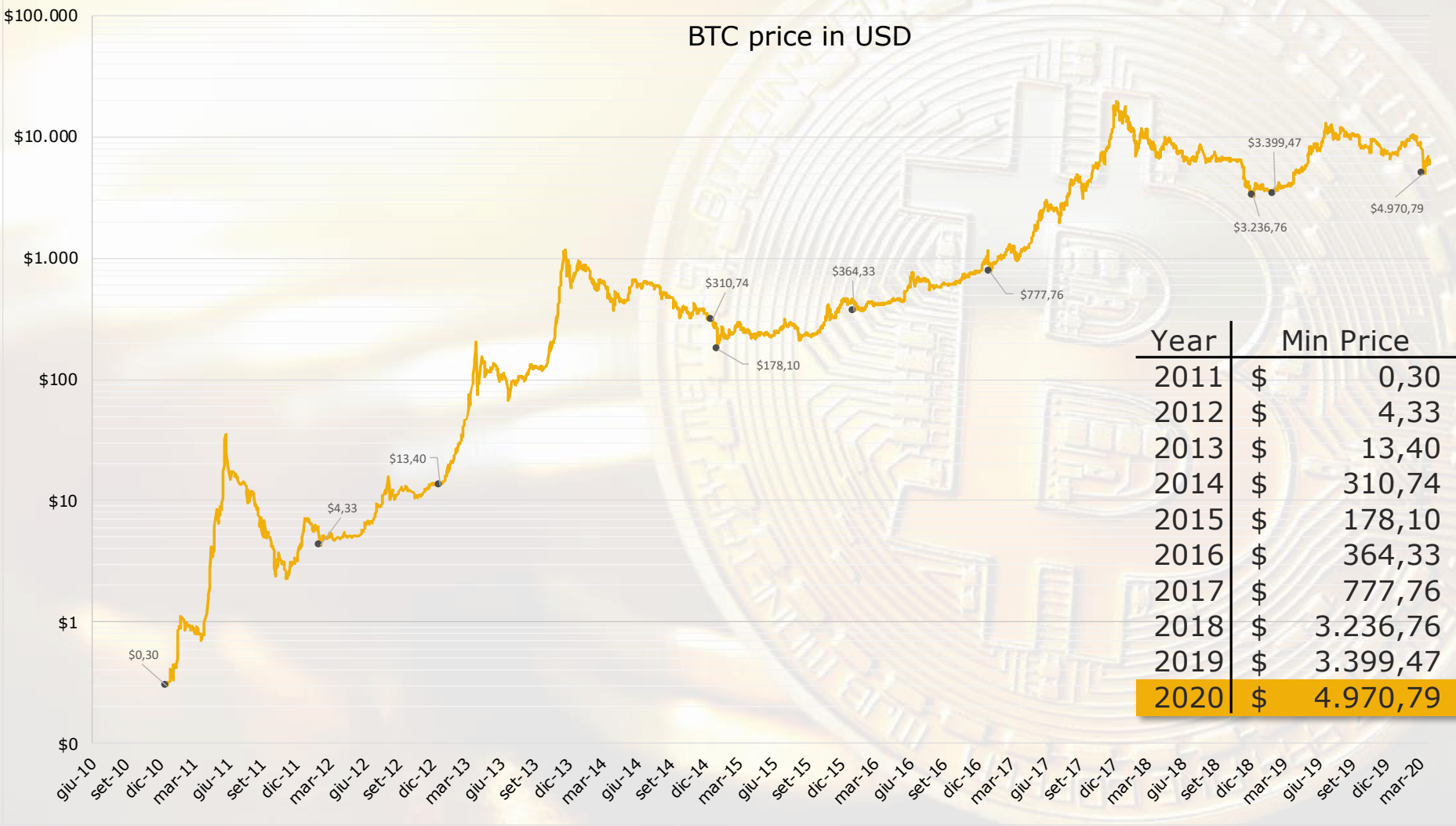


1. MARKET

Bitcoin Performance

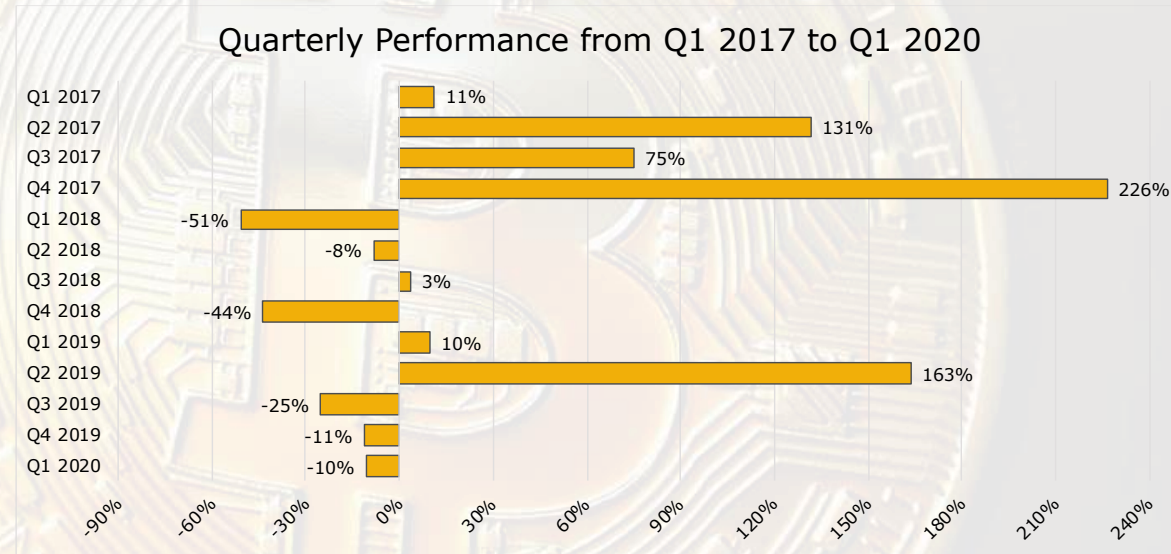


Bitcoin Performance (Log Scale)

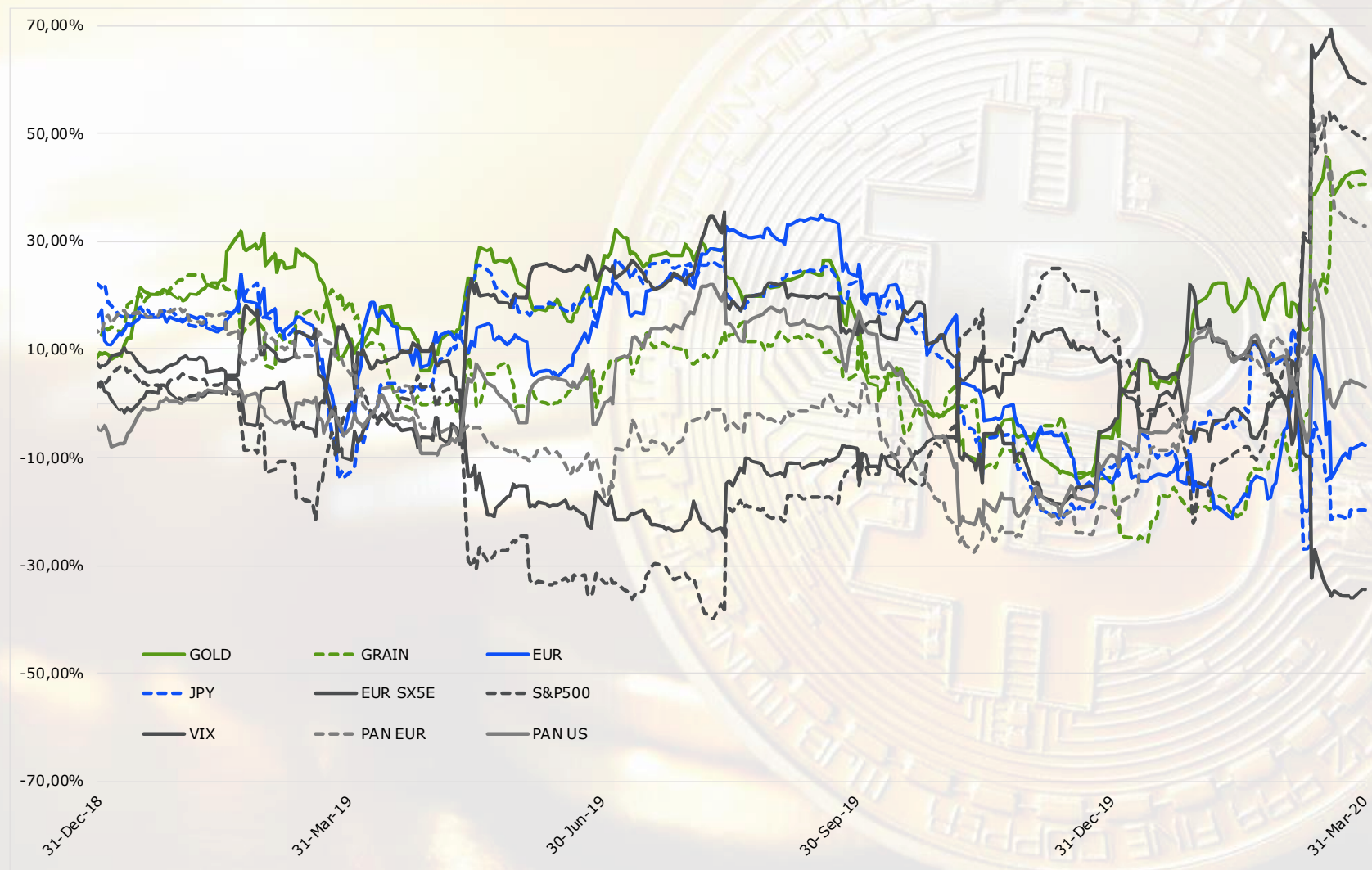


+46%

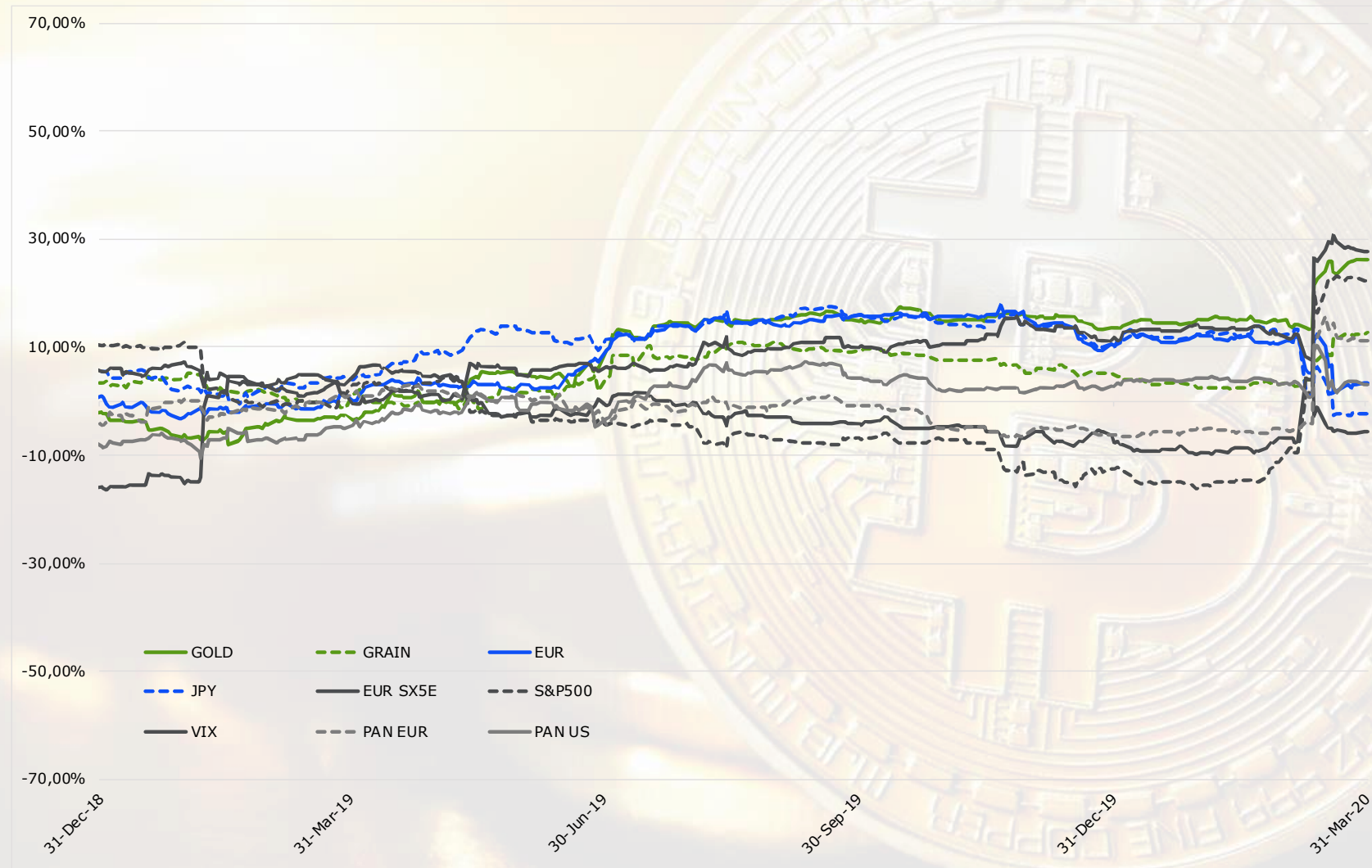
Bitcoin Performance (2020 Q1)



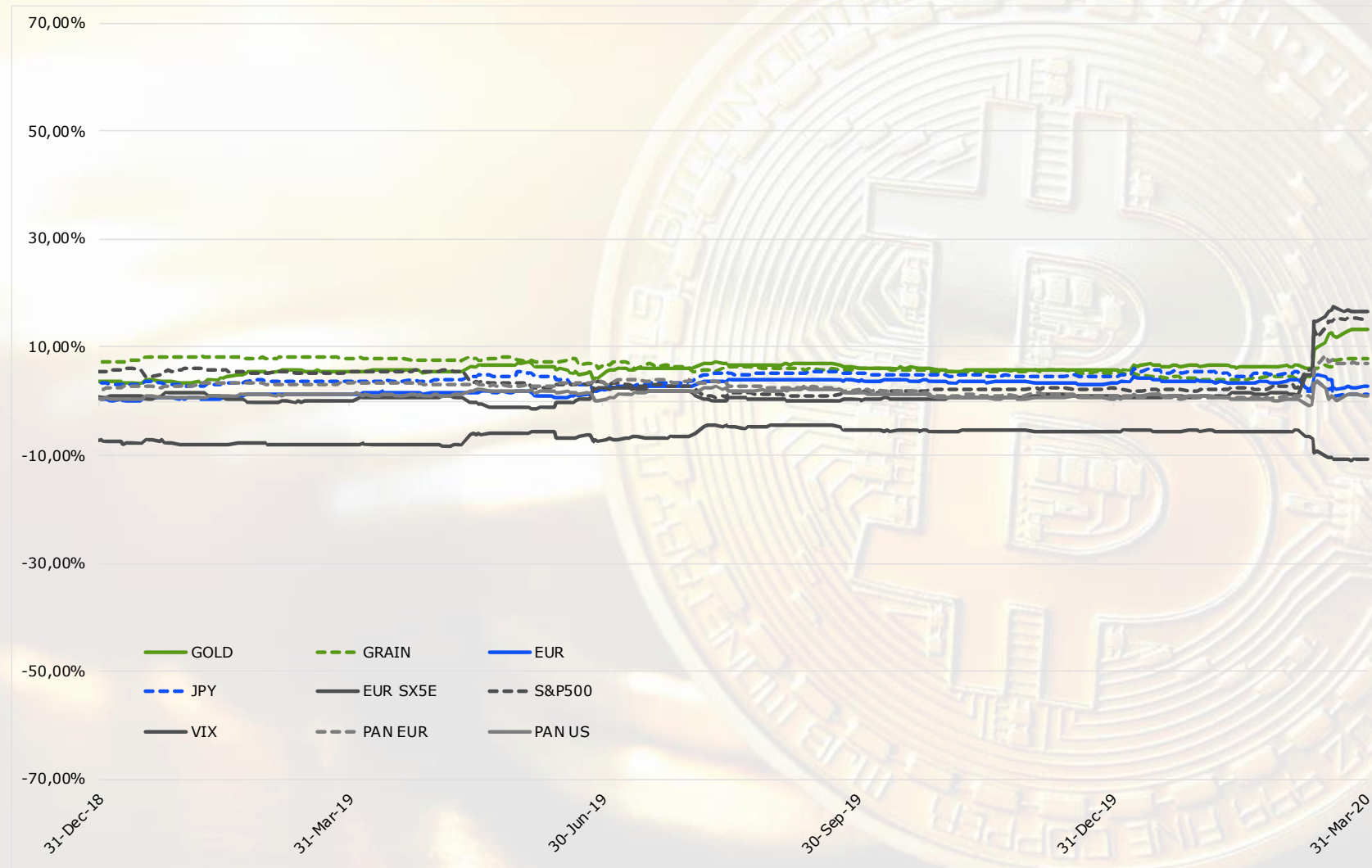
Correlation with Bitcoin: 3M Rolling Window



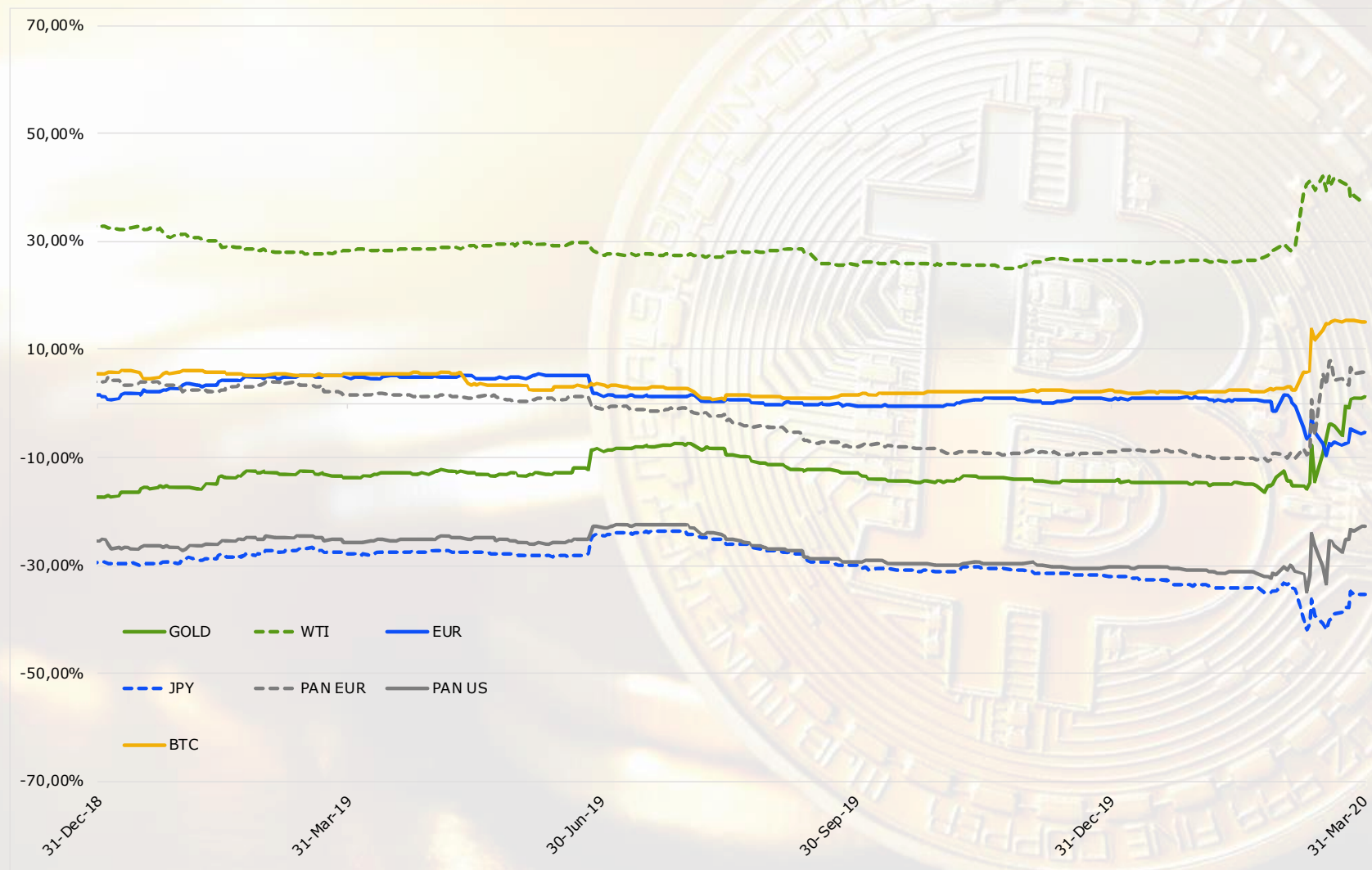
Correlation with Bitcoin: 1Y Rolling Window



Correlation with Bitcoin: 3Y Rolling Window



Correlation with S&P500: 3Y Rolling Window



Data set: 2017-01-01 / 2019-12-31

Positive
Negative

Data set: **2019**-01-01 / 2019-12-31

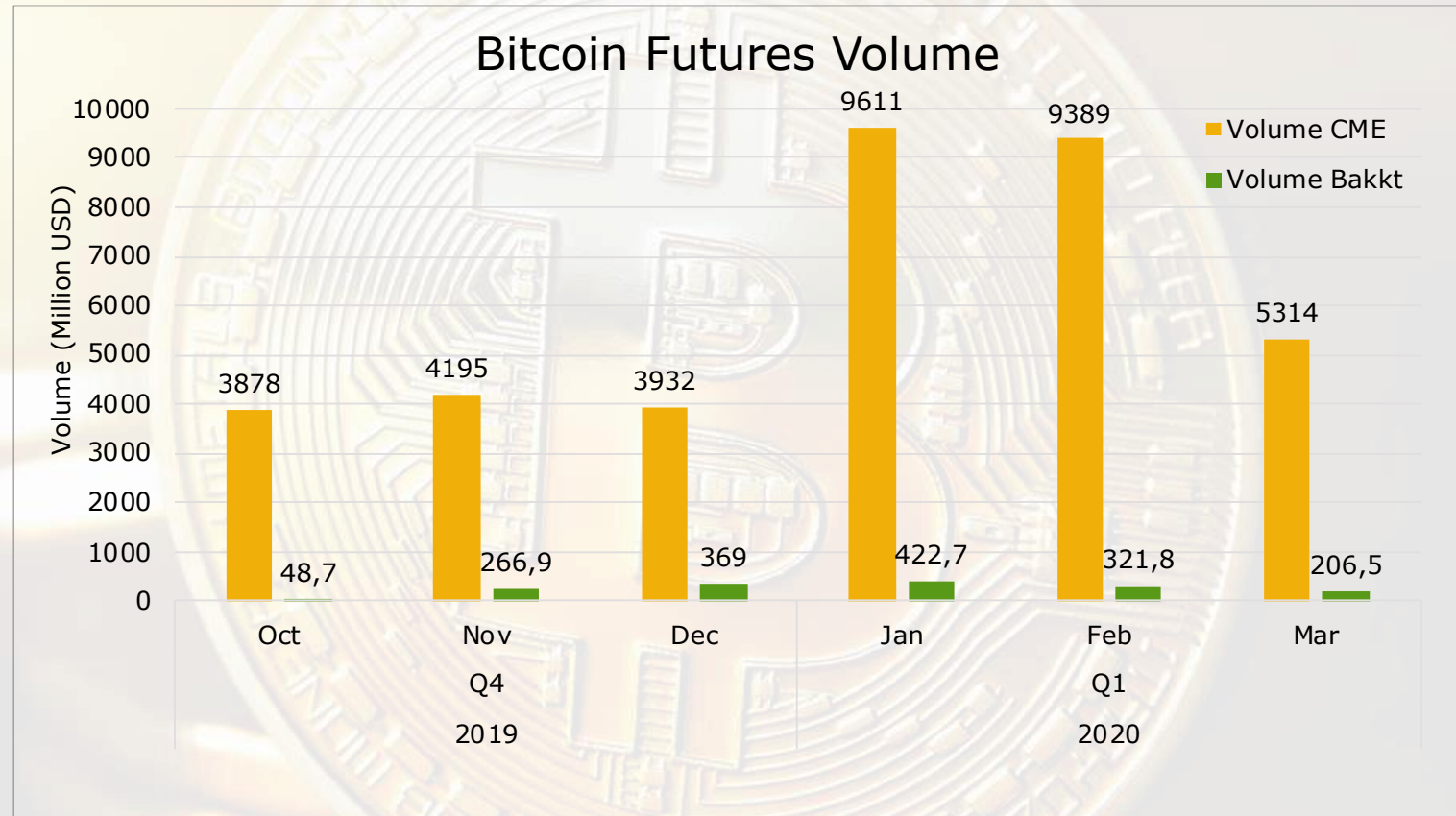
Positive
Negative

Data set: 2019-04-01 / 2020-03-31

Data set: 2019-04-01 / 2020-03-31																				
BTC	100,00%																			
ETH	18,79%	100,00%																		
LTC	18,70%	87,37%	100,00%																	
XRP	18,82%	86,85%	80,83%	100,00%																
GOLD	26,18%	17,29%	9,29%	10,06%	100,00%															
IND MET	2,56%	-1,23%	-2,42%	5,17%	-14,53%	100,00%														
WTI	21,68%	5,10%	3,29%	6,54%	9,33%	34,26%	100,00%													
GRAIN	12,78%	8,86%	4,94%	8,80%	4,56%	11,07%	22,82%	100,00%												
EUR	3,46%	11,68%	8,62%	7,00%	33,44%	8,51%	-13,04%	-2,57%	100,00%											
CHF	5,03%	10,98%	6,74%	6,27%	41,27%	-4,29%	-16,19%	-4,91%	84,16%	100,00%										
GBP	10,51%	18,27%	12,59%	11,56%	28,54%	22,66%	8,16%	1,43%	56,71%	46,05%	100,00%									
JPY	-2,19%	17,04%	11,58%	12,00%	35,93%	-18,50%	-36,85%	-15,06%	58,88%	70,44%	33,41%	100,00%								
NASDAQ	22,10%	-24,30%	-19,50%	-18,90%	3,34%	36,43%	41,94%	16,45%	-20,27%	-28,14%	9,44%	-47,73%	100,00%							
EUR SX5E	27,74%	4,15%	5,00%	6,21%	13,14%	40,34%	41,68%	19,82%	-15,41%	-26,28%	22,61%	-41,32%	72,23%	100,00%						
S&P500	22,28%	-23,12%	-18,74%	-17,90%	5,81%	37,74%	41,10%	15,12%	-16,36%	-22,96%	13,03%	-43,52%	97,98%	73,44%	100,00%					
MSCI BRIC	15,36%	-0,63%	1,19%	3,31%	4,20%	50,42%	40,68%	17,48%	-5,98%	-17,18%	26,00%	-35,47%	67,29%	78,20%	69,59%	100,00%				
VIX	-5,57%	18,90%	16,48%	12,78%	13,28%	-32,97%	-26,42%	-21,84%	22,12%	32,56%	-2,22%	48,94%	-74,19%	-57,55%	-69,84%	-51,98%	100,00%			
EUR AGG	11,15%	8,50%	-0,21%	8,22%	42,31%	-4,41%	13,36%	1,68%	8,81%	20,74%	25,59%	25,07%	9,72%	20,27%	10,61%	15,63%	-2,07%	100,00%		
PAN EUR	11,12%	13,37%	3,68%	11,15%	43,12%	-1,35%	11,98%	2,43%	9,16%	20,92%	41,20%	26,48%	9,72%	24,51%	11,10%	20,60%	-2,81%	95,81%	100,00%	
PAN US	3,16%	13,26%	9,75%	9,24%	44,16%	-9,88%	-3,88%	-8,77%	44,90%	52,53%	35,32%	62,81%	-22,58%	-3,75%	-20,91%	-12,07%	26,49%	54,67%	57,76%	100,00%
	BTC	ETH	LTC	XRP	GOLD	IND MET	WTI	GRAIN	EUR	CHF	GBP	JPY	NASDAQ	EUR SX5E	S&P500	MSCI BRIC	VIX	EUR AGG	PAN EUR	PAN US
	Crypto-currency				Commodity				Currency				Equity				Volatility	Bond		

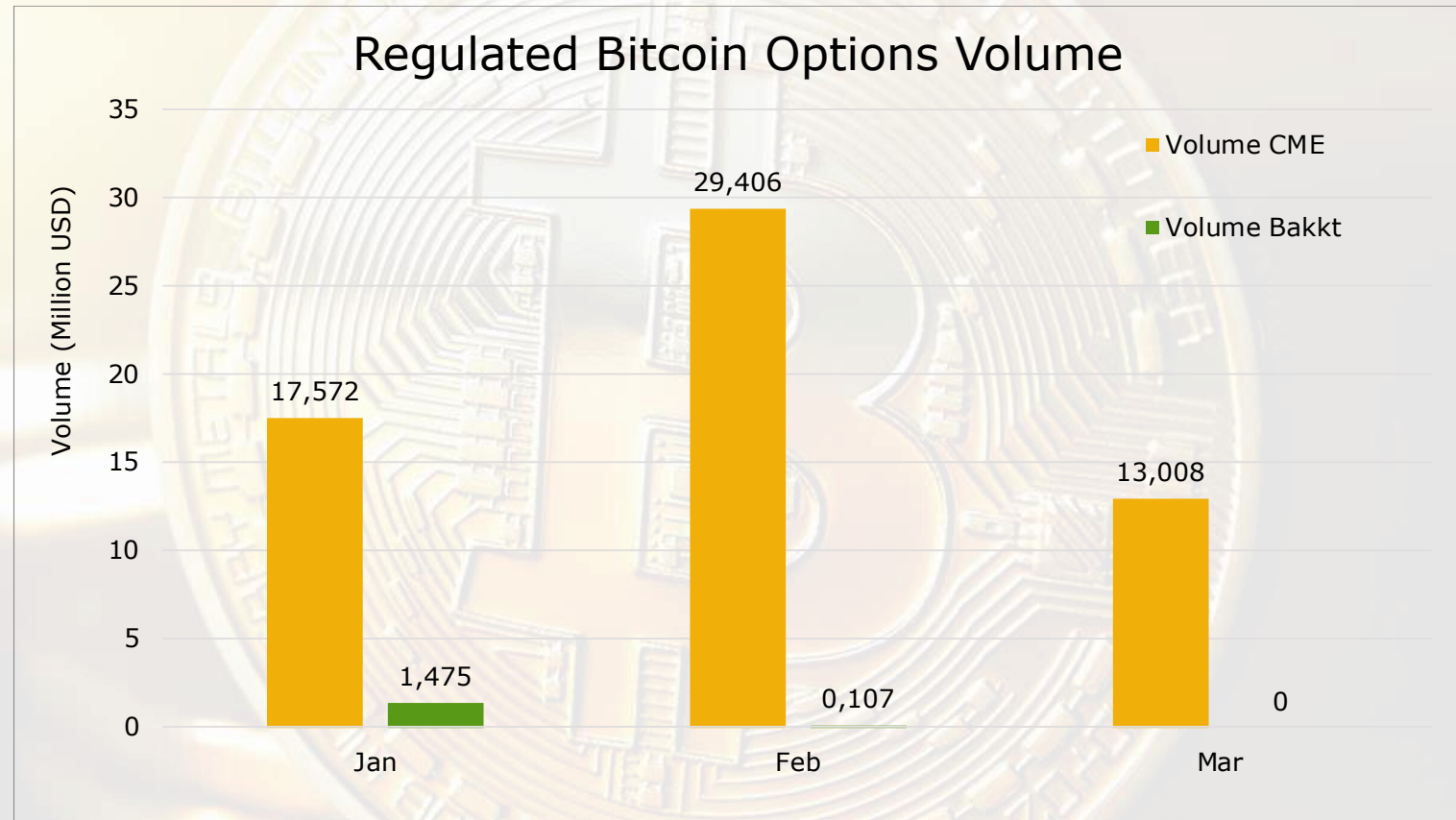
Bitcoin Listed Futures

- Record traded volumes in January for both Bakkt and CME
- CME Futures hit \$100B traded volume since 2017
- Drop in volume starting from mid February due to Covid-19
- CME is market leader



Bitcoin Listed Options

- CME launched listed Bitcoin options in January, joining Bakkt
- CME traded volumes are significantly higher than Bakkt
- Bakkt options saw zero volume in March



Bitcoin ETF

- SEC reopened the previously rejected Bitwise's Bitcoin ETF proposal. The proposal was rejected because it did not meet legal requirements to prevent market manipulation or other illicit activities
- Bitwise has requested the withdrawal of the proposal in January to prepare new documentation
- SEC has rejected Wilshire Phoenix Bitcoin ETF proposal, because of the risk of market manipulation or other illicit activities.

The Bitwise logo consists of the word "Bitwise" in a white serif font, centered within a solid black square. This square is positioned over a large, faint background image of a Bitcoin coin.

Bitwise

The Wilshire Phoenix logo features a stylized blue flame icon to the left of the company name "Wilshire Phoenix" in a blue sans-serif font. The logo is placed over the same Bitcoin background.

Wilshire Phoenix



2. TECHNOLOGY

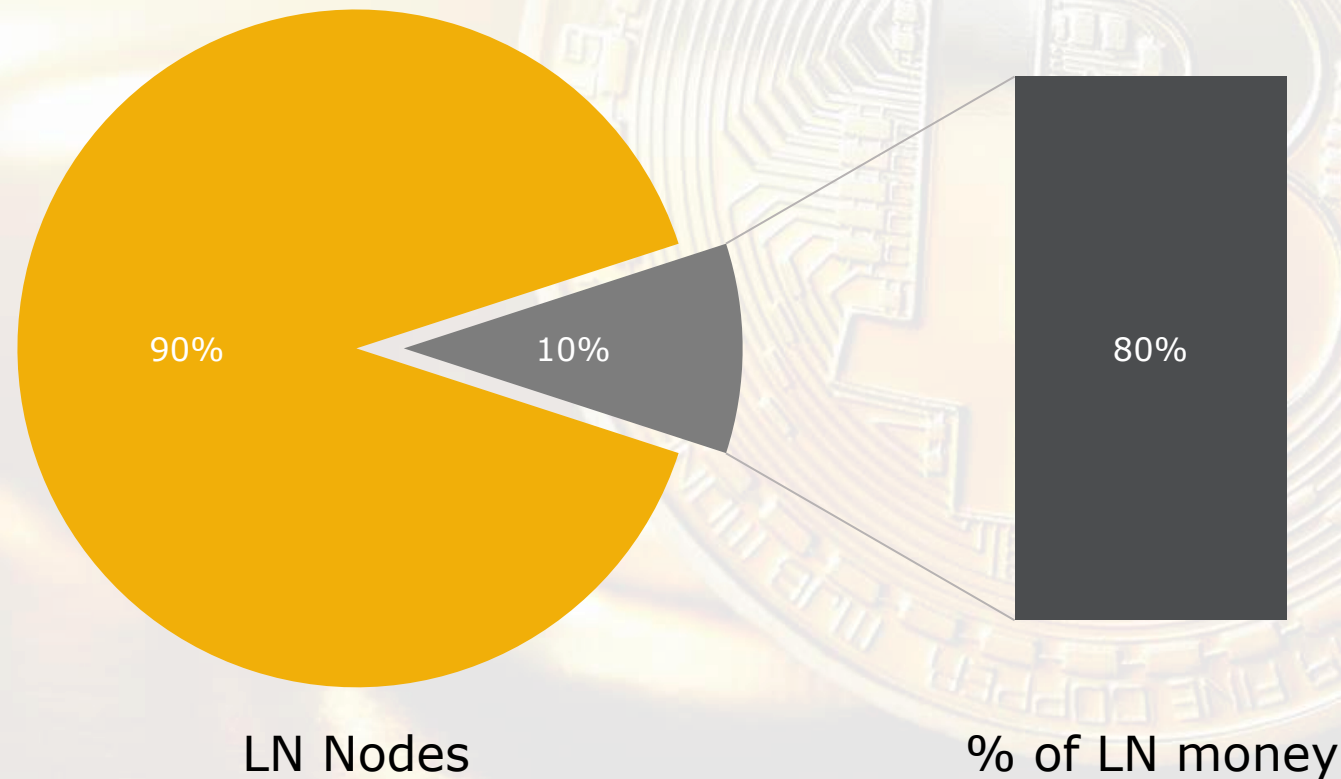


Bitcoin - Protocol Update

- On January 22, Core developer Pieter Wuille submitted BIPs for Schnorr Signature and Taproot
- **Ongoing discussion** about how to activate these changes in Bitcoin Core
- Two alternatives:
 - BIP9: 95% of miners must approve the changes
 - BIP8 (UASF): all the actors of the ecosystem can vote
- Core Developer Matt Corallo proposed a **mixed solution**: BIP 9 at the beginning, then, if it failed over the course of a year due to "unreasonable objections," users could debate and regroup over a period of six months. After that, if the change is something the community wants, they can try BIP8 over the period of another year

Bitcoin - Lightning Network

- Jian-Hong Lin, Kevin Primicerio, Tiziano Squartini, Christian Decker and Claudio J. Tessone published a research "Lightning Network: a second path towards centralisation of the Bitcoin economy"
- 10% of active nodes hold more than 80% of total money



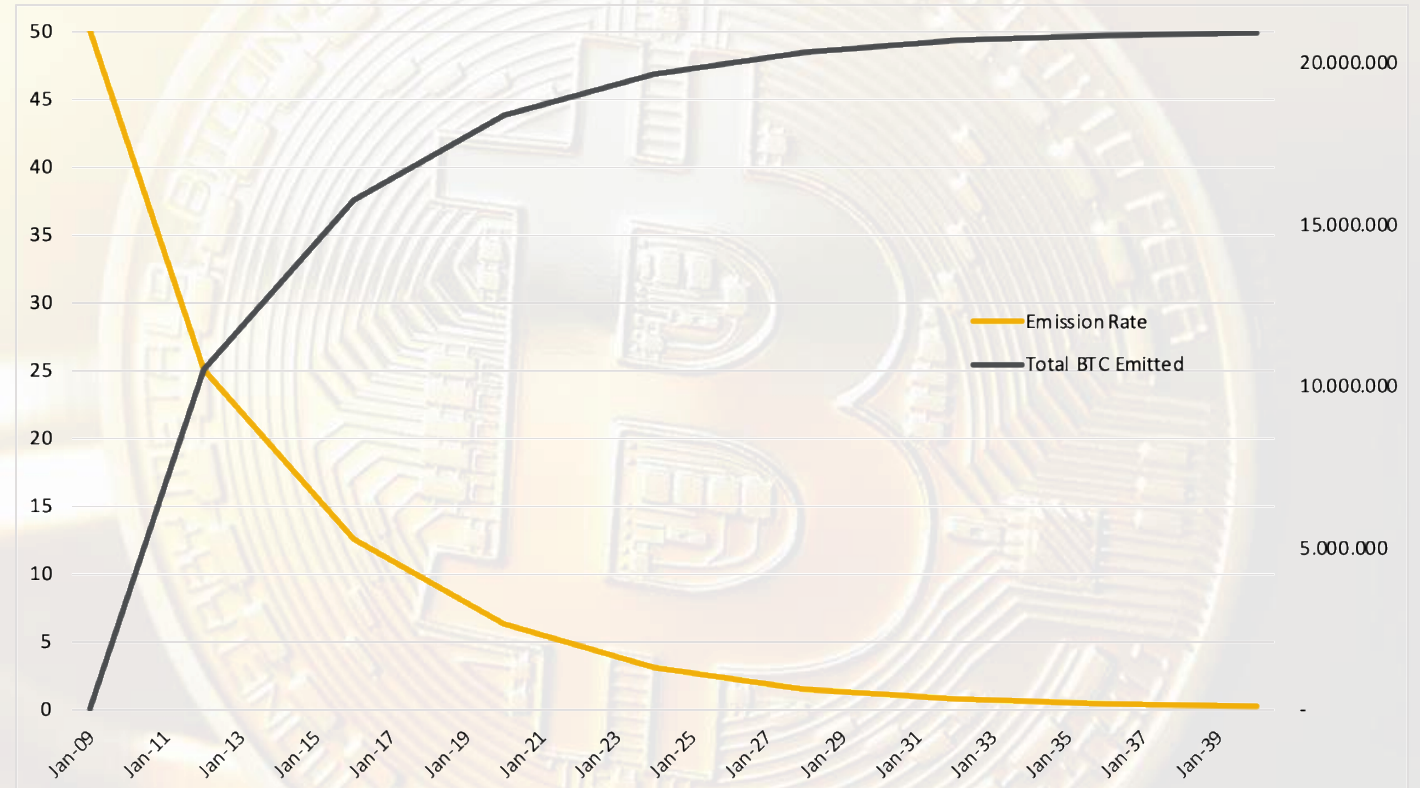
Bitcoin - Mining (1/2)

- Second worst negative adjustment for difficulty rate due to price drop
- Many miners have turned off unprofitable mining hardware



Bitcoin - Mining (2/2)

- Every 210,000 blocks (about 4 years) issuance rate halves
- In May Bitcoin issuance rate will decrease from 12.5 BTC/block to 6.25 BTC/block



Blockchain – Algorand and AVA

Algorand:

- Silvio Micali, Turing Prize winner
- MIT
- Raised \$200m
- Platform for the Marshall Islands digital currency



Avalanche / AVA

- Emin Gün Sirer, Initiative for Cryptocurrencies and Smart Contracts
- Cornell University
- \$6M
- AVA Labs just moved its offices to Manhattan

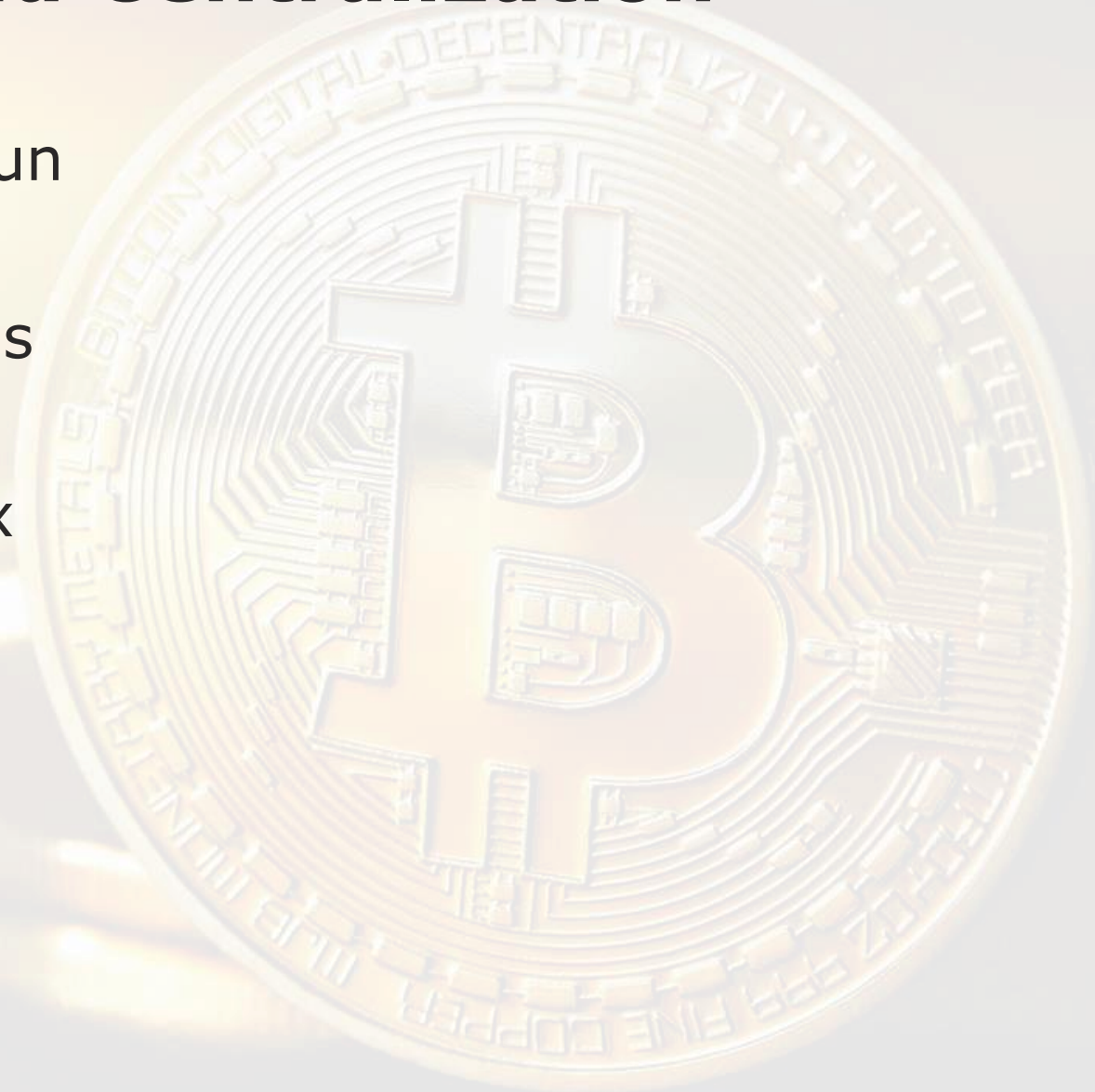


Altcoin – Ethereum Update: Muir Glacier

- Muir Glacier: hard-fork just one month after Istanbul
- Proof-of-Work, Proof-of-Stake
- ProgPoW for ASIC-resistance
- Caspar Labs and CryptoKitties are moving to dedicated blockchain
- Plasma -> Optimism
- JP Morgan Quorum / ConsenSys / Microsoft / Ernst & Young: *Baseline Protocol*

Altcoin – Control and Centralization

- Steem bought by Justin Sun
- IOTA suspended operations
- Bitcoin Cash developer tax





3. REGULATION



Libra

- Out: Vodafone
- In: Shopify and Tagomi
- Not listed among Facebook's 2030 priorities
- Multi stablecoin design



Central Bank Digital Currency

- Bank of Canada: CBDC only if Libra happens
- ECB: interested in CBDC, not against private initiative
- BIS working group: Central Banks of CAD, CHF, EUR, GBP, SEC, YEN
- Powell (FED): digital USD might happen

ESMA, Consob, G20, and BaFin

- IOSCO, WEF
- ESMA
 - Consultation about a framework for crypto markets
 - CDF 2:1 max leverage
 - Crypto among the key priorities for 2020-2022
- Consob: presented results of its consultation on January 2, 2020
- G20 / FATF-GAFI: travel rule
- BaFin: bitcoin as financial instrument



4. ECOSYSTEM



Crypto-asset Custody (1/2)

- Gemini:
 - Captive insurance company, \$200M
 - SOC 2 Type 2 and Type 1 certification from Deloitte
- Coinbase:
 - SOC 1 Type 2 and SOC 2 Type 2 certification from Grant Thornton
 - Coinbase International Ltd in Dublin for European clients



Crypto-asset Custody (2/2)

- Julius Bear partnership with SEBA Bank to offer crypto services to its clients
- Hype (Banca Sella) now offers the possibility to buy Bitcoin directly from their app, thanks to a partnership with italian startup Conio



Traditional Finance and DeFi

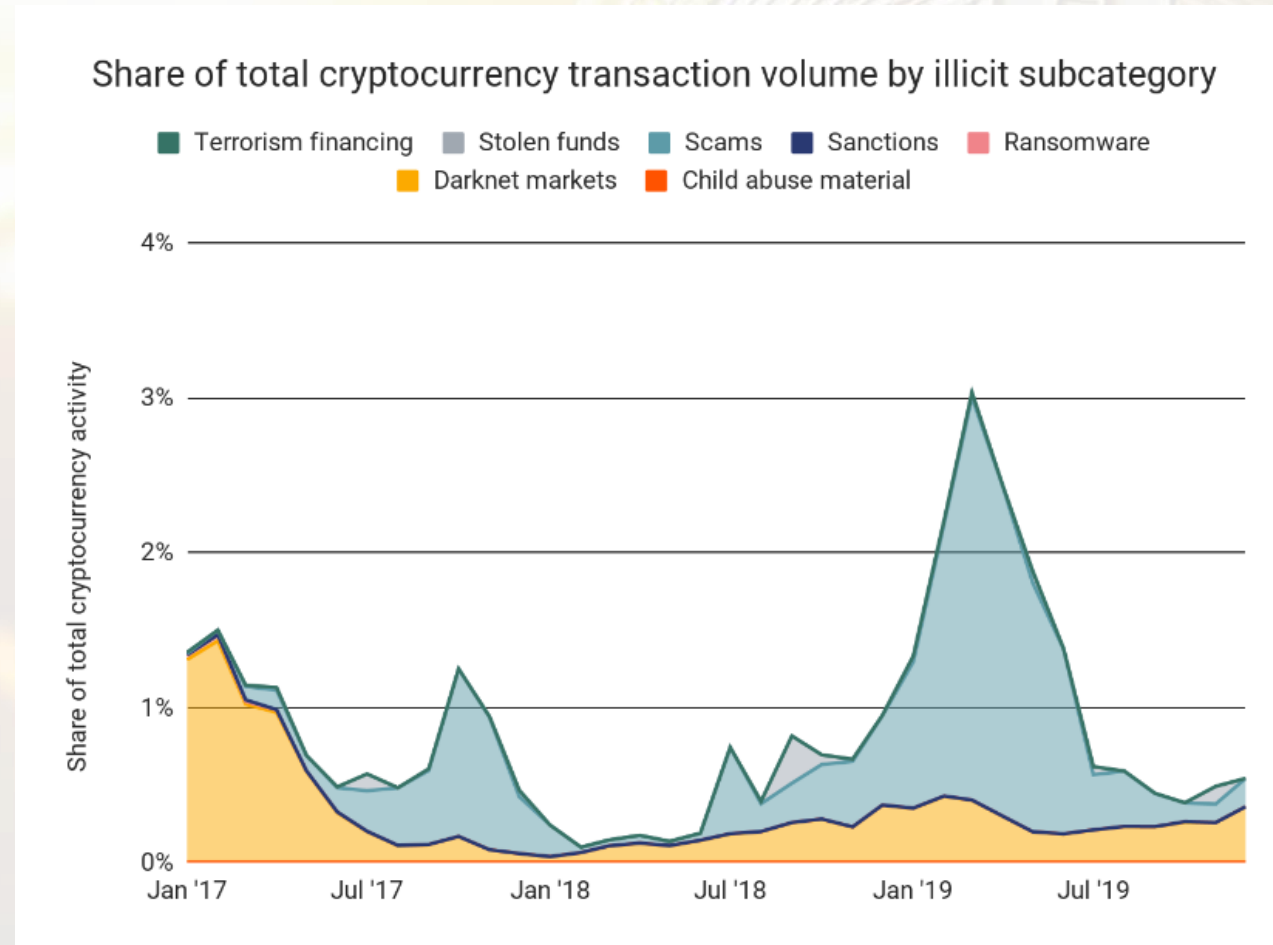
- **Paxos** and **Credit Suisse**: liquidity settlement against shares using blockchain
- **Bank von der Heydt**: stablecoin for financial instruments as tokens on the blockchain
- **HSBC**: private placement of \$10B on the R3 Corda blockchain
- **DeFi**: financial smart contracts, such as *flash loans*



Learning from failures?

Chainalysis and Criminal Activity

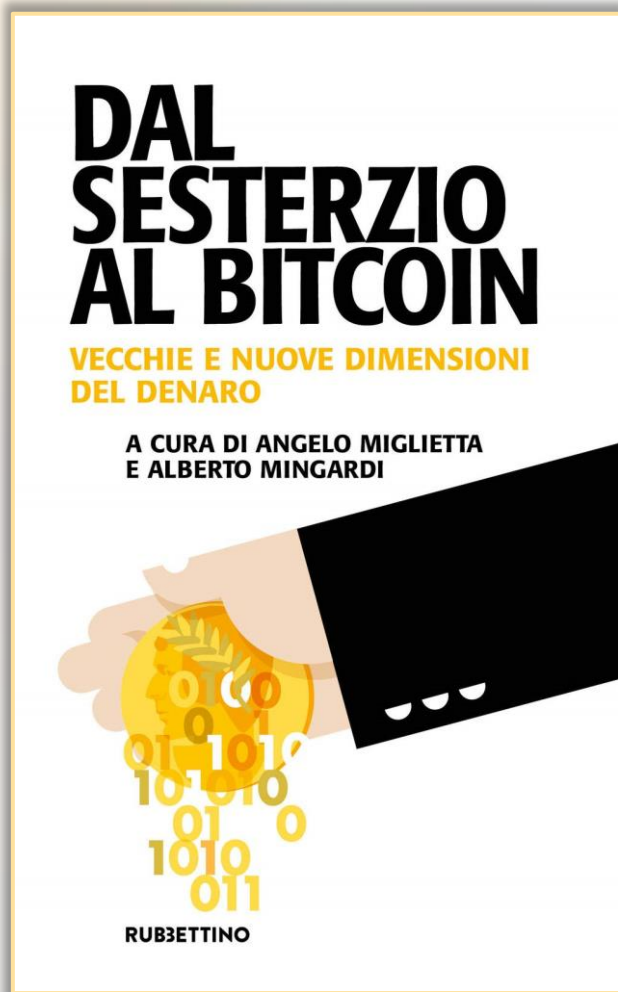
Crypto Crime Report 2019: only 1% of \$1B in crypto transactions are connected to illicit activities





5. UPDATES FROM THE INSTITUTE

Research Activity: a New Publication



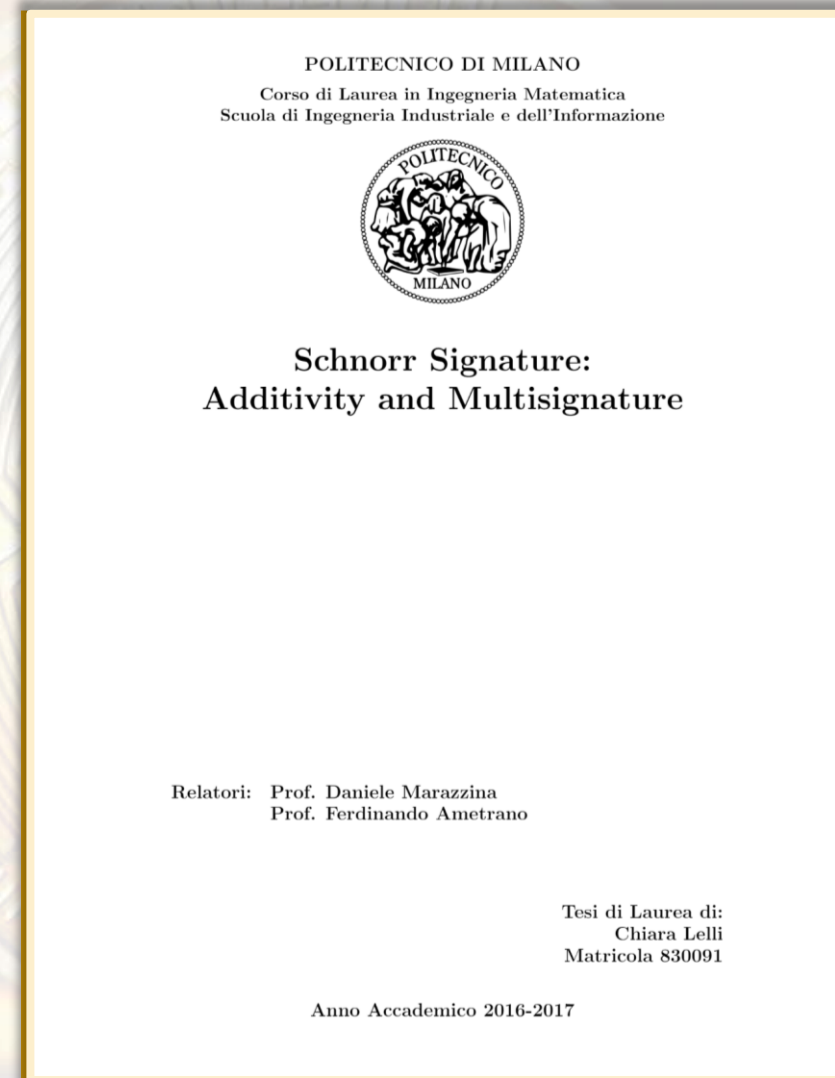
“ *A genuine and fruitful intellectual provocation: money is an instrument of freedom and a vector of open society* ”

Blockchain Thesis Award

Schnorr Signature: Additivity and Multisignature

by Chiara Lelli
(first DGI *alumna*)

Winner of the 2017/2018
Blockchain Thesis Award



42: Puzzle Solved!

- 1954: express $k \in \mathbb{N}$ in terms of $x, y, z \in \mathbb{Z}$

$$k = x^3 + y^3 + z^3?$$

- Solutions available for every number (<100), but 33 and 42
- 2019: Andrew Booker finally solved 33
- 2020: A. Booker and A. Sutherland solved the elusive 42 puzzle
 $42 = -80538738812075974^3 + 80435758145817515^3 + 12602123297335631^3$
- 1983: *The Hitchhiker's Guide to the Galaxy*, Douglas Adams
42 is the answer to the fundamental question about life



21 million  **bitcoin**

Save The Date

Bitcoin and Blockchain

April 21-22

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

CAL2020

September 16

<https://cryptoassetlab.di.seade.unimib.it/cal2020/>

2020-Q2 Report Presentation

July 7

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

Bitcoin, blockchain e crypto-assets: impatti nei settori finanziari e assicurativi

September 15

<https://www.lseg.com/it/Blockchain2020>



Bitcoin and Italian Tax Declaration

Guest speaker:

Francesco Avella

*Tax advisor and litigator at Studio Avella
Member of the Editorial Board of European Taxation*





Digital Gold Institute

Scarcity in the Digital Realm

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