

January 19

2022



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.



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.

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.



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-networth 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.

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</u> <u>Technology</u> course taught at Milano-Bicocca and other universities.

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.

>>>

Development

We <u>write code</u> and love to get our hands dirty in programming and technology.

Check out our <u>OpenTimestamps calendar</u> free facility and <u>btclib</u>, an open-source Python library intended for teaching/learning/using bitcoin, its blockchain, and the associated elliptic curve cryptography.

Advisory and Training for Institutions, Consultancies, and Private Firms

Selected current and past collaborations

















Deloitte.















Agenda

Market

Ecosystem

Regulation

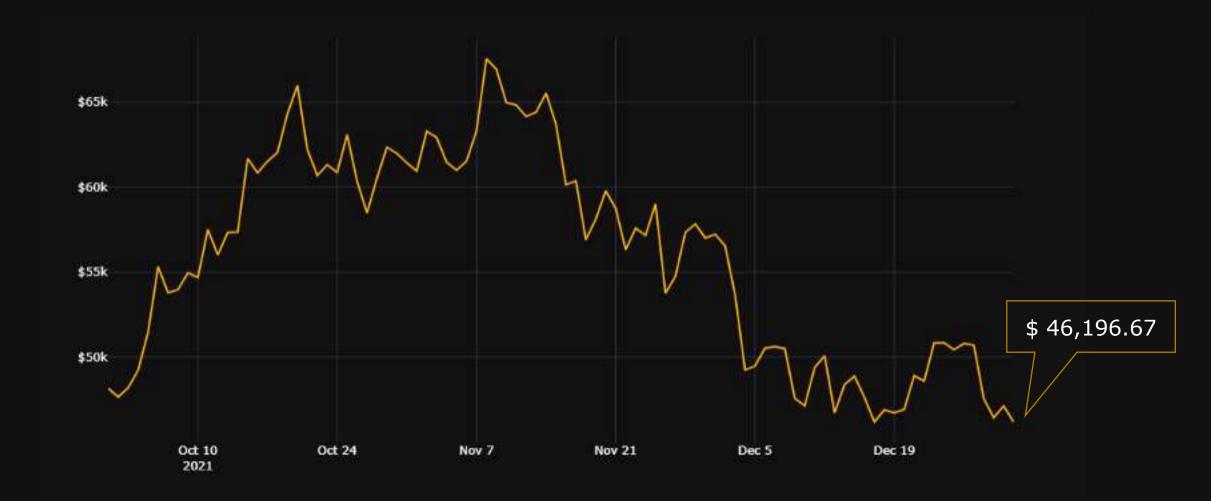
Technology

The Institute

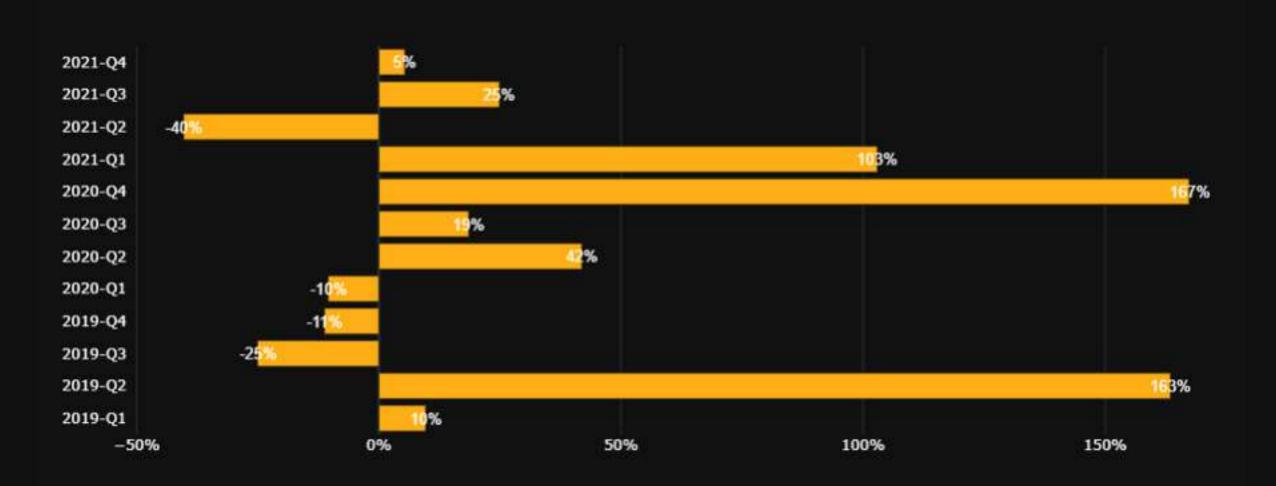




Bitcoin Performance (2021 Q4): +5.47%



Bitcoin Quarterly Performances



Bitcoin Yearly Performance



Bitcoin Minimum Prices

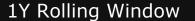


Volatility of Best Performing Assets





Asset Class Correlation With Bitcoin



Correlation at 31

Dec 2021

-3.23%

26.14%

6.45%



0.62%

1.45%

-10.54%

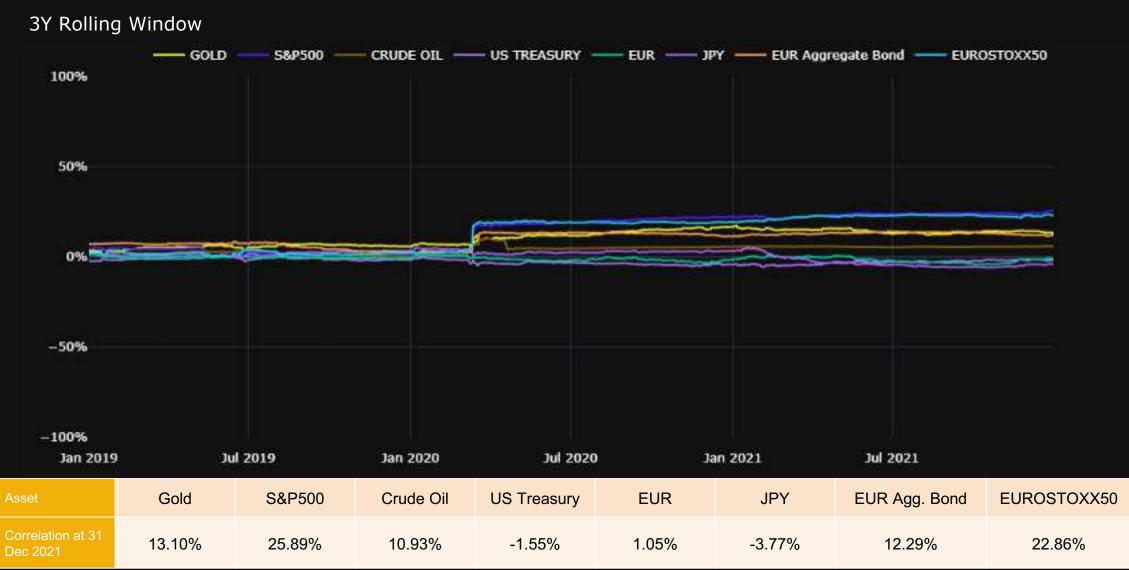
4.42%

22.94%

Asset Class Correlation Matrix

17															
81C	100.00%													Corr = 1009	X .
GOLD	-3.23%	100,00%												Corr = -100	Y6
COPPER	22.86%	29.06%	100.00%												
CRUDE OIL	6.45%	4.09%	31,58%	100.00%											
CORN	7.99%	7.51%	15.77%	15.04%	100.00%										
EUR	1.45%	10.16%	4.85%	1.22%	-9.57%	100.00%		_							
GBP	-0,28%	3.65%	4.82%	3.79%	-6.82%	65,55%	100.00%	o.							
JPY	-10.54%	9.07%	3.17%	0.20%	-6.50%	49.84%	28.49%	100.00%							
CHF	3.35%	16.25%	2.94%	-3.52%	-10.40%	80/08%	49,799	52.23%	100.00%						
NASDAQ	27.52%	6.27%	22.79%	19.74%	2.90%	-6.70%	-13.89%	-5.81%	-3.09%	100.00%		_			
S&P500	26.14%	6.39%	30.51%	33.97%	2.67%	-5.62%	13.00%	-6.01%	-3.47%	89.30%	100.00%	a			
FUROSTOXX50	22.94%	6.34%	19.35%	30.86%	0.00%	-3.14%	-7.76%	-4.73%	5.53%	40.18%	51.52%	100.	00%		
VIX	-26.97%	-5.33%	-26,49%	-33,48%	-0.62%	7.49%	14.50%	7.21%	3.12%	-73.12%	-84,039	-52	16% 100.00	₩a	
US TREASURY	-0.62%	26.99%	-13.45%	-25.73%	-10.44%	-8.11%	-11.35%	2.52%	-7.20%	5.76%	-6.57%	i -19.	11% 11.33	% 100.00	%
PAN LUR	4.42%	14.94%	-6.04%	-21.29%	-1,96%	-1.81%	-10.079	11.28%	2.48%	9.11%	1.09%	-6.	72% 6.27	% 51,4/	% 100.00%
	BTC	GOLD	COPPER C	RUDE OIL	CORN	EUR	GBP	JPY	CHF	NASDAQ	S&P500	EUROSTO	KX50 VIX	US TREASU	Y PAN EUR
	Crypto Commodity				Currency				Equity			Volatili	ly B	ond	
Asset	Gold	Copper	Crude	Corn	EUI	₹ (SBP	JPY	CHF	NASD	A El	JRSTOX	VIX	US	PAN
		осррс.	Oil					•	.	Q		X		Treasury	EUR
Convolation at	0.000/	00.000/	0.4504	= 0000		50 /	0.0004	40.540/	0.050	07 =	201	00.040/	00.0=0	0.0001	4.4004
Correlation at 31 Dec 2021	-3.23%	22.86%	6.45%	7.99%	1.4	.5% -	0.28%	-10.54%	3.35%	27.52	2%	22.94%	-26.97%	-0.62%	4.42%
														4.2	/54

Asset Class Correlation With Bitcoin

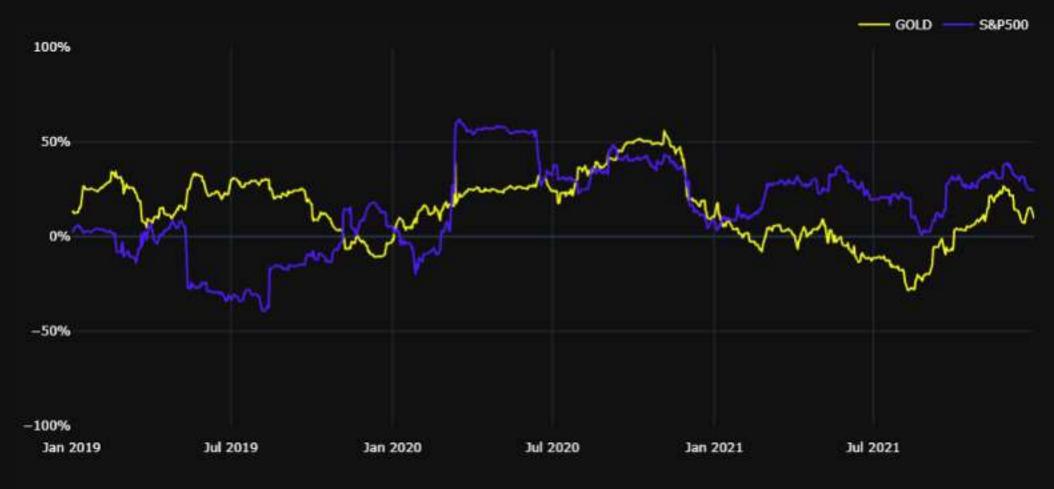


Asset Class Correlation Matrix

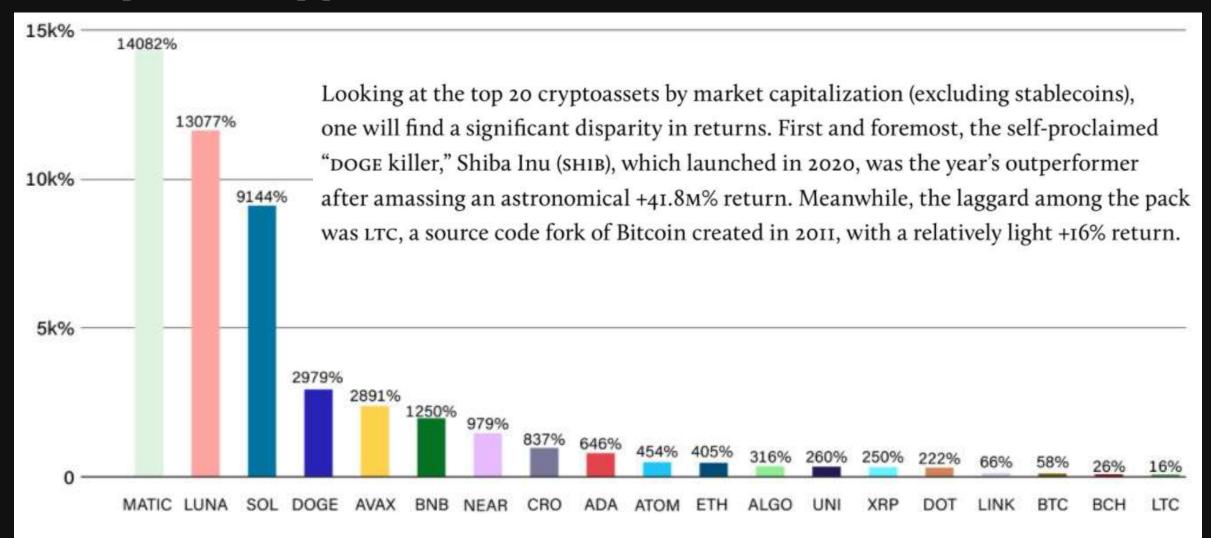
3Y																
BIC	100.00%													Corr =	100%	
GOLD	13.10%	100.00%												Corr =	100%	
COPPER	15.42%	13.88%	100.00%													
CRUDE OIL	5.93%	2.22%	11.63%	100.00%												
CORN	7.68%	5.64%	12.55%	11.23%	100.00%											
EUR	-1.05%	5,19%	3.75%	-0.91%	-2.66%	100.00%										
GBP	-6.83%	0.48%	-0.27%	-1.08%	-3.14%	55.47%	100.009	6								
JPY	-3,77%	5.87%	0.64%	-2.72%	-5.34%	44.37%	24.969	6 100.00%								
CHF	-0.94%	9.00%	2.66%	-2.37%	4.79%	80.21%	43.519	6 56.34%	100.00%							
NASDAQ	27.42%	10.78%	28.34%	13.57%	9.52%	5.56%	-2.939	6 4.37%	1.08%	100.00%						
S&P500	25.89%	9.63%	30.98%	15.86%	10.57%	7.11%	-1.309	6 4.52%	1.11%	94.38%	100.00%					
EUROSTOXX50	22.86%	5.68%	30.70%	10.64%	9.00%	-3.98%	-2.289	6 -18.53%	-7.85%	57.41%	65.95%	100.00%				
VIX	-20.41%	-0.23%	-29,22%	-12.93%	-8.13%	3.65%	2,249	6 3.27%	5,22%	-70.50%	-69,82%	-49.60%	100.00%			
US TREASURY	-1.55%	26.35%	-16.85%	-8.39%	-10.24%	-0.79%	-1.179	6.17%	2.79%	-28.42%	-36.53%	-30.15%	27.14%	10	00.00%	
PAN EUR	12,29%	24.45%	-1.03%	4.78%	5.35%	4.65%	-6,499	6.50%	2,72%	19.86%	18,15%	14.20%	-5.13%	4	42.13%	100.00%
	BTC	GOLD	COPPER C	RUDE OIL	CORN	EUR	GBP	JPY	CHF	NASDAQ S	88P500 EURO	STOXX50	VIX	US TRE	ASURY	PAN EUR
	Crypto	Crypto Commodity				Currency				Equity			Volatility	olatility Bond		
	0-1-1	0	0	0			ODD	IDV	OUE	NAODAG	FUDOTO	/// \/\	,	US	DAN	ELID
Asset	Gold	Copper	Crude Oil	Corn	EUF	₹	GBP	JPY	CHF	NASDAC	Q EURSTO	(X VIX		easury	PAN	EUR
Correlation at																
31 Dec 2021	13.10%	15.42%	5.93%	7.68%	-1.05	% -6	6.83%	-3.77%	0.94%	27.42%	25.89%	-20.4	1% -1	.55%	12.2	29%

Asset Class Correlation With Bitcoin

1Q Rolling Window



Top 20 Cryptoassets - Returns



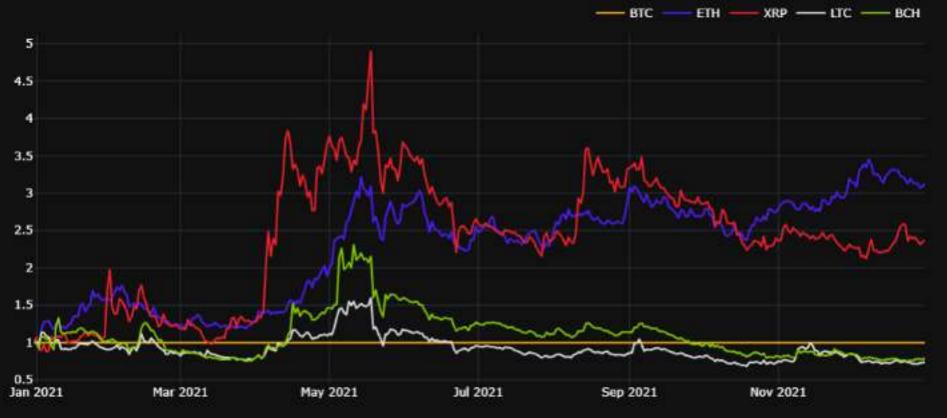
Source: Kraken Intellegence, Cryptowatch (SHIB not included for visualization purposes)

Altcoins vs Bitcoin (2021 Q4)



Altcoin	Performance
ETH	16.22%
XRP	-17.39%
LTC	-9.54%
ВСН	-18.82%

Altcoins vs Bitcoin (1Y)



Altcoin	Performance
ETH	212.54%
XRP	136.44%
LTC	-26.37%
ВСН	-21.30%

Altcoins vs Bitcoin (3Y)

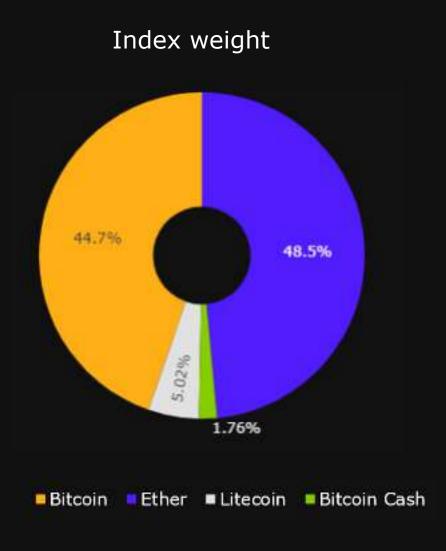


Altcoin	Performance
ETH	124.58%
XRP	-81.00%
LTC	-60.81%
ВСН	-76.75%

DGI Crypto Index Weights (Q4 2021)

- Weighted by trading volume,
 Bitcoin accounts for about the
 45% of the index composition
- Exchanges considered:





Altcoin Correlation With Bitcoin



Altcoin Correlation With Bitcoin

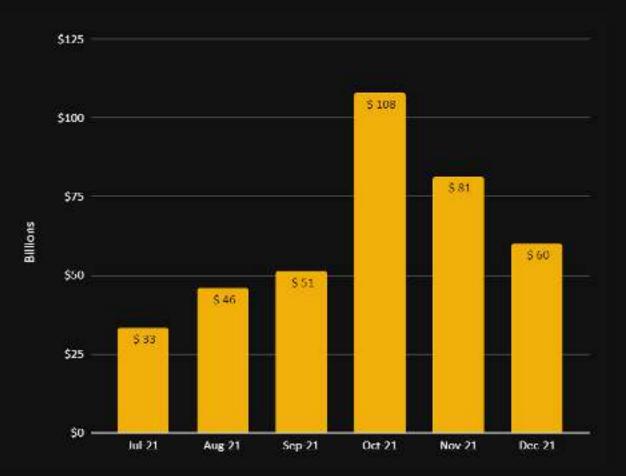
3Y Rolling Window

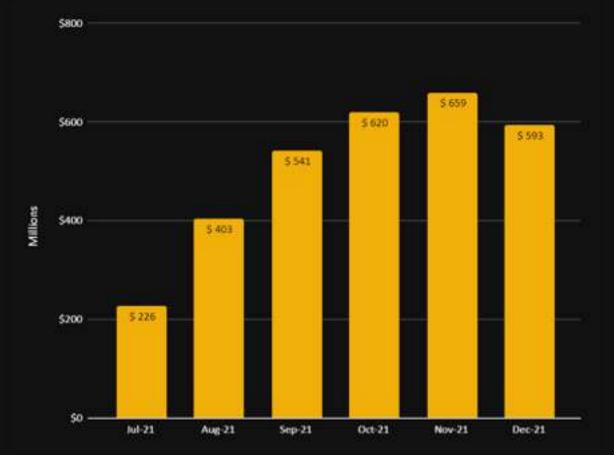


Bitcoin Listed Derivatives



CME Options Volume





ETF and Micro Ether Futures

- Approved the first Bitcoin Futures ETF, issued by ProShares Bitcoin Strategy
- About \$981 million of shares changed hands over the first session, making it the second-most highly-traded ETF debut ever
- Micro ether futures contracts introduced on the Chicago Mercantile Exchange (CME) on the 6th of December, had a slower start than the bitcoin equivalents that began trading in May
- Micro contracts are sized 1/10th of one ETH, while standard contracts represent 50 ETH and are widely considered a proxy for institutional participation.





ECOSYSTEM

2021: Crypto Went Mainstream

- Elen Musk, Michael Saylor
- Coinbase IPO
- Mining: resilient to the Chinese ban
- No crypto ban in the US according to Gensler and Powell
- Approved ETF on Bitcoin Futures
- Raising inflation: 7% US, 5% EU
- Bitcoin receives legal tender in El Salvador
- Taproot
- NFT / DeFi





2022 According to the Crystal Ball

- EU MiCA
- US regulatory regimes might impact on DeFi and stablecoins
- NFT craze will cool down
- Bitcoin will become mainstream financial investment in EU too

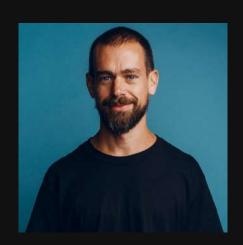


Metaverse and NFT

- Facebook rebranded the company into Meta
- The metaverse is "going to be a big focus" Zuckerberg told. "And I think it's going to be the next big chapter for our company too, really doubling down in this area."
- NFT could play a central role in Metaverse



Jack Dorsey: Bitcoin All-In



- Jack Dorsey resigned from his role of Twitter's CEO to focus on his other company, Square that on December changed its name into Block
- Jack, referring to Bitcoin told that "I don't think there's anything more important in my lifetime to work on, and I don't think there's anything more enabling for people around the world"



 Block is representative of his full commitment on Bitcoin and between other goals the company pushes for building a DeFi applications for bitcoin, entering the mining business and making Bitcoin custody more mainstream

El Salvador and the Bitcoin City



 Nayib Bukele, president of El Salvador, has revealed the plan for a 7,466-hectare 'Bitcoin City', which will be built in the Southeast of the Central American country

- The city will be developed at the base of Conchagua volcano. Thanks to its geothermal power it will provide of energy the whole power grid of the city, making possibile the bitcoin mining
- To fund the project El Salvador announced the issue of "Bitcoin Bond": 10 years national bond covered at 50% by Bitcoin
- The bond will be issued using Liquid, the Bitcoin sidechain developer by Blockstream and listed on Bitfinex

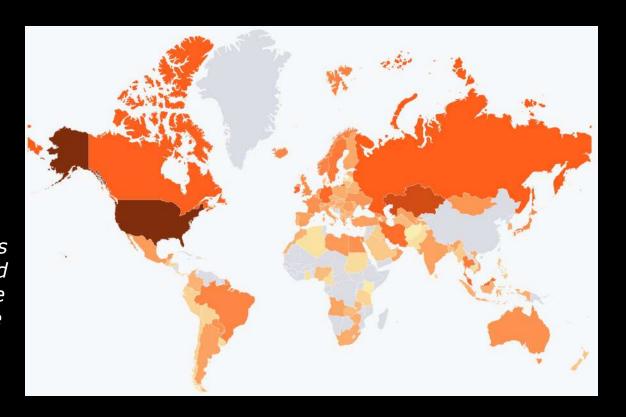


Power Consumption and Sustainability

Bitcoin Mining Map:

- 35% USA
- 18% Kazakistan

Newsweek report: "Yes, Bitcoin miners use energy to mine Bitcoin. This is indisputably true, but what's missing is that miners pay for their energy use. And as with any trade of energy for technology—a plane flight, a car ride, a phone charge—those paying the cost must feel they're getting their money's worth. With planes, cars and phone batteries, we've accepted the trade-offs—and so we should with Bitcoin. Even in its early innings, the world's premier cryptocurrency has created a trillion dollars in global wealth, brought jobs and investment to rural communities and given millions of people the ability to help secure their families' financial futures."



Binance

- Regulators have scrutinized Binance in the recent months aiming at its opaque structure and resulting in banning activities and warning clients
- Zhao, the company CEO, continues with his proposal to improve relations with regulators by changing his decentralized structure, as he said that he feels the urge to have a "legal entity structure behind"
- Binance, as a result plans to establish headquarters in different parts of the world, the latest example sees Ireland as Europe HQ



Tether





- October has seen Tether lending a billion to Celsius using Bitcoin as backed asset
- The stablecoin continues to struggle over its backed reserve and, reading the inquiry from Bloomberg, the mystery of "how is backed, or if it's truly backed at all"
- Tether replied attacking Bloomberg and claiming that "all Tether tokens are fully backed, as we have consistently demonstrated"
- Notwithstanding the company position, CFTC fined Tether and Bitfinex over the stablecoin backing
- In this scenario other fully backed stablecoins competitor as USDC and Circle start to threaten Tether

CheckSig completes new €1.5M funding round

- After a first seed of € 1M, on 22 December CheckSig announced a new round of business angels for € 1.5M, at a post-money valuation of € 20M.
- The shareholder structure of the company today sees among the shareholders The Rock Trading (the longest running euro / bitcoin exchange in the world), Intesi Group (among the Italian leaders in digital signature), and several business angels with relevant experience in the financial services and consulting.
- CheckSig offers crypto services for private and institutional investors



REGULATION

Digital Euro 1/2

European Central Bank Launches 24-Month Investigation into Digital Euro



Christine Lagarde ECB President

"Our work aims to ensure that in the digital age citizens and firms continue to have access to the safest form of money, central bank money."



Fabio Panetta ECB Executive Board

"If the central bank gets involved in digital payments, privacy is going to be better protected... because we are not like private companies, we have no commercial interest in storing, managing or monetizing the data of users."

Digital Euro 2/2



A Digital Euro aims to:

- lead to "a fundamental change in the way in which payments, the financial system and society at large will function"
- protect consumer privacy
- combat the spread of digital coins created by other nations and companies
- maintain the autonomy of domestic payment systems and the international use of a currency in a digital world
- competing cryptocurrencies that could undermine the bloc's monetary sovereignty
- prevent illicit activities and avoid any "undesirable impact on financial stability and monetary policy"

SEC on Crypto Regulation



Gary Gensler Chair of the U.S. Securities and Exchange



Jerome Powell Chair of the Federal Reserve

- In December, the American Congress hosted a hearing with some CEO from top crypto companies as witnesses; this event aimed to keep track of a constant evolving ecosystem in which the regulator must intervene with clear regulation
- Fed Chair Powell said accordingly that a well-regulated crypto industry could do a lot of good for mainstream finance and that cryptos are not a threat to financial stability

SEC Oversights the Crypto Ecosystem

- Areas of focus for SEC's regulation purposes are:
 - Platforms for crypto trading and lending
 they provide direct access to millions of investors with no
 intermediate broker andabsent clear investor protection obligation
 on these platforms. Therefore, the investing public is vulnerable.
 - Stablecoins
 the use of stablecoins on trading platforms may facilitate those seeking to sidestep public policy suck as anti-money laundering, sanctions, and more."
 - Decentralized Finance (DeFi)
 even though they are decentralized, DeFi projects that reward
 participants with incentives or digital tokens could enter territory
 that is subject to SEC regulation

Italian Tax Regulation: Proposals

- Imponibilità delle plusvalenze ai fini IRPEF
- Imponibilità subordinata al possesso di cripto per un controvalore superiore a €51.645,69 per almeno 7 giorni lavorativi continui
- Nessuna rilevanza per il concetto di "prelievo" di valute virtuali
- Rilevanza fiscale delle sole operazioni che comportano pagamento o conversione in valute fiat
- Determinazione della plusvalenza imponibile in mancanza di documentazione del costo di acquisto (con criteri analoghi a quelli già adottati nel TUIR in riferimento ai metalli preziosi)
- Nessun obbligo di monitoraggio se il valore massimo complessivo nel periodo d'imposta non è superiore a 15.000 euro
- Non imponibilità delle valute virtuali ai fini IVAFE





https://www.senato.it/japp/bgt/showdoc/18/Emendc/1324002/1329212/index.htm

https://www.camera.it/leg18/126?idDocumento=3131

TECHNOLOGY

Mining: New All-Time High



- China ban for cryptos back in May caused the Hash Rate to tumble by over 50%
- China had around 70% of the total mining power and the forced halt caused a temporary global shock
- Since July, the mining power has experienced a constant recovery reaching a new All-Time high in December
- The China ban did not affect the mining industry, indeed it just caused a relocation of the mining farms, especially to North America

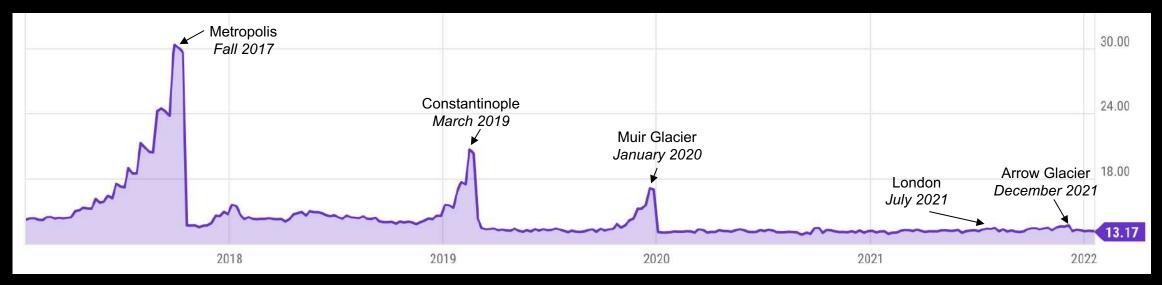
Taproot activated

- Sunday, Nov. 14, Taproot, the long-anticipated Bitcoin upgrade, activated at block 709,632, opening the door for developers to integrate new features that will improve privacy, scalability and security on the network.
- Taproot is a Bitcoin protocol upgrade deployed as a backward- compatible soft fork. **Taproot expands Bitcoin's smart contract flexibility**, while offering more privacy by letting users mask complex smart contracts as a regular bitcoin transaction.
- This is the biggest protocol update since SegWit (August 2017)



Ethereum: Another Difficult Bomb Delay

- The Arrow Glacier network upgrade pushed back the difficulty bomb by several months: is now expected
 to occur around June 2022.
- This is the only change introduced in this upgrade
- The difficulty bomb will, by design, make mining on Ethereum uneconomical and difficult to do. This
 feature motivates the development of Ethereum 2.0 and will force miners to change over to the new
 Proof of Stake blockchain.
- The first difficulty bomb was included in 2015 with its first hard fork "Frontier Thawing" with a
 deadline 18 months after the genesis block



Protocol Development: Bitcoin vs Ethereum



- 14 protocol updates
- Hard-fork: non backward compatible
- Defined roadmap driven by Vitalik Buterin and the Ethereum Foundation
- Migration to <u>Proof of Stake (PoS)</u>
 <u>and Ethereum 2.0 moved</u>
 <u>forward again to June 2022</u>



- 2 protocol updates
- Soft-fork: backward compatible
- Incremental updates, must be accepted by all actors of the ecosystem: developers, miners, users, investors, industries

THE INSTITUTE

The Most Relevant European Crypto Event



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

Media Appearances and Inteviews

Fintech e moneta digitale

Dec 17, 2021 | Staff



L'impatto della tecnologia digitale sulla finanza e sulla moneta: opportunità e rischi

Si svolge oggi il seminario "Fintech e moneta digitale. L'impatto della tecnologia digitale sulla finanza e sulla moneta: opportunità e rischi" organizzato da Banca d'Italia, in collaborazione con Università degli Studi di Catania, Confindustria

Catania, Consiglio Notarile di Catania e Caltagirone, Ordine dei Dottori Commercialisti e degli Esperti Contabili di Catania e Ordine Avvocati Catania.

Le cripto tornano a correre: Bitcoin in zona record storico

Nov 12, 2021 | Staff



Intervista a Ferdinando Ametrano su Class CNBC

Ferdinando M. Ametrano, direttore scientifico DGI, interviene in diretta su CLASS CNBC per lo speciale dedicato all'ultimo all-time high di Bitcoin.

Read more

Il futuro di Bitcoin

Nov 23, 2021 | Staff



Intervista a F. Ametrano e M. Boldrin

Bitcoin può essere una moneta? Oppure non c'è alcuna possibilità di fare a meno delle banche centrali?

Read more

Bitcoin, c'è la strada per non inquinare più: ecco come

Nov 22, 2021 | Staff



L'opinion di Ferdinando Ametrano su Agenda Digitale

Per Bitcoin e altre cripto, sostenibilità significa passare alle energie rinnovabili. I cambiamenti climatici ci impongono la transizione energetica in ogni attività, compresa quella del crypto mining. Ecco la strada.

Media Appearances and Inteviews

Criptovalute e moneta digitale. Rischio o opportunità?

Oct 8, 2021 | Staff



Webinar a cusa di Federconsumatori

Si è svolto oggi in live streaming il webinar **Criptovalute e moneta digitale. Rischio o opportunità?** promosso da **Federconsumatori** e **FEduF**, nel quale è intervenuto il direttore scientifico DGI **Ferdinando** M. Ametrano.

Read more

Un bitcoin più verde

Oct 1, 2021 | Staff



Produrlo consuma troppa energia? Non è vero: è una delle industrie più rispettose dell'ambiente e più attente alle fonti rinnovabili. Sostenitori e critici della criptovaluta si danno battaglia da tempo a colpi di dati. Chi ha ragione? E, soprattutto, in futuro sarà possibile una moneta digitale completamente green?

Eugenio Spagnuolo intervista Ferdinando M. Ametrano in un articolo

per Wired Italy.

Read more

Bitcoin è l'equivalente digitale dell'oro. Non scomparirà

Oct 26, 2021 | Staff



Intervista a F. Ametrano per HuffingtonPost

"Il Bitcoin è l'equivalente digitale dell'oro. Ma è fondamentale sapere come funziona, visto che rimarrà con noi e non è destinato a scomparire. Noi aiutiamo gli investitori a capirlo". Ferdinando Ametrano, fondatore e Ceo di CheckSig e direttore scientifico del Digital Gold Institute, ci accompagna nel far west delle criptovalute.

Read more

Se il fondo quotato è sui criptoderivati, cautela necessaria

Oct 19, 2021 | Staff



L'opinion di Ferdinando M. Ametrano su Il Sole 24 Ore

"Il future, usato in varie strategie, può non replicare i movimenti del sottostante". Ne discute Vittorio Carlini in un articolo su Il Sole 24 Ore, nel quale è ripotata l'opinion del direttore DGI Ferdinando M. Ametrano.

Read more

Next Training Sessions

Entry-level and Advanced Training

- Focus: Bitcoin, crypto-asset, blockchain, distributed ledger, smart contract, and cryptography
- Next session:
 - 15-16 March 2022
- www.dgi.io/workshop



CryptoWeek: Every Friday at 6PM

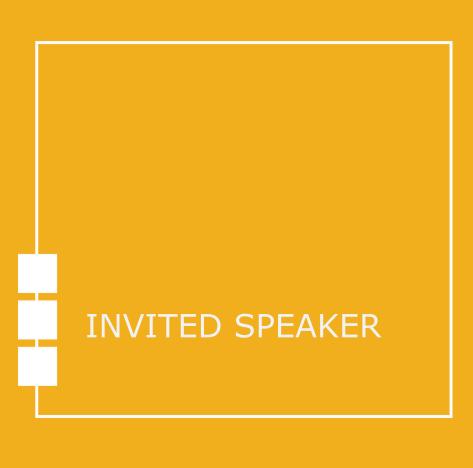
- The most relevant news about bitcoin, crypto-assets and blockchain commented weekly by Ferdinando M. Ametrano
- Live streaming:
 - YouTube
 - Facebook
 - LinkedIn
 - Twitter
- Also available as podcast
- www.dgi.io/cryptoweek



Sponsored by



www.dgi.io/cryptoweek 52/54



Guest Speaker



Maria Sterpeta Balzano
Director, Deloitte Risk Advisory

"Rischi ed opportunità delle tecnologie emergenti e delle cripto – Le due facce della medaglia"

Digital Gold Institute

Scarcity in the Digital Realm

Contacts:

www.dgi.io | info@dgi.io

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.