PRASOS

QUARTERLY REPORT

Q4 2019

in collaboration with dcresearch

CONTENTS

FOREWORDS

BITCOIN'S VALUE PROPOSITIONS TO INVESTORS

INDUSTRY OUTLOOK

MARKET CAPITALIZATIONS

STABLECOINS

EXCHANGES

PEER-TO-PEER MARKET

CURRENCIES

CENTRAL BANK DIGITAL CURRENCIES (CBDC)

INITIAL EXCHANGE OFFERINGS

DECENTRALIZED FINANCE (DEFI)

ASSET SUMMARY

UNIQUE ADDRESSES

CONF. TRANSACTIONS

NETWORK HASHRATE

MINING DIFFICULTY

CORRELATIONS

BITCOIN SUSTAINABILITY

MVRV

NETWORK SECURITY

ALTCOIN / BTC PAIRS

INDICES

MINING

SEARCH ENGINES

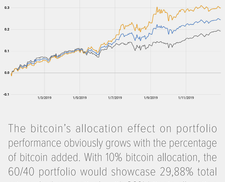
REFERENCES

FOREWORDS

BITCOIN SIGNIFICANTLY ENHANCED THE PERFORMANCE OF TRADITIONAL PORTFOLIO IN 2019

Even a modest 5 percent allocation to bitcoin has historically enhanced the performance of a traditional 60/40 portfolio (60% stocks, 40% bonds). Total return percent for a traditional 60/40 portfolio for 2019 was 19,71%, uplifted by bullish S&P 500 index. The same portfolio with added 5% bitcoin recorded 24,61% total return.

TRADITIONAL 60/40 PORTFOLIO WITH BITCOIN ALLOCATION
data source: dcresearch



The bitcoin's allocation effect on portfolio performance obviously grows with the percentage of bitcoin added. With 10% bitcoin allocation, the 60/40 portfolio would showcase 29,88% total return. And respectively with 30% bitcoin allocation the same portfolio would offer 48,57% total return.

TRADITIONAL 60/40 PORTFOLIO
data source: dcresearch

The holistic summary is clear, bitcoin has historically enhanced traditional portfolio performance, from small percentages, escalating the effect with more bitcoin allocated.

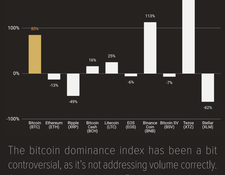
Key performance data for 5% bitcoin allocation below.

	Traditional	Enhanced
Total Return (%)	19,71%	24,61%
Total Return (10K USD)	$1,970.52	$2,460.71
Annualized Return (%)	19.88%	24.83%
Annualized Return (10K USD)	$1,987.76	$2,482.66
Sharpe Ratio	2.51	2.49
Max Drawdown	-3.58%	-5.55%

2019: BITCOIN UP, SMALL CAP ALTS DOWN

After the modest bearish sentiment of 2018, bitcoin pampered its investor segment in 2019 with 85% performance year-on-year (YOY). Significantly overperforming other cryptoassets like Ethereum (-13%, Litecoin (25%), and Ripple (-49%). Bitcoin's dominance stayed in proximity to 70 percent through fourth quarter.

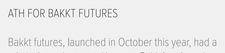
2019 PERFORMANCE FOR TOP 10 CRYPTOASSETS
data source: Kraken



The bitcoin dominance index has been a bit controversial, as it's not addressing volume correctly. A new approach, by Arcane Research, weighs real volume and excludes stablecoins (which are often pegged to USD), offers a more clarified view on bitcoin's dominance. By the said model, bitcoin's authentic dominance is estimated to be over 90 percent.

UPCOMING BITCOIN HALVING

Bitcoin is closing in on its 21 million coin supply and its third halving event. Bitcoin's price has historically been following an upward pattern after halving events:



2012 halving → 2013 peak: **+9180%.**

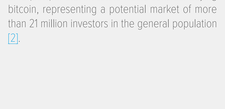
2016 halving → 2017 peak: **+2875%.**

ATH FOR BAKKT FUTURES

Bakkt futures, launched in October this year, had a relatively modest start. However Bakkt's volume has steadily been increasing, recording all-time-highs (ATH) during late fourth quarter.

BAKKT MONTLY FUTURES, DAILY VOLUME Q4
data source: Bakkt

On December 18th Bakkt reached it's all-time-high so far with 46,3 million USD daily volume. Additionally Bakkt is about to launch Bitcoin Options Contracts later in 2020 [1].



MORE THAN 36% OF U.S. INVESTORS WOULD CONSIDER BITCOIN

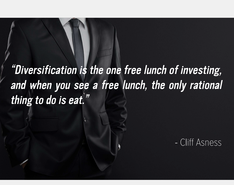
A new research from digital currency asset manager Grayscale Investments has found that more than a third (36%) of U.S. investors would consider buying bitcoin, representing a potential market of more than 21 million investors in the general population [2].

EUROPEAN CENTRAL BANK ANNOUNCES EUROCHAIN

European Central Bank (ECB) published a new proof-of-concept project called EUROchain on on December 17th. The concept published on the ECB's website states, "That proof of concept boasts several novel features developed by the ESCB's EUROchain research network (with the support of Accenture and R3) using distributed ledger technology (DLT)." Based on the R3's Corda platform, the project is a study on how privacy can be balanced with compliance procedures, like anti-money laundering rules, while DLT helps drive down the cost of transactions [3].

GROWING BITCOIN OTC DEMAND IN EMERGING MARKETS

Argentinians appear to flock to bitcoin in response to economic shocks. In August, bitcoin rocketed to a 900 USD premium above Coinbase on one of Argentina's top exchanges after an unexpected election result cast doubts over whether the nation would receive a $57,4 billion bailout package, and sent Argentinian markets plunging in one of their biggest intraday losses in history.



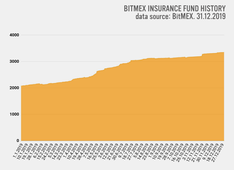
Once again, in September, volumes erupted across Argentina's exchanges when President Mauricio Macri announced a plan to reinstate capital controls. This time bitcoin was sent to a staggering $2250 premium above the market.

LocalBitcoins is seeing exceptionally high usage in nations with low economic freedom indicating bitcoin is increasingly being bought as an non-confiscatable, deflationary hedge against fiat. This thesis was probed last week by Deutsche Bank, who suggested crypto could replace fiat by 2030 in the event of global hyperinflation.

The central bank will restrict dollar purchases by savers to buy just $200per month compared with the $10000 per month previously, according to a central bank statement [4].

IOTA MAINNET DOWN FOR >24H

Iota, a small-cap altcoin, suffered embarrassing technical difficulties as its mainnet was reportedly down for over 24 hours. Iota is a IOT focused project dating back to 2015 [5].



BITMEX INSURANCE FUND UP 62% IN 2019

BitMEX insurance fund holds 0,18% of bitcoins in circulation, over 33 000 bitcoins combined. BitMEX's insurance fund is used to ensure the winning party of a trade receives their expected profits even if the losing party's losses do not cover the winning party's gains [6].

RICCARDO SPAGNI OF MONERO STEPS DOWN

The legendary project lead of cryptocurrency Monero (XMR), Riccardo "Fluffypony" Spagni has reportedly stepped down. Despite his stance, fluffypony will not be leaving the team entirely. Instead, He will serve as a backup maintainer during times when his successor is not able to perform his duties. The news comes at a time when XMR is down 60 percent after peaking at $121 in June.

THE WAR AGAINST CASH

Governments seem to be increasingly interested in restricting the use of physical cash and increasing capital controls. Greeks will be hit with a significant fine if they do not spend almost a third of their income electronically in an unprecedented bid by the new government to stamp out rampant tax evasion.

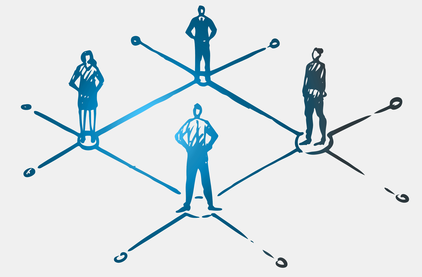
The government expects to raise more than 500 million euros every year from the initiative that will force Greeks to spend 30 percent of their income electronically, Alex Patelis, the prime minister's chief economic adviser, revealed. The scheme is part of new prime minister Kyriakos Mitsotakis's sweeping overhaul try revive growth.

Individuals that fail to meet the target will be hit with a 22 percent fine on the shortfall. Therefore, if an individual spends just 20 percent of their income through electronic means, they would face a 20 % tax on the remaining 10% bar some exclusions.

The government's plan is a radical attempt to cast some light on Greece's huge shadow economy, the world's largest, and is part of new prime minister Kyriakos Mitsotakis's sweeping overhaul to revive growth [8].

S&P500 COMPANIES INCREASINGLY IN DEBT

Some 40% of public stocks quoted in the U.S. have negative tangible book value, meaning that their tangible assets aren't worth enough to repay all their debt. Two decades ago, this was only true of 15% of companies.



BLUESKY, A NEW DECENTRALIZED SOCIAL MEDIA

According to Twitter's founder Jack Dorsey, the company is funding a small independent team of up to five open source architects, engineers, and designers to develop an open and decentralized standard for social media. The goal is for Twitter to ultimately be a client of this standard.

New technologies have emerged to make a decentralized approach more viable. Blockchain points to a series of decentralized solutions for open and durable hosting, governance, and even monetization. Much work to be done, but the fundamentals are there [7].

PLUSTOKEN FRAUD, A FACTOR BEHIND BITCOIN'S PRICE DROP?

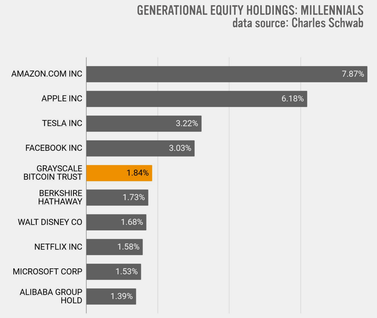
PlusToken, an unfortunate fraud in the cryptocurrency scene, has been wreaking havoc from 2018 to 2019. Plus Token seems to have been a classic ponzi scheme, raising money from retail-level public investors, without any previous knowledge of cryptocurrencies.

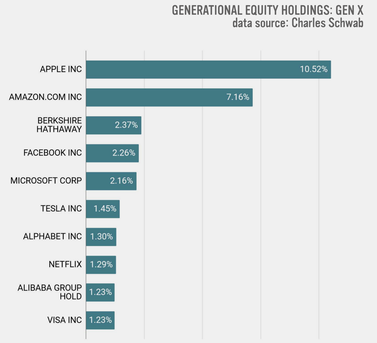
On June 2019, the organization behind Plus Token ceased operation and stopped the flow of payments. At the end of fourth quarter, the organization had liquidated 25 000 bitcoins, 20 000 remaining, and additionally 10 000 ethereum, 790 000 remaining.

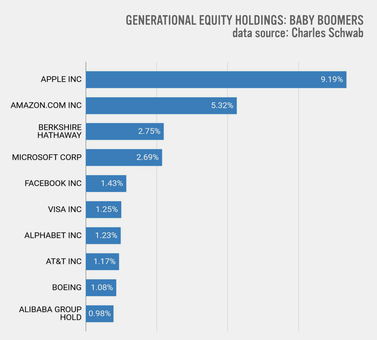
The Plus Token fraud acts as a definitive warning to all investors looking to gain exposure to the cryptocurrency market.

SCHWAB REPORT: MILLENNIALS LOVE BITCOIN

By data provided by US brokerage company Charles Schwab, more millennials hold a bitcoin-related investment product in their investment portfolios than Microsoft, Netflix, or Walt Disney.







The report shows that millennials (currently aged between 25-39) have a higher holding in Grayscale's Bitcoin Trust (GBTC) investment product at 1,84% than Netflix stock at 1,58%. Schwab publishes this report every quarter and collects data from nearly 142 000 retirement plan participants who currently have balances between 5000 and 10 million USD in their Schwab Personal Choice Retirement Account [9].

BITCOIN'S VALUE PROPOSITIONS TO INVESTORS

GROWTH

The pioneering blockchain industry is developing with escalating pace and new projects are constantly gaining traction. The mass adoption in bitcoin & blockchain tech and tokenization in general will continue to evolve rapidly in coming years.

DIVERSIFICATION

Bitcoin with a low historical correlation to traditional markets, is an emerging asset class to consider as a part of the portfolio diversification. Even just 1-5% allocation to bitcoin has been historically impacting portfolio performance favorably.

HEDGE

Bitcoin can be seen as a potential hedge to traditional asset classes. Built-in features like 21 million hard cap, inflation-free structure, and antifragile blockchain make bitcoin a store of value.

DECENTRALIZED VALUE

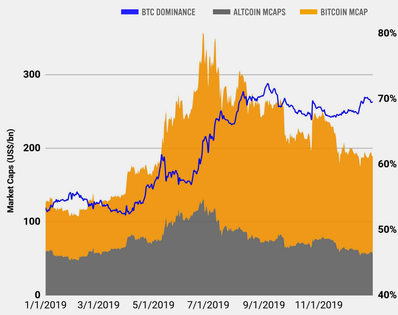
Global, decentralized, censorship-resistant & programmable asset with proven 10-year track record, showing outstanding staying power. With 99,98% uptime since inception, every subsequent day online makes bitcoin more robust, secured by built-in incentive structure.

INDUSTRY OUTLOOK

MARKET CAPITALIZATIONS

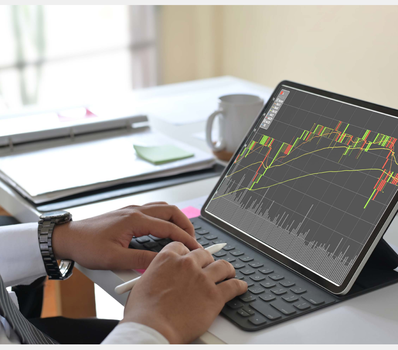
Bitcoin's relative dominance to altcoins stayed in close proximity to 70% over fourth quarter of 2019. Interestingly bitcoin's dominance was within 50-60 percent during first and second quarters, to eventually rise into 70s during summer upward volatility.

BITCOIN & ALTCOIN MCAPS AND BTC DOMINANCE (2019 YTD)
data source: coin.dance. 31.12.2019.



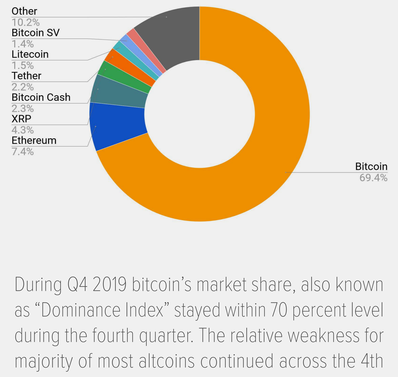
Bitcoin's dominance rose nearly 20% throughout 2019, extending and doubling the gain seen in 2018. If we combine market caps of the thousands of altcoins, they don't reach half that of bitcoin's MCAP.

Why are altcoins losing market share? A large segment of altcoins are ERC-20 based tokens, released during 2017 ICO phenomenon. The track record of these ERC-20 projects has been poor in general, consequently leading to investors capitulation.



When exploring the market cap data we should always remember that MCAP is only a relevant metric when it's supported by volume relative to MCAP, and when volume comes from a broad group of participants that are representative of market demand. Many altcoins don't fit the criteria above, so the real (organic) bitcoin dominance is well over the said percent.

CRYPTOASSET MCAPS
data source: coin.dance. 31.12.2019.



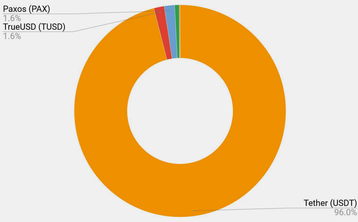
During Q4 2019 bitcoin's market share, also known as "Dominance Index" stayed within 70 percent level during the fourth quarter. The relative weakness for majority of most altcoins continued across the 4th quarter.

Ethereum (ETH) took the second place with 7,4% of the total MCAP. Ethereum has been able to secure its second position, despite of heavy capitulation in ERC-20 tokenized projects.

STABLECOINS

The de facto stablecoin Tether (USDT) remained in it's default dominant position among stablecoins during the fourth quarter of 2019.

STABLECOIN VOLUMES
data source: Messari. 31.12.2019.

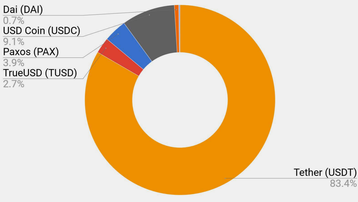


Tether accounted for almost 97% of the combined global volume of stablecoins. USD Coin (USDC) was the second largest stablecoin in volume terms, with a modest 1,3% of global transactional volume.

> *"My personal conviction is that given the developments we are seeing, not so much in the bitcoin segment, but in the stablecoin projects, we'd better to be ahead of the curve if that happens. Because there's clearly a demand out there we have to respond to."*
>
> - Christine Lagarde, ECB

Not surprisingly, Tether (USDT) sovereignly leads global market cap of stablecoin as well, while the stablecoins are bit more evenly distributed in MCAP terms.

STABLECOIN MCAPS
data source: Messari. 31.12.2019.

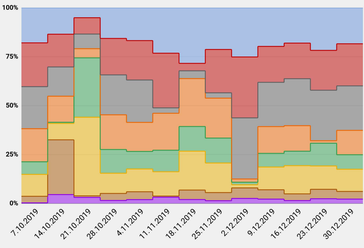


Tether's dominance is 83,4 percent, while USDC's MCAP has accumulated to 9,1%. Compared with Q3, Paxos (PAX) lost some market share with 3,9% of the current control group. TrueUSD takes the fourth place with 2,7% of global MCAP.

EXCHANGES

Let's take a look at exchange rankings. Kraken's volume stayed relatively stable, increasing during mid-quarter, while retracting later in fourth quarter. Kraken's share in the control group grew from early July 17,9 percent to late 18,4%, growing sharply from Q3.

EXCHANGE RANKING Q4
data source: Bitcoinity



The European Bitstamp's volume stayed within 10-20%, closing at 12,4 for late Q4.

Bitfinex saw a peak volume of 40,2% during early Q4, while staying between 10-20% for most of the quarter.

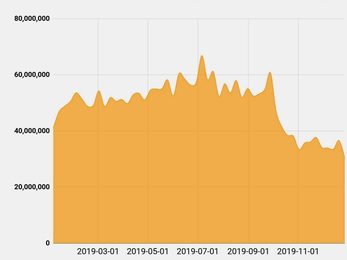
Bitcoinity analyses exchange data by weighing orderbook data instead of the default typical volume data. Bitcoinity weighs on open orders based on how long time ago the given price was achieved.

PEER-TO-PEER MARKET

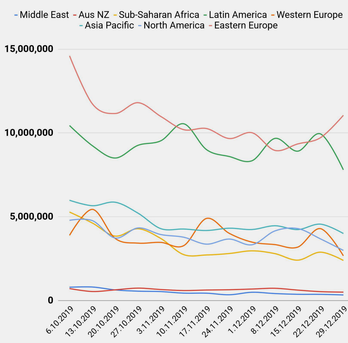
LOCALBITCOINS

LocalBitcoins, the largest bitcoin P2P OTC platform globally, saw some decline in volume during fourth quarter of 2019. LocalBitcoin's volume grew modestly during first and second quarters, but started to retract after Q2. There has been speculation if tightening regulation was one of the factors behind decreasing volume. As an EU company, LocalBitcoins needs to comply with 5AMLD and 6AMLD, however some client segments have been hostile to increasing control through regulation.

LOCALBITCOINS VOLUME 2019 (USD)
data source: Coin Dance. 31.12.2019



LOCALBITCOINS OTC VOLUME DURING Q4 (USD)
data source: LocalBitcoins. 31.12.2019.

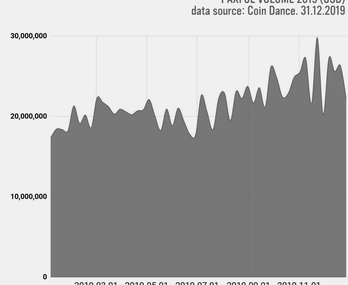


When looking at different markets, LocalBitcoin's volume stayed relatively steady in main markets, decreasing in Latin America and Eastern Europe. Eastern Europe saw slight growth during late fourth quarter. Russia, part of Eastern Europe, was the largest single market location for LocalBitcoins in 2018.

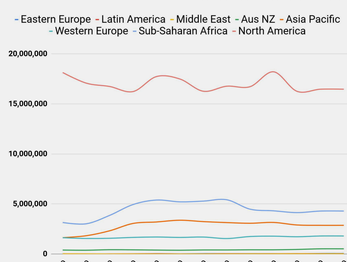
PAXFUL

Meanwhile LocalBitcoin's volume decreased in fourth quarter, the competitor Paxful's volume in turn increased. Paxful is especially focused on transactions with gift cards, including partners as Amazon, Apple, eBay, and Google.

PAXFUL VOLUME 2019 (USD)
data source: Coin Dance. 31.12.2019



PAXFUL OTC VOLUME DURING Q4 (USD)
data source: LocalBitcoins. 31.12.2019.



Paxful's volume stayed steady or increased across markets with significant presence in North America. Paxful has historically been well-positioned in North American markets.

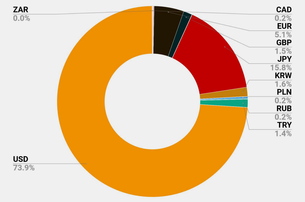
CURRENCIES

MOST TRADED GLOBAL NATIONAL CURRENCIES FOR BITCOIN

The US dollar (USD) continued to hold its position as most dominant global national currency traded for bitcoin in fourth quarter of 2019, counting for 73,9 percent of the volume. Dollar's position weakened slightly compared with 75,% of third quarter.

Second most traded fiat was Japanese yen (JPY) with 15,8% of global volume.

MOST TRADED GLOBAL NATIONAL CURRENCIES FOR BITCOIN
data source: Coinhills



Euro (EUR) took the third place from South Korean won, climbing to 5,1%.

South Korean won dropped quite dramatically from 4,2% in third quarter to mere 1,6% in Q4.

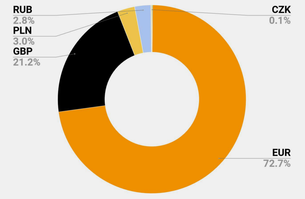
As expected in general, USD retained its position as the sovereign global reserve currency. Consequently USD is heavily dominant in bitcoin transactions as well. Dollar still shows its strength and is incrementally supported by weakening emerging markets and third world national currencies. It's easy to expect the fundamental support for dollar to continue well into long-term future.

MOST TRADED EUROPEAN NATIONAL CURRENCIES FOR BITCOIN

Euro (EUR) continued to showcase most volume among European national currencies traded for bitcoin, with 72,7 percent of the volume combined.

The second most significant fiat currency traded for bitcoin in Europe was pound sterling (GBP), accounting for 21,2%.

MOST TRADED EUROPEAN NATIONAL CURRENCIES FOR BITCOIN
data source: Coinhills



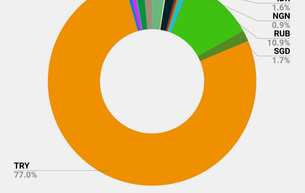
Polish zloty (PLN) retained its third position among most used national currencies for bitcoin in Europe.

By Coinhill's data, Russian ruble takes the fourth position with 3,0% share. Coinhill uses exchange data, which greatly affects these numbers. Hypothetically if OTC volume would be included, the RUB percentage would be a lot higher. Russia was the single most largest market area for bitcoin OTC platform LocalBitcoins in 2018.

MOST TRADED EMERGING MARKETS NATIONAL CURRENCIES FOR BITCOIN

In the emerging markets (EM) segment, Turkish lira (TRY) dominates the control group with 77 percent share. Lira relative share increased significantly in Q4, rising from 25,7% in Q3.

MOST TRADED EM NATIONAL CURRENCIES FOR BITCOIN
data source: Coinhills



Russian ruble (RUB) comes as second with 10,9% share, decreasing from 17,5% in quarter three. Coin Hills only tracks exchanges so OTC data is not included. If over-the-counter data would be included here, RUB would likely be dominant.

Third place goes for Brazilian real (BRL) with 2,2 percent share, also dropping from 6,9% in Q3. Turkey's increasing dominance might stem from growing geopolitical risk within the area.

CENTRAL BANK DIGITAL CURRENCIES (CBDC)

CENTRAL BANKS EMBRACING BLOCKCHAIN TECH

Central bank digital currencies, or CBDCs, are different from cryptocurrencies, which are not issued by the state and lack the legal tender status declared by the government. As such, CBDSs, could fit an use case as competitors with commercial bank deposits and challenge the status quo of the current fractional reserve banking system.

MOST TRADED EM NATIONAL CURRENCIES FOR BITCOIN
data source: Coinhills

Central Banks	Digital Currency	Announced	Status	Blockchain
Central Bank of Tunisia	e-Dinar	2015	Launched	
People's Bank of China	DCEP	2016	Development	
Central Bank of West African States - Senegal	eCFA	2016	Launched	
Sveriges Riksbank	e-Krona	2017	Development	
Central Bank of Venezuela	Petro	2017	Launched	NEM
Monetary Authority of Singapore	Ubin	2016	Development	Corda
Central Bank of Uruguay	e—peso	2017	Launched	
National Bank of Cambodia	N/A	2017	Development	Hyperledger Iroha
Bank of the Marshall Islands	Sovereign	2018	Development	SOV Trust Network
Bank of Thailand	Inthanon	2018	Development	Corda
Central Bank of the Bahamas	Sand Dollar	2018	Pilot	NZIA
Central Bank of Curacao and Sint Maarten		2018	Pilot	Bitt
Central Bank of the Republic of Turkey	Turkcoin	2018	Development	
Central Bank of Iran	PayMon	2019	Development	Phoenix Network
United Arab Emirates Central Bank	Aber	2019	Pilot	
Saudi Arabian Monetary Authority	Aber	2019	Pilot	
European Central Bank	EURoChain	2019	Development	Corda
Eastern Caribbean Central Bank	DXCD	2019	Pilot	Bitt

We're witnessing more and more countries globally announcing CBDCs under development, adding to the list that currently includes: US, Russia, Canada, Singapore, Turkey, Sweden, Uruguay, South Africa, Thailand, the Bahamas, among others.

Additionally, CBDCs are likely to trigger escalating interest in the private sector, large private corporates will be able to provide important intermediate services, including onboarding, distribution, security provisioning, and customer-facing functions. The emergence of such public-private undertakings in the sovereign currency sphere will also be a real paradigm shift. The ambitious Libra project by Facebook acts as one of the pioneering private "corporate coins."

> *"Each country will have to weigh the pros and cons of the case for CBDC depending on its particular circumstances."*
>
> - IMF

The specific design of each CBDC will have profound implications on its effectiveness as a monetary policy instrument. This, along with challenging questions of interoperability, cross-border use, and regulatory demands will become hot topics of discussion.

INITIAL EXCHANGE OFFERINGS

IEO ROI?

IEOs (Initial Exchange Offerings) were created as succeeding financial product for the somewhat infamous ICOs (Initial Coin Offerings). The ICO market saw it's peak within Q4 2017 bullish trend.

IEO INVESTMENT RETURNS
data source: CoinMarketCap, BitMEX Research. 20.12.2019.

IEOs differ from ICOs by exchanges directly listing the tokens via their own dedicated launchpad.

Funds raised via ICOs (or IEOs):

2014:	*$30M*
2015:	*$9M*
2016:	*$257M*
2017:	*$6,6B*
2018:	*$21,6B*
2019:	*$3,3B*

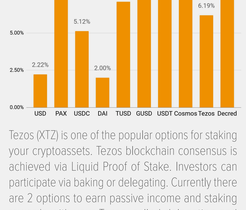
Some people say, IEOs can help projects to raise money and enjoy liquidity, bring cryptocurrency exchanges with reputation and financial well-being and benefit investors from good projects.

DEZENTRALIZED FINANCE (DEFI)

DECENTRALIZED FINANCE AND STAKING

One growing segment within the cryptocurrency industry is decentralized finance (DeFi), and very recently a process called staking. In staking, an individual or party holds funds to receive rewards, while contributing to the operations of a blockchain. As such, staking is widely used on networks that adopt the Proof of Stake (PoS) consensus mechanism or one of its variants.

COMPARING DEFI INTEREST RATES
data source: LoanScan



Tezos (XTZ) is one of the popular options for staking your cryptoassets. Tezos blockchain consensus is achieved via Liquid Proof of Stake. Investors can participate via baking or delegating. Currently there are 2 options to earn passive income and staking rewards with your Tezos, called delegating and baking.

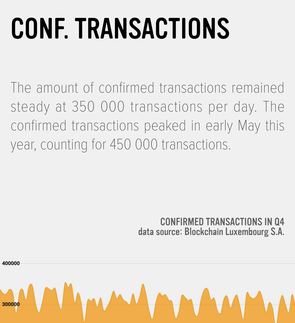
DELEGATE TEZOS	BAKE TEZOS
Annual Reward: 5.94%	Annual Reward: 6.60%
Adj. Reward: 0.87%	Adj. Reward: 1.53%
Recommended minimum: 1 XTZ	Required collateral: 8000 XTZ
Potential risk: Low	Lock-Up Period: 14 days
	Potential risk: Moderate

ASSET SUMMARY

UNIQUE ADDRESSES

The number of unique bitcoin addresses used in Q4 2019 remained steady, at close proximity to 500 000 addresses.

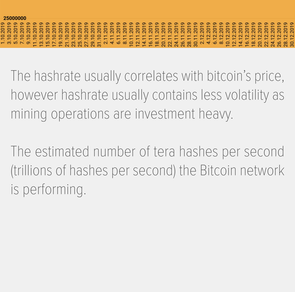
UNIQUE ADDRESSES IN Q4 2019
data source: Blockchain Luxembourg S.A.



CONF. TRANSACTIONS

The amount of confirmed transactions remained steady at 350 000 transactions per day. The confirmed transactions peaked in early May this year, counting for 450 000 transactions.

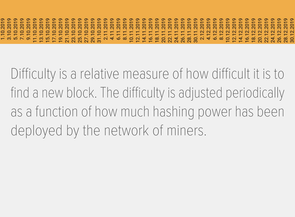
CONFIRMED TRANSACTIONS IN Q4
data source: Blockchain Luxembourg S.A.



NETWORK HASHRATE

Bitcoin hashrate has been increasing across 2019, from early January 40M TH/s, towards the year end around 100 million. Bitcoin's hashrate peaked on 23th October for the last quarter, indicating 114 million TH/s.

HASHRATE IN Q4
data source: Blockchain Luxembourg S.A.



The hashrate usually correlates with bitcoin's price, however hashrate usually contains less volatility as mining operations are investment heavy.

The estimated number of tera hashes per second (trillions of hashes per second) the Bitcoin network is performing.

MINING DIFFICULTY

Bitcoin difficulty increased has been increasing steadily since January 2019. Mining difficulty adjusted upwards during the third quarter along with the increase in the hashrate.

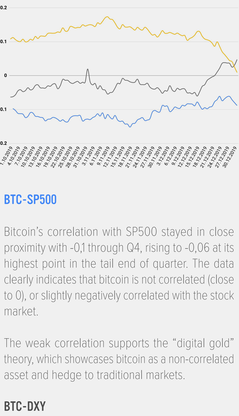
BITCOIN MINING DIFFICULTY (IN BILLIONS) DURING Q4
data source: Blockchain Luxembourg S.A.

Difficulty is a relative measure of how difficult it is to find a new block. The difficulty is adjusted periodically as a function of how much hashing power has been deployed by the network of miners.

CORRELATIONS

By data, traditional asset classes are more correlated with each other than with bitcoin. Here we'll take a closer look at bitcoin's correlation with S&P 500 Index, U.S. Dollar Index (DXY), and SPDR Gold Shares (GLD) in fourth quarter of 2019.

BITCOIN CORRELATIONS WITH: SP500, DXY, AND GLD
data sources: Coin Metrics. 31.12.2019. Spearman correlation. Arithmetic. 180d. Q4 2019



BTC-SP500

Bitcoin's correlation with SP500 stayed in close proximity with -0,1 through Q4, rising to -0,06 at its highest point in the tail end of quarter. The data clearly indicates that bitcoin is not correlated (close to 0), or slightly negatively correlated with the stock market.

The weak correlation supports the "digital gold" theory, which showcases bitcoin as a non-correlated asset and hedge to traditional markets.

BTC-DXY

Bitcoin's correlation with DXY stayed especially close to 0, switching from slightly negative correlation in mid-quarter to slightly positive in late-quarter.

BTC-GLD

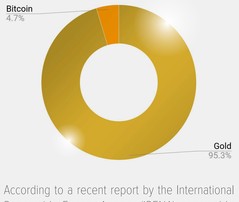
Bitcoin's correlation with GLD was between 0,1 and 0,2 during early- and mid-quarter. However correlation quickly turned towards 0 in late Q4, as GLD saw >9% growth during December 2019.

Bitcoin's and gold's value propositions are close to each other, both promise to be a hedge to mainstream stock market in cyclical downturn events. Both represent alternative currencies, bitcoin's edge being in censorship-resistance and cross-border transactions, while gold is a more mainstreamly accepted alternative investment.

SUSTAINABILITY

Mainstream media often prefers to portray bitcoin mining as "unsustainable", while the truth is 76% of the energy used to mine bitcoin comes from renewable sources. In stark contrast, diesel appears to be the main source of energy for gold mining companies.

ANNUAL COST OF MINING: BITCOIN AND GOLD
data source: LongHash



According to a recent report by the International Renewable Energy Agency (IRENA), renewable energy costs are down over 80% from 2009, and continue to decline. Additionally given the industry they support, bitcoin miners are much earlier adopters than the gold industry.

Bitcoin miners will continue to take advantage of renewable sources of energy that are lower cost, not just economically but environmentally. In summary bitcoin's sustainability and environmental footprint are on a stable ground [10].

"Unlike fine wines, fiat currencies do not get better with time. In fact, the average lifespan of a fiat currency is only 27 years."

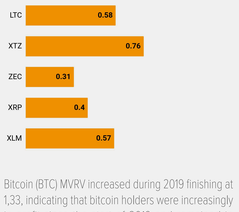
- Demelza Hays

MVRV

TOP CRYPTOASSETS AND MVRV

Market Value to Realized Value (MVRV) is calculated by dividing the market cap by realized cap. MVRV is a good instrument for estimating if market participants are in profit or not. Negative MVRV ratio indicates market participants being minimally in profit or not in profit and positive MRVR may indicate asset holders being well in profit, respectively.

MVRV OF BIGGEST CRYPTOASSETS
data source: Coin Metrics. 31.12.2019



Bitcoin (BTC) MVRV increased during 2019 finishing at 1,33, indicating that bitcoin holders were increasingly in profit since the start of 2019 and remained in profit by the end of the year. Ethereum (ETH) MVRV on the other hand grew more modestly, suggesting ethereum holders were also increasingly in profit. However ETH finished at MVRV 0,61, indicating that holders were collectively underwater by the end of fourth quarter.

NETWORK SECURITY

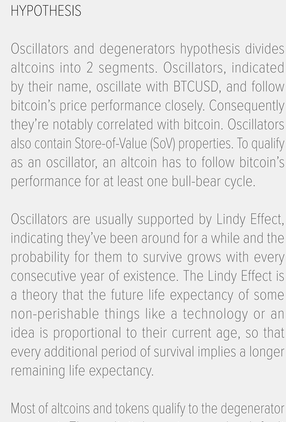
Bitcoin is said to be the most secure ecosystem within cryptocurrencies, and it's definitely true. When exploring 24-hour attack cost for cryptoassets, we discover that **it'd cost over 27 million USD in 24-hours to attack bitcoin.** The attacker would need to be able to spend the amount in continuing fashion, escalating the cost of attack significantly. However, especially small-cap altcoins are much more vulnerable to attacks. A theoretical attack against Litecoin (LTC) would cost the attacker only ~440K USD.

24H ATTACK COST FOR CRYPTOASSETS (USD)
data source: Messari

51 percent attacks might occur when a single entity gains majority (more than 51 percent) of the network hashrate. This entity could then both prevent valid transactions from occurring, as well as reverse already occurred transactions on the blockchain. A single token can even be spent twice from the same origin with this sort of control, in what's called a double-spend.

The **attack appeal** compares cryptoasset market caps (MCAP) with the cost of 24-hour attack. In theory, it's more appealing to attack coins with higher-marketcaps per unit of cost an attacker might expend.

ATTACK APPEAL FOR CRYPTOASSETS
data source: Messari



Higher numbers suggest attacks may be more appealing than for coins with lower attack appeal numbers. Small-cap altcoins are showing their weakness as more appealing for attacks.

ALTCOIN / BTC PAIRS

ALTCOINS: OSCILLATORS AND DEGENERATORS HYPOTHESIS

Oscillators and degenerators hypothesis divides altcoins into 2 segments. Oscillators, indicated by their name, oscillate with BTCUSD, and follow bitcoin's price performance closely. Consequently they're notably correlated with bitcoin. Oscillators also contain Store-of-Value (SoV) properties. To qualify as an oscillator, an altcoin has to follow bitcoin's performance for at least one bull-bear cycle.

Oscillators are usually supported by Lindy Effect, indicating they've been around for a while and the probability for them to survive grows with every consecutive year of existence. The Lindy Effect is a theory that the future life expectancy of some non-perishable things like a technology or an idea is proportional to their current age, so that every additional period of survival implies a longer remaining life expectancy.

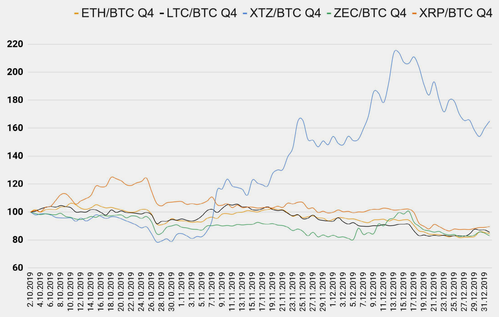
Most of altcoins and tokens qualify to the degenerator segment. These digital assets were by default following the 2017 bull cycle, but have lost traction since. These digital assets did not follow bitcoin's Q2-Q3 2019 bullish reversal pattern and they're are weakly correlated with bitcoin.

LTC / BTC 16-19
data source: Coin Metrics

NEO / BTC 17-19
data source: Coin Metrics

Here we can compare the performance of Litecoin (LTC) and NEO. Litecoin oscillates with bitcoin, consequently it fits into oscillator category. NEO's performance is poor compare with bitcoin, so NEO definitely is a degenerator.

BTC/ALTCOIN INDEXED PERFOMANCES Q4
data source: Coin Metrics. 31.12.2019



Litecoin was launched by Charlie Lee in October 2011 as an attempt to make bitcoin more scalable and faster.

Litecoin's price continued to slide during Q3 and Q4 against bitcoin, when bitcoin dominance index has been gaining ground. (Q4 performance-14%)

Ethereum is a public, open-source, blockchain-based distributed software platform, that allows developers to create and deploy decentralized applications.

The platform's currency is called ether. Ethereum depreciated 15% against BTC in the last quarter.

Ripple is known as a Real-Time Gross Settlement System, the currency traded is known as XRP and transfer times are immediate.

XRP isn't made up of a blockchain but rather a "hash tree" and its currency can't be mined because there are a finite number of coins, one billion. In fourth quarter, XRP performed better than bitcoin in early quarter, however dropped below bitcoin in the tail-end of Q4 resulting in -10% drop against bitcoin.

Tezos is a cryptocurrency and decentralized computing platform. Its features include proof of stake consensus, formal verification (which lets developers verify the correctness of their code), and the ability to let stakeholders vote on changes to the protocol.

Tezos's block creation process is called "baking" — Tezos holders who stake their tokens can receive Tezos tokens as a reward for creating and verifying blocks. Kraken exchange currently offers 6% interest when staking Tezos. Due to market anticipation related to Tezos staking launch, Tezos performed well (+65%) against bitcoin during fourth quarter.

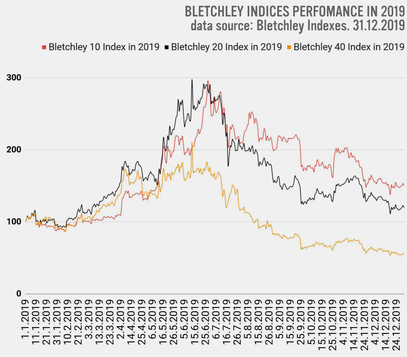
Zcash is a cryptocurrency aimed at using cryptography to provide enhanced privacy for its users compared to other cryptocurrencies such as bitcoin.

Like bitcoin, zcash has a fixed total supply of 21 million units. Zcash gradually underperfomed (-17%) compared to bitcoin during fourth quarter of 2019.

INDICES

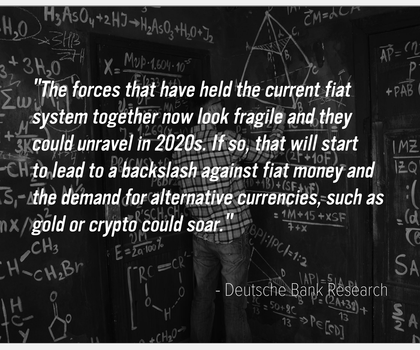
Bletchley Indexes are an excellent tool for evaluating the cryptocurrency market. Now that 2019 is over, it's good to take a recap into the market and what were the dominant drivers within the year.

Bletchley 10, composed of 10 most valuable cryptoassets, followed bitcoin's price action closely. Top 10 altcoins are also called "oscillators" as they oscillate with bitcoin's performance, making them possibly more alluring to investors. The Bletchley 10 index performance was +49,7 % for 2019.



Bletchley 20 index, composed of 20 medium-sized digital assets by nominal MCAP, also followed bitcoin's price action, increasing significantly during summer 2019 bull run and dropping during Q3-Q4. The Bletchley 20 index performance was +19,3 % for 2019.

Bletchley 40 index, composed of 40 small-sized digital assets, showcased more volatility than Bletchley 10 and 20. After bitcoin's summer 2019 bull run, small-sized digital assets quickly dropper well below January 2019 levels, retracing further in third and fourth quarters. The Bletchley 40 index performance was - 45,4 % for 2019.



Small-cap altcoins, weighted in Bletchley 40 index, have been suffering from general capitulation, especially among ERC-20 projects. ERC-20 ICOs raised significant amount of money during 2017 ICO hype, however two years later most projects are suffering from poor track record. The ICO projects need to sell assets, usually Ethereum (ETH), to cover running costs. Additionally ICO investors are likely frustrated with the poor performance and are exposed to capitulation.

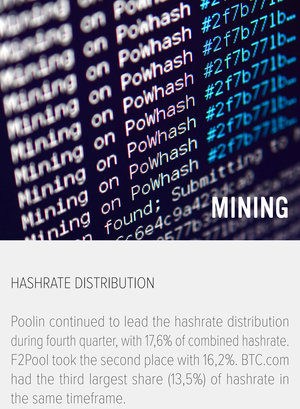
BLETCHLEY METHODOLOGY

Bletchley 10 index → Market cap weighted index composed of 10 of most valuable digital assets by nominal MCAP.

Bletchley 20 index → Market cap weighted index composed of 20 medium-sized digital assets by nominal MCAP.

Bletchley 40 index → Market cap weighted index composed of 40 small-sized digital assets by MCAP.

The market capitalization of each asset in indexes is calculated off of the expected total supply in 2050, using OnChainFX data.



HASHRATE DISTRIBUTION

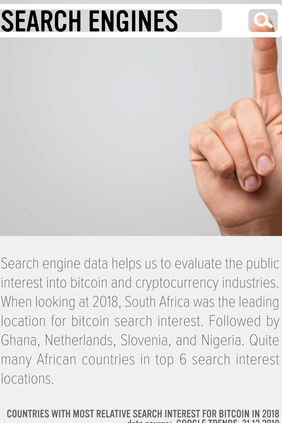
Poolin continued to lead the hashrate distribution during fourth quarter, with 17,6% of combined hashrate. F2Pool took the second place with 16,2%. BTC.com had the third largest share (13,5%) of hashrate in the same timeframe.

HASHRATE DISTRIBUTION Q4
data source: BTC.COM. 31.12.2019

EVOLUTION OF MINING HARDWARE

There's a constant competition for miner efficiency in mining hardware. As the included chart shows, mining hardware is in a continuing state of improvement. The increasing pace of technological development also forces miners to constantly upgrade their equipment.

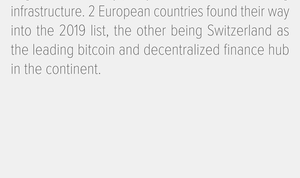
THE EVOLUTION AND EFFICIENCY OF BITCOIN MINING EQUIPMENT
data source: ASIC Miner Value, Cryptocompare. 31.12.2019



Exempli gratia, Antminer S9, most popular ASIC model produced by Bitmain, has reportedly exhausted its productivity limit, and many miners are running on a margin of profit.

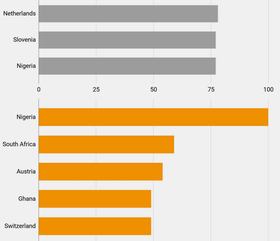
UPCOMING HALVING AND PROFITABILITY

The next bitcoin event is scheduled to occur on May 2020, embedding a difficulty increase for bitcoin mining. The difficulty increase will force miners to maximize their hardware efficiency. Some estimates even say the halving might "squeeze out" smaller retail miners.



Search engine data helps us to evaluate the public interest into bitcoin and cryptocurrency industries. When looking at 2018, South Africa was the leading location for bitcoin search interest. Followed by Ghana, Netherlands, Slovenia, and Nigeria. Quite many African countries in top 6 search interest locations.

COUNTRIES WITH MOST RELATIVE SEARCH INTEREST FOR BITCOIN IN 2018
data source: GOOGLE TRENDS. 31.12.2019



COUNTRIES WITH MOST RELATIVE SEARCH INTEREST FOR BITCOIN IN 2019
data source: GOOGLE TRENDS. 31.12.2019

In 2019, Nigeria was clearly the leading location for bitcoin search interest, followed by South Africa. By multiple estimates, African countries could be among the first to actually implement cryptocurrencies on a larger scale, as they partly lack the modern banking infrastructure. 2 European countries found their way into the 2019 list, the other being Switzerland as the leading bitcoin and decentralized finance hub in the continent.

REFERENCES

[1] bakkt.com

[2] grayscale.co

[3] https://www.ecb.europa.eu/paym/intro/publications/pdf/ecb.mipinfocus191217.en.pdf

[4] localbitcoins.com

[5] coindesk.com/iota-fixes-minor-network-bug-following-15-hour-mainnet-downtime

[6] bitmex.com/app/insuranceFund

[7] twitter.com/bluesky

[8] https://www.smh.com.au/business/markets/greeks-set-to-face-heavy-fines-if-they-don-t-spend-30-per-cent-of-their-income-electronically-20191209-p53i14.html

[9] https://pressroom.aboutschwab.com/press-release/schwab-corporate-retirement-services-news/schwab-report-self-directed-401k-balances-ho

[10] irena.org/publications/2020/Jan/Advancing-renewables-in-developing-countries

Prasos Oy (the Company) is not responsible for any errors, inaccuracies or defects that may arise in this document and the information therein. Market views are only the company's own. This document is under no circumstances an offer, purchase or sales call or sales recommendation. There are always risks when investing. The value or return on investments may rise or fall and the investor may even lose the capital invested. Historical development is not a guarantee of potential future returns or losses.