

Zorica Golić

Faculty of Economics Pale,
University of East Sarajevo,
Bosnia and Herzegovina

✉ zorica_golic@yahoo.co.uk

INVESTING IN CRYPTOCURRENCIES: BITCOIN - "RAT POISON" OR NEW ASSET CLASS?

УЛАГАЊЕ У КРИПТОВАЛУТЕ: БИТКОИН – „ОТРОВ ЗА ПАЦОВЕ” ИЛИ НОВА КЛАСА ИМОВИНЕ?

Summary: *Although the world of finance has been existing for only ten years, the fact is that Bitcoin (BTC) has unstoppably triggered significant changes in the global financial market and has opened up numerous controversies. There is debate over whether BTC could become a new global currency that will not be subject to inflation or central bank influence. At the same time, decentralization and lack of regulations, which were considered a major asset, were characterized as the main cause of the high volatility of BTC, whose price depends solely on the supply-demand ratio. Like every time, when it comes to revolutionary technologies and issues of their impact on the world of finance, the public is divided, this time into BTC pessimists and BTC optimists. The former claim that BTC is broken and will suffer an inevitable and spectacular collapse, calling it "rat poison". However, optimists are of the view that the BTC era is just beginning and that it will change its payment method, economy and even politics around the world, and they consider it a new asset class worth investing in. In the midst of all these discussions around BTC, there seems to be no topic that is more media-covered, but less discovered. The aim of this paper is to come to the truth by analyzing recent scientific papers dealing with this issue, that is, to try to answer the research question: is BTC a "rat poison" or a new asset class worth investing in?*

Keywords: *Satoshi Nakamoto, blockchain, Warren Buffett, tulipmania, speculative bubbles, decentralization, altcoins, portfolio diversification, volatility, future of finance.*

JEL classification: *G11, G12, G15, G19, G23, O33*

Резиме: *Иако у свијету финансија егзистира тек десет година, чињеница је да је биткоин (БТЦ) незаустављиво покренуо значајне промјене на свјетском финансијском тржишту и због тога отворио бројне полемике. Воде се расправе може ли БТЦ постати нова глобална валута која неће бити подложна инфлацији нити утицају централних банака. Истовремено, децентрализованост и нерегулисаност, које су се сматрале крупном предношћу, окарактерисане су као главни узрок велике волатилности БТЦ-а чија цијена зависи искључиво од односа понуде и тражње. Као и сваки пут, када се ради о револуционарним технологијама и питањима њиховог утицаја на свијет финансија, јавност се подјелила, овога пута на БТЦ песимисте и БТЦ оптимисте. Ови први тврде да је БТЦ сломљен и да ће претрпјети неизбежни и спектакуларни колапс, називају га „отровом за пацове”. Међутим, оптимисти стоје на становишту да је ера БТЦ тек започела и да ће он измијенити начин плаћања, економију, па чак и политику широм свијета, сматрају га новом класом имовине у коју вриједи улагати. Усред свих ових расправа око БТЦ, чини се да не постоји тема која је медијски покривенија, а неоткривенија. Циљ овога рада је да се анализом новијих научних радова који се баве овом проблематиком дође до истине, односно да се покуша одговорити на постављено истраживачко питање: да ли је БТЦ „отров за пацове” или нова класа имовине у коју вриједи улагати?*

Кључне ријечи: *Satoshi Nakamoto, blockchain, Warren Buffett, лалолманија, инекулативни балони, децентрализација, altcoins, диверзификација портфолиа, волатилност, будућност финансија.*

JEL класификација: *G11, G12, G15, G19, G23, O33*

1. INTRODUCTION

Cryptocurrencies and BTC have been one of the most talked about topics lately. However, regardless of the large media coverage, trade volume, large capital gains and losses, and the emergence of self-proclaimed "cryptomillionaires", this is a relatively new concept that, even a decade after its emergence, seems to be in the phase of understanding and acceptance or refusal by financial institutions, investors, traders and consumers.

Cryptocurrencies function as digital records of certain values stored in electronic wallets (E_Wallet) on specialized websites that provide this type of service. These are actually digital currencies that cannot be copied or arbitrarily produced because they are based on cryptography. Narayanan et al. (2016, 23) argue that cryptography is the basis of cryptocurrency because it provides a mechanism for secure coding of the rules of the system on which they operate. The characteristic of cryptocurrencies is that there is no superior central institution, bank, agency, government or corporation that issues or accounts for them, and that their value is determined on a second-by-second basis depending on the relation between the demand and the supply, without being tied to any physical thing.

BTC is the first cryptocurrency based on groundbreaking blockchain technology, first mentioned in a paper published in 2008 and signed under the pseudonym "Satoshi Nakamoto" (Narayanan et al. 2016, 18), behind a huge mystery and many conspiracy theories which are further fueled by the fact that BTC just emerged at the time of the last economic and financial crisis. It is as if the first "mined" BTC block, the "genesis block", has a text message embedded in it which is actually the headline from The Times (BitcoinWiki n.d.), and which indicates the instability of the banking system in general and the need for governments to rescue banks as the main causes of the crisis, whereas the title itself symbolizes the concept of BTC as a decentralized medium of exchange of value deprived of the problems of traditional financial systems (Curran and Norry 2019, 2).

In addition to the many benefits of blockchain technology, the BTC public has split up to see it as a global reserve currency, a new asset class worth investing in, while legendary investor Warren Buffett views it as "rat poison squared" (La Monica 2018). Unfortunately, there is no middle ground, and where is the truth that usually lies somewhere in the middle?

This paper is organized as follows: In the first part, we pay attention to the cryptocurrency market, which, despite volatility, instability, and deregulation, is extremely lively and turbulent. We point to the absolute market dominance of BTC as the first cryptocurrency over all other cryptocurrencies, which are also its derivatives, also known as altcoins. Subsequently, the functioning of BTC along with the blockchain technology on which it is based, namely the principles on which it is based and for which it is specific, were clarified. At the same time, this part of the paper aims to highlight the importance and broader ability to apply blockchain, and the innovations that it brings, along with BTC, to the world of finance. Yet despite the many benefits, innovations and refreshments brought to the finance world by blockchain and BTC as one way of its implementation, the public has split into BTC pessimists and optimists. In the next part of the paper, we considered their opinions and attitudes. Since we have seen that opinions about BTC are sharply divided and diametrically opposed, we have investigated what is the standing of the science, or what are the conclusions of recent scientific papers that have treated this topic in different ways and from different aspects. In this part of the paper, the methodology is first explained, and then the results of the research conducted are presented and commented on, which helped us to discuss and draw certain conclusions by which we conclude this paper.

2. CRYPTOCURRENCY - MARKET SITUATION

Cryptocurrencies have become a hugely popular topic lately, both within and outside the academic community. Despite all the discussions and attention they draw to themselves, cryptocurrencies, as a relatively new concept, are still in the process of being understood and widely accepted by merchants, consumers and financial institutions. Together with blockchain technology, they represent some of the most promising forms of financial technology (FinTech) today that need not be confused. Cryptocurrencies are just a type of blockchain application that can be applied across sectors, not necessarily limited to cryptocurrencies or even FinTech (Golić 2019,130-131).

It is a technology that has the potential to reduce transaction costs while increasing the security and speed at which they take place, eliminating fraud and misuse within these processes, and achieving improved and liberalized transaction execution (Stupar 2019, 339). For these reasons cryptocurrencies are becoming increasingly accepted by participants from different countries (both developed and developing), industry leaders, such as Microsoft, Dell and Expedia. However, given the radical innovations they carry with them, they are characterized by marked instability and volatility - their numbers change from day to day, with many emerging, many disappearing (Sajter 2018, 278), with many announcing: Facebook Coin - also called "Project Libra" (Binance 2019a, 100), Samsung Coin (Binance 2019a, 101) and as a highlight announcement that the Chinese Central Bank (National Bank of the Republic of China) will launch a government-backed cryptocurrency launched as early as November 11 this year on China's busiest shopping day known as Singles Day (del Castillo 2019). And despite the fact that it is an almost completely unregulated area, the situation has gone so far.

The status of the legality and regulation of cryptocurrencies varies from country to country and is still undefined or under review in many of them. Considering the status of cryptocurrency regulation around the world, or whether crypto exchanges are banned, regulated or operating in the gray zone, according to Binance (2019, 67), Switzerland is, as in many respects, the only country in the world where this area is fully regulated. Furthermore, in August, the New Zealand Tax Administration regulated the payment of salaries in cryptocurrencies by issuing guidelines on how to handle such payments from a tax liability perspective from September onwards (Kaminska 2019). In addition to weak or almost no regulation, daily turbulence, new entrants and stakeholders, the many controversies and overt skepticism that accompany them, it is evident that the emergence of cryptocurrencies and the ability to survive in this period opens a new chapter, first and foremost in digital and immediately financial ecosystem. Therefore, we consider that in the continuation of the paper it is useful to consider the situation in the cryptocurrency market, which is widely referred to as a vibrant environment.

2.1. Cryptocurrency market and/or BTC dominance

According to Coinmarketcap data, as of August 28, 2019, the total number of cryptocurrencies was 2,494, traded at 20,327 markets, with a total capitalization of the complete cryptocurrency market of over USD 252 billion and a dominant BTC share of 69.06% (Coinmarketcap 2019a).

The ten largest cryptocurrencies, as measured by their percentage share in the total capitalization of the cryptocurrency market (Chart 1) at the date of data download, are presented in Table 1.

Table 1. Top 10 cryptocurrencies as measured by their percentage share in the total capitalization of the cryptocurrency market as of 28 August 2019

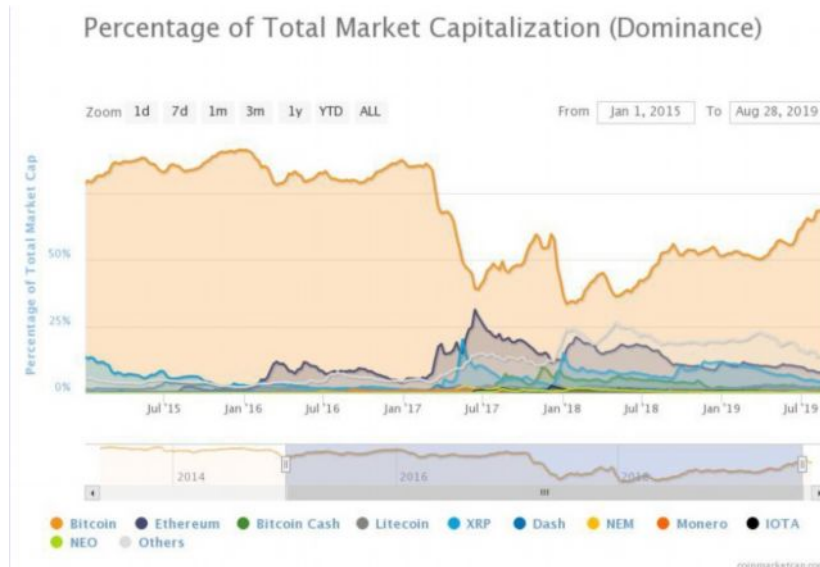
Serial number	Cryptocurrency name	Ticker	(%)% share in total cryptocurrency market capitalization	Price (USD)	% daily price change (+/-)
1.	Bitcoin	BTC	69,06	9.757,02	-4,11
2.	Ethereum	ETH	7,50	173,59	-7,19
3.	XRP	XRP	4,36	0,256064	-4,72
4.	Bitcoin Cash	BCH	2,08	239,00	-5,12
5.	Litecoin	LTC	1,71	67,22	-7,48
6.	Monero	XMR	0,50	72,52	-6,96
7.	Dash	DASH	0,31	85,44	-5,88
8.	IOTA	MIOTA	0,27	0,244512	-6,14
9.	NEO	NEO	0,26	9,10	-4,88
10.	NEM	XEM	0,18	0,048842	-7,31
11.	Other cryptocurrencies			13,77	

Source: Created by the author according to Coinmarketcap 2019a data.

From the data presented in Table 1, we can see the absolute dominance of BTC with respect to all other cryptocurrencies both in regard of the percentage of participation in the total capitalization of the cryptocurrency market and the price that was more than 40 times higher on the day of data analysis than Bitcoin Cash - the next cryptocurrency with the highest price from the group of top 10. The

percentage of BTC's share in the total capitalization of the cryptocurrency market in 2013 was at the level of 94.36% and it is logical that it constantly fluctuates, both for the emergence of new cryptocurrencies and for other reasons - the production of new BTC units and price fluctuations, which will be discussed more in the continuation of this paper, but it still remains indisputably dominant (Chart 1).

Chart 1. Market capitalization of leading cryptocurrencies and percentage of share in total cryptocurrency market capitalization in the period from 01 January 2015 to 28 August 2019 - BTC domination



Source: Coinmarketcap 2019a

New BTC units are “printed” by mining, as a reward for solving a mathematical task set by the BTC protocol, which verifies a newly created block and writes it to a BTC blockchain file (Stupar 2019, 341). The cryptocurrency can be owned by users either by purchasing a certain amount of cryptocurrency, or by selling goods and/or services. Every 10 minutes, on average, a new block is generated on the BTC blockchain file, which is also the average time to confirm the transaction. After generating a new block, the miner receives a reward that currently stands at 12.5 BTC (it halves every 4 years) along with transaction fees paid by users that are written to the new block. The only way to issue a new BTC is by mining (Stupar 2019, 341). BTC emission is fixed at 21 million (Coinmarketcap 2019b), so this is one reason why we can say that BTC is in fact a deflationary currency. This is one of the differences with respect to classic (fiat) currencies, which central banks can issue as needed and by estimate, thus triggering inflation (Stupar 2019, 341). By the time of this analysis (August 28, 2019), nearly 18 million BTC had been "mined", or over 85% of the fixed emission of 21 million BTC (Coinmarketcap 2019b). As the number of BTCs grows the reward diminishes and thus inflation is further suppressed, and as soon as all 21 million BTCs have been mined, the rewards will be zero, and miners will only earn from transactions (Stupar 2019, 341). However, what could significantly increase the value of BTC in the future is a permanent loss of almost 30% of the total amount of BTC 21 million. Specifically, as of July 2018, a total of 6 million BTC remains inaccessible (about 4 million have been lost forever and another 2 million BTC have been stolen), and since it is impossible to recover them, it means that 28.5% of the fixed emissions from 21 million BTC have been lost forever (BitcoinWiki, nd).

In early 2009, an open source project called Bitcoin-Qt was launched and the first BTCs were launched. Analyzing the price history of BTC from the beginning of trading to the present (ten year period), we can say that it is an extremely turbulent area (BitcoinWiki, n.d.). In the first year of existence of BTC, more precisely from January 2009 to March 2010, there was no market, activities were very weak and were mostly performed between crypto enthusiasts. In March 2010, the first stock exchange started operating - BitcoinMarket.com and BTC had a price of USD 0.003. In February 2011, BTC is worth USD 1, in the middle of the year as much as USD 31, and the number of users as well as the number of transactions starts to rise sharply, some market chains began to accept it as a means of payment and the first exchange offices were opened. In early 2014, it reached a price of USD

1,000 for the first time and as much as USD 2,000 in May 2017, to grow to a dizzying USD 10,000 in November of that year (BitcoinWiki, n.d.). The highest price ever reached for BTC is USD 20,089 (Coinmarketcap 2019b).

In this part of the paper, the greatest attention is given to BTC both because of its absolute dominance in the cryptocurrency market and the fact that all other cryptocurrencies are its derivatives, the so-called. altcoins. Similar to the Bosnian story of „burek“ (meat pie) and its domination, variations in which all pies are pies and only *burek* is the main pie, so are the cryptocurrencies introduced after BTC - altcoins represent various alternatives, that is, variations of the BTC algorithm itself, but BTC still remains the main "player".

3. WHAT IS BTC AND HOW DOES IT WORK?

The term BTC was first mentioned in a paper entitled "Bitcoin: A Peer-to-Peer Electronic Cash System" published in 2008 by an author and/or group of authors or an organization presented under the pseudonym "Satoshi Nakamoto" (Narayanan et al 2016, 18). In addition, this paper introduces the term and explains the design of the blockchain technology on which BTC itself rests. The essence of blockchain is that it solves the problem of creating a distributed database without having to use a separate entity to monitor transactions. Thus, it offers an alternative to the classic system by eliminating a trusted, centralized third party, replacing it with a decentralized network of unknown computers that validate transactions based on a specific algorithm (Nakamoto 2008, 1-4). Behind the computers on that network is anyone who wants to earn or "mine" BTC by confirming the transaction. Therefore, we can say that BTC is both the payment system and the currency of that payment system, and denotes the organization, software and protocol of the same name.

The BTC network was put into practice in January 2009 and the first BTC was created and Satoshi Nakamoto "mined" the first BTC block ever (known as a "genesis block") which received a prize of 50 BTC. The following text message is embedded in the coin of this block: "The Times 03 / Jan / 2009 Chancellor on Brink of Second Bailout for Banks." BitcoinWiki, nd). This message was a headline drawn from the British newspaper The Times in the aftermath of the 2008 global financial crisis, where banks were rescued by their governments (i.e., the US and the UK) as the main causes of the crisis. However, the comment points to the volatility of the banking system in general, and the title itself symbolizes the widely accepted concept behind BTC, an immutable, uncensored and decentralized medium of value exchange without endemic problems that are possible in traditional financial systems and governments (Curran and Norry 2019, 2). Not long after, Nakamoto also made the first BTC transaction, sending 10 BTC to another crypto enthusiast, Hal Finney (BitcoinWiki, n.d.).

Despite BTC being first introduced in 2009 and having been around for ten years, it is still a relatively new player in the trading, payment and transaction system, special in many ways. Its uniqueness is reflected in the principles on which it is based, which can be summarized as follows (Sajter 2018, 282-283):

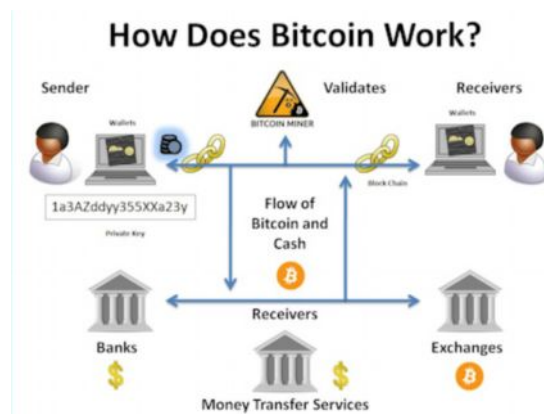
1. Decentralization (lack of institutions and central authority, disintermediation - exclusion of intermediaries that do not provide significant added value, and empowerment of end users);
2. Economic incentives (the concept is based on economic incentives for participants to compete for a prize by mining - verifying transactions and solving a cryptographic problem);
3. Fixed emission (due to monetary expansion ceiling - 21 million BTC inflation is not possible and creation of BTC requires large investments in hardware and electricity);
4. BTC coverage in electricity (electricity is the originator of the modern digital networked world, and logically, BTC has electricity coverage unlike fiat currencies that do not have any real coverage);
5. Transparency and simplicity of the transaction (each transaction is publicly registered and as such anyone can audit it; it is a mitigating circumstance that the system code of the system is open, while sending BTC is identical to sending an e-mail);
6. Security and protection of personal data (authorized transactions are verified and permanently registered in the public registry - a general ledger that is virtually invariant, although the public register is protected because personal identifiers do not exist - the addresses are cryptographically protected and the system is pseudo-anonymous).

Finally, we can conclude from all that BTC has emerged as a remarkable technological endeavor, and its future implications, along with the growing industry it has launched, are very deep (Curran and Norry 2019, 1), and it is an extremely important phenomenon. We discuss further on how it works.

3.1. How does BTC work?

In addition to being unique in many ways (see above), BTC is also characterized by its ease of operation (Figure 1). Stupar (2019, 341) considers it important that a new user can start using BTC without having to fully understand the technical details, in the same way that someone can use a program without being the author of the program or having knowledge of programming.

Figure 1. Functioning of BTC



Source: Wall Street 2018

The process begins when a potential member downloads the software, i.e. installs the BTC electronic wallet application (E_Wallet) on their computer, smartphone or tablet. When this process is completed, the user gets his new IP address – BTC address. Then the user starts collecting BTC through purchases or transactions. An electronic wallet is a simple user interface that tracks all BTC users, shows how much there is in the wallet, when the user wants to spend BTC, it processes the details of which keys the user uses, how to generate new addresses, etc. (Narayanan et al. 2016, 102). Transferring BTC from one address to another, or by a banking dictionary called "from one account to another", is in practice similar to sending and receiving e-mails because the user sending the BTC must know the address of the user to whom it is sent (Stupar 2019, 341). Each user has an insight into both his or her transactions and the transactions of the other participants, and each transaction contains a digital signature of the initiating user. This digital signature is generated from a combination of a transaction message and a user's private key, and differs in each message, which prevents forgery and misuse, since it would require an original private key. Each user also owns a public key that is mathematically related to a private key. All payment transactions are stored in the blockchain, which is nothing but a public ledger. BTCs are transmitted immediately and are mathematically verified by the network, which means that currency is transferred from one electronic wallet to another quickly, and safely (Wall Street, 2018). The BTC mining process is where transactions are continually placed in the blockchain and then verified by computers.

Despite many benefits, innovations and refreshments brought to the finance world by the blockchain and the BTC, the public has become pessimistic and optimistic about BTC. In order to better and more thoroughly review the views and arguments of BTC pessimists and optimists, we will consider the opinions of both in the next section.

4. BTC PESIMISTS AND BTC OPTIMISTS

In late 2017, in the midst of a major media scuffle over blockchain and BTC, at an investor conference held in New York, JPMorgan Chase & Co. Chief Executive Officer Jamie Dimon said he would fire any employee who trades BTC for being "stupid" (Son, Levitt and Louis 2017). He also

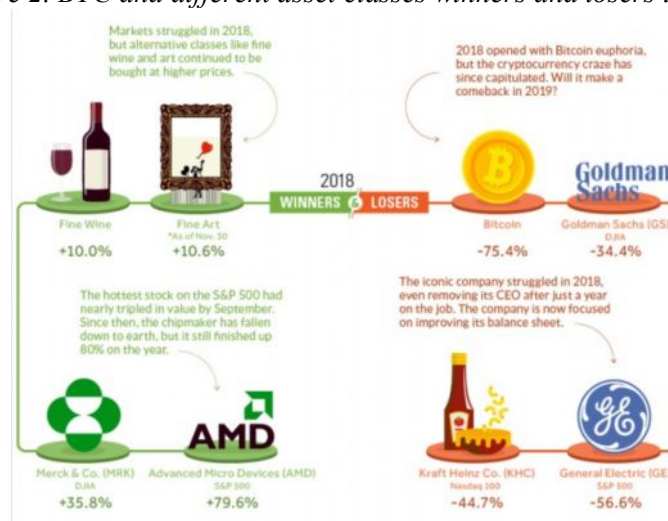
predicts that the BTC "will not end well" and that it will eventually fail, he considers it a fraud "even worse than tulip bulbs". Comparing all the excitement about BTC with lalomania, Dimon said in public that it was "good option only for murderers and drug dealers" (Son, Levitt and Louis 2017), that is, for terrorist financing, drug and arms trafficking, and some add to this list the payment of child pornography (Arnold and Thompson 2014).

Just one year after this statement from Dimon, JPMorgan Chase & Co. changed its mind completely and on February 14, 2019 became the first US bank to create and successfully test the JPM Coin cryptocurrency, which has a 1: 1 coverage in the bank's fiat reserves and enables instantaneous transfer of payments between institutional clients. When asked by bank executives what this cryptocurrency means for the future of payments, they explained it as follows: JPM Coin is a digital coin intended to make instant payments using blockchain technology; Digital currency is needed to exchange value, such as money, between different parties via the blockchain, which is why JPM Coin was created; It is a cryptocurrency that represents USD in certain accounts in JPMorgan Chase & Co. and always has a value equal to 1 USD, which means that when one customer sends money to another through a blockchain, JPM coins are transferred and currently redeemed for an equivalent amount of USD, reducing typical settlement time (JPMorgan Chase & Co. 2019).

Warren Buffett, legendary US investor and current CEO of Berkshire Hathaway, the third richest man in the world according to Forbes List (Forbes 2019), one of the most influential people in the world of finance whose opinion is respected and listened to, often compared BTC to gold, saying that both assets are speculative, do not bring dividends and earnings as stocks do. Prior to the Berkshire Hathaway Annual Meeting in 2018, he told CNBC network that BTC was "probably rat poison squared", that its purchase would not bring anything useful, and that BTC and other cryptocurrencies were doomed to fail (La Monica 2018). Not surprisingly, Berkshire's Vice President Charlie Munger agreed, calling cryptocurrency trading "dementia" (Li 2019).

This opinion of crypto pessimists also received confirmation in the market in 2018 (Figure 2). Compared to other asset classes, BTC ended the year as the biggest loser (Desjardins 2019).

Figure 2. BTC and different asset classes winners and losers in 2018



Source: Desjardins 2019

Analyzing how each asset class, currency and sector behaved in 2018, Desjardins (2019) states that this year began with BTC euphoria, but that cryptocurrency's enthusiasm declined by the end of the year, so that BTC lost more than 75% of market value (Figure 2). As for the other asset classes, the story is similar, but the losses were slightly lower, so crude oil, for example, closed the year at a loss of 24.8%, the S&P 500 fell by 6.2% and gold at the same time by 2.6%. Interestingly, alternative asset classes such as fine wines and fine arts, despite the fact that investing in this type of asset requires knowledge that goes beyond conventional investment theory and practice (Radmilović and Golić 2019, 167), outperformed most traditional asset classes, yielding about 10 % (Desjardins 2019).

Furthermore, in 2019, Warren Buffett continued with BTC pessimism, calling this time the BTC a "gambling device" with a lot of frauds connected with it (Li 2019). Explaining that BTC is no

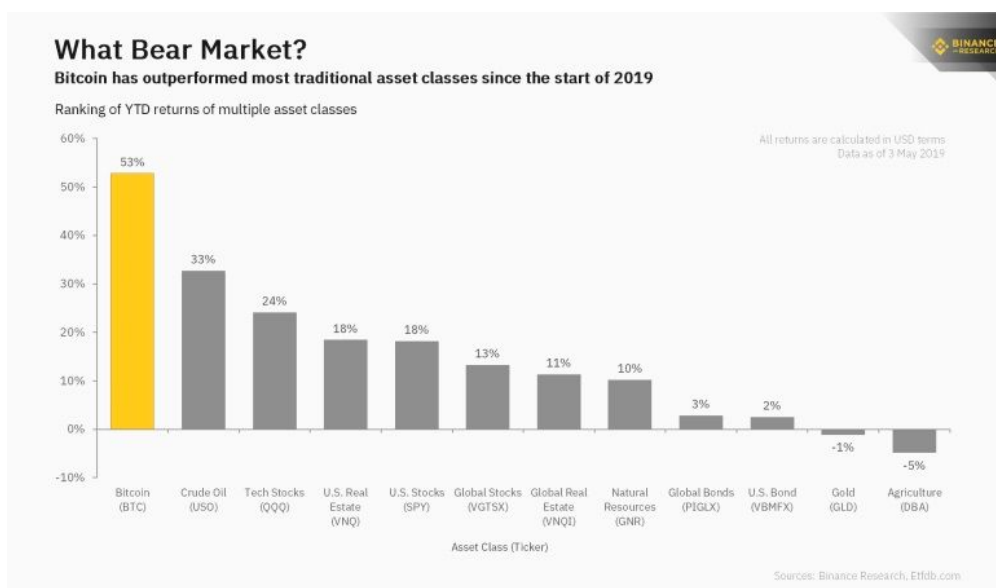
investment, Buffett compared it to a button on a jacket, explaining: I'll tear a button off the jacket, What I'll have here is a little token, then I'll offer it to you for USD 1,000 and I'll see if I can get the price up to USD 2,000 by the end of the day... But the button has one use and it's a very limited use (Li 2019).

On the other hand, despite all the pessimism and skepticism, and the market situation in 2018, BTC optimists do not hesitate and have great forecasts for BTC in the coming years. Thus, in response to Buffett's claims, an anonymous Australian cryptocurrency expert has asked for a bet with a USD 6.28 million stake that the BTC price will beat Berkshire Hathaway's share price by 2023, and if it wins, the bet's mover is seeking USD 887 million (Bitcoinnews 2018). This is a particularly bold move, given the fact that Berkshire Hathaway shares are currently selling for just over USD 288,000, which means that the mover is very optimistic and estimates that one BTC will rise from today's price of USD 9,757 to about USD 300,000 by 2023, of course, provided that Berkshire Hathaway's shares are worth a little more than they are today (Dawkins 2018).

Answering all Buffett's charges to BTC, Nexo Principal Partner Antony Trenchev (the first company to approve instant crypto credit lines) claims that BTC is censorship-resistant money that doesn't need permission from anyone or any bank to transfer, which is innovation (Trenchev 2019). The only argument against it as a form of money is its volatile nature. Although volatility has been a problem so far, it is on the decline and will continue to do so, so that according to Trenchev's opinion the BTC became the best selling asset in the past 10 years. Contesting Buffett's "limited use" argument, he states that BTC is very attractive, citing the following: After sending USD 250,000 from New York to London for just a few cents, the transaction was completed in just few minutes, while SWIFT transactions of the same size cost around USD 200 and take 5-7 business days, so that this speaks enough about BTC's usable value (Trenchev 2019).

Although the cryptocurrency market has experienced different ups and downs this year, it still surprises critics. Thus, the world's largest cryptocurrency, BTC, also had an exciting year, as indicated by the Binance Research report that BTC is one of the best performing assets in 2019 (Binance 2019b). Comparing the YTD-Year-to-Date yield of BTC and traditional asset classes (crude oil, technology stocks and natural resources, etc.), it was found that BTC performed better than observed traditional asset classes (Chart 2). Graph 2 shows that BTC had a YTD yield of as much as 53%, while crude oil had a YTD yield of 33%, technology stocks only 24%, global and US bonds posted disappointing 3% and 2%.

Chart 2. Rank of BTC and observed asset classes by YTD yield

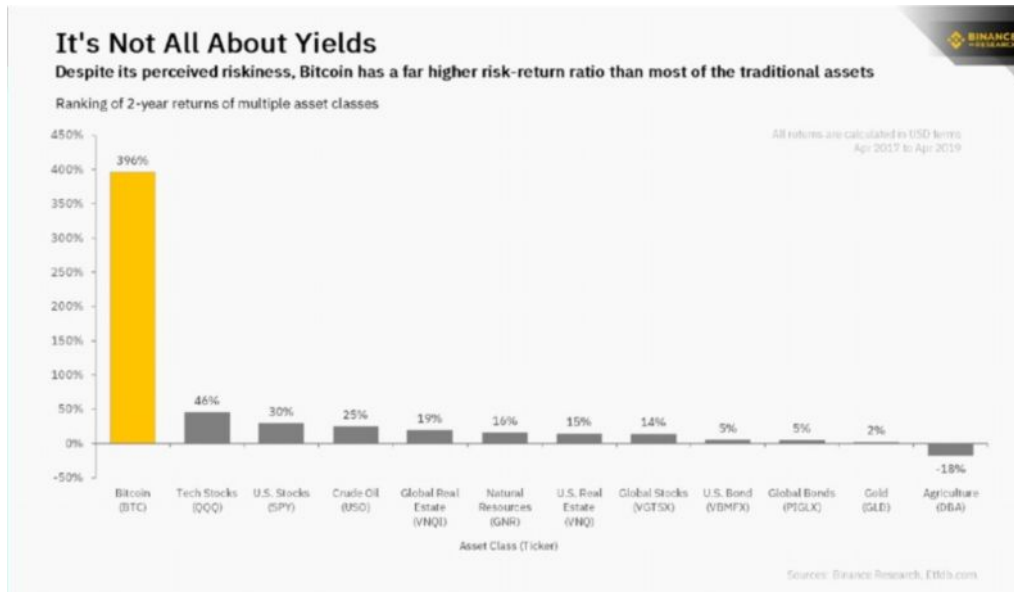


Source: Binance 2019b

Despite investing in BTC being risky and its trading being treated as "dementia" (Li 2019), a recent 2019 Binance Research study found that BTC has a far higher risk-return ratio than most of the traditional asset classes observed - Chart 3 (Binance 2019a, 106). Ranking the observed asset classes

according to the two-year yield, BTC is an absolute record holder with a yield of 396%, ahead of technology stocks, US bonds, crude oil, etc. (Binance 2019a).

Chart 3. Rank of BTC and observed asset classes by two-year yield



Source: Binance 2019a

Furthermore, in the first report from the BinanceResearch portfolio management series, BTC is being promoted as an effective portfolio diversification tool. Regardless of the asset class that investors prefer, according to this report, the inclusion of BTC in the portfolio (made up of more traditional asset classes) is useful in order to better diversify. In line with modern portfolio theory, despite high (but decreasing) volatility, simple allocation of BTC in a diversified portfolio consistently leads to improved risk and return profiles for both individual and institutional investors (Binance 2019c, 18). These conclusions came after an analysis - a simulation of BTC inclusion in the portfolio, in line with the slogan: "add a little BTC because of its potential to grow without too much risk of loss for the total portfolio" (Binance 2019c, 11). The simulation was made for the target time period from December 31, 2015 to June 30, 2019, which is a three-year and six-month period, covering three different phases of the BTC market, namely: price increase, sudden drop in price, along with the period in which BTC stagnates. The simulation showed that incorporating BTC into all of these portfolios creates a better risk-return profile as opposed to non-BTC portfolios. As BTC does not correlate with traditional asset classes, its inclusion in a portfolio composed of these classes leads to improved risk-return profiles for simulated portfolios. Which ultimately means that if BTC (and other cryptocurrencies) remain inconsistent with other asset classes, the benefits of including BTC in the portfolio for better diversification can be expected in the future (Binance 2019c, 11-17). According to this report, from a trading perspective, BTC is one of the most liquid assets on the planet with a constantly low spread - a middle spread of less than 2-3 basis points (bp), large volumes and cost efficiency because its trading places are constantly arbitrated (Binance 2019c, 1). Therefore, BTC, according to this report, has become an essential alternative asset to be included in the traditional portfolio for its diversification properties (Binance 2019c, 1).

Finally, as for the forecasts for the period 2019-2020, crypto optimists speculate that BTC will reach USD 25,000 or even USD 50,000. Renowned BTC enthusiast and billionaire Tim Draper predicts that in two years' time, fiat currencies will become archaic, while BTC will be widely used. Likewise, another big name and BTC supporter, Elon Musk, founder of Tesla and SpaceX, sees BTC as "brilliant" and far better than paper money (Newsallcoins 2019).

Recognizing the fact that, despite its potential, opinions on BTC are still divided and diametrically opposed, and for a more objective view of the research question posed (is BTC "rat poison" or a new asset class?), we will consider hereunder what a standing of science is, or what are the conclusions of recent scientific research that has dealt with this subject and issue in different ways and from different angles.

5. WHO IS RIGHT AND/OR WHAT DOES SCIENCE SAY?

Considering the views of BTC pessimists and BTC optimists, we have found that not only is there no consensus on the importance of BTC in the financial world, but also that opinions are diametrically opposed and move from one extreme to another. In order to determine whether BTC is actually “rat poison squared” or a new class of property worth investing that can serve to diversify the portfolios of both individual and institutional investors effectively, we have analyzed a number of recent scientific papers treating this area (Table 2) to come up with additional insights that will shed light on this area and help us draw some conclusions.

5.1. Research methodology

In order to achieve our goal, we conducted a keyword search of the following electronic databases of scientific papers: NBER (National Bureau of Economic Research), Google Scholar, and SSRN (Social Science Research Network). We did a keyword search in a way that we selected two keywords that essentially reflect - summarize the views of BTC pessimists and BTC optimists. For obvious reasons, the words used in the searches are in English, and we have used the following keywords: "Bitcoin rat poison", "Bitcoin tulip bulbs", "Bitcoin asset class" and “Bitcoin portfolio diversification”. A number of scientific papers have been analyzed that treated BTC issues from different aspects over a period of less than five years (2015-2019), which is also the "gold standard" in the research (use of scientific papers not older than five years), and their chronological overview together with the survey results are given in Table 2.

Table 2. Chronological overview and results of scientific research according to the methodology described

Author or Authors	Year	BTC Research Area/Area	Conclusion or Conclusions of the BTC Scientific Research	BTC Pessimism	BTC Optimism
Corbeta, Luceyb, Urquhartc and Yarovayad	2019	Cryptocurrencies as financial assets	Although cryptocurrencies continue to evolve, as do the markets in which they are traded, caution should be exercised. Isolating lessons from our past, such as those found in Lalomania and Dot-com collapse, adds to the accusations that are conducive to speculative balloons. However, these accusations are more focused on knowing that the future of finance just lies in the underlying blockchain on which cryptocurrencies are based.		√
Gerlach, Demos, and Sornette	2019	History of BTC Balloons	The BTC is particularly attractive as a new asset class. It follows from the quantitative analysis of the balloon that the price of BTC, although highly volatile and prone to frequent decline, could at any time recover from the withdrawal, allowing the price to rise again and again over the coming years.		√
Foley, Karlsen and Putniņš	2019	BTC and Illegal Activities	Approximately 25% of users and almost 50% of BTC transactions are associated with illegal activities; Cryptocurrencies are transforming black markets by enabling "black e-commerce".	√	
Huberman, Leshno and Moallemi	2019	BTC Payment System (BPS)	Comparing the BTC Payment System (BPS) with traditional payment systems, it is found that, in addition to a number of advantages, it has certain disadvantages; However, it is suggested that this area has not been sufficiently explored.	√	√
Wang, Tang, Xie and Chen	2019	BTC and Hedging	If a portfolio is made up of multiple asset classes at the same time, by incorporating BTC into the portfolio, it can play multiple roles, such as asset hedging/protection, safe haven and diversification assets.		√
Baur, Hong and Lee	2018	BTC-a medium of exchange or ...?	Analysis of transaction data in BTC accounts shows that BTCs are mainly used as a speculative investment rather than as an alternative currency and medium of exchange.	√	
Guesmi, Saadi, Abid and Ftiti	2018	BTC and Portfolio Diversification	BTC involvement significantly lowers portfolio risk, compared to portfolio risk made up of gold, oil and stocks only.		√
Liu and Tsyvinski	2018	Cryptocurrency Risk and Yield	Cryptocurrencies (BTC, Ripple and Ethereum) have a better risk-return ratio than traditional asset classes (stocks, currencies and precious metals).		√

Taskinsoy	2018	BTC and USD	The main results of the analyzes show that the BTC price can grow exponentially above the current price level and can reach USD 1 million by 2040.		√
Blau	2017	BTC and Speculative Trading	The results of this study do not reveal that during 2013 speculative trading contributed to the unprecedented rise and fall of BTC value, nor can it be argued that speculative trading is directly related to an unusual level of BTC volatility.		√
Bouri, Molnár, Azzi, Roubaud and Hagfors	2017	BTC and Portfolio Diversification	BTC is suitable for portfolio diversification.		√
Chiu and Koepl	2017	BTC Economic Potential, Efficiency and Design	BTC is extremely expensive and inefficient in its long-term design. The efficiency of the BTC system can be significantly improved by taking certain actions and completely changing the consensus protocol. However, it can be a viable alternative in retail payment systems.	√	√
Garman, Green and Miers	2017	BTC Decentralization and Privacy	A high degree of privacy in BTC transactions allows individuals to conduct illegal transactions such as money laundering. This raises questions about the regulation of these transactions and proposes adding privacy safeguards to ensure compliance.	√	
Bohannon	2016	BTC Failure	When conducting transactions with BTC, privacy is not guaranteed because it leaves a forensic trail that can make the entire financial history of transactions become public information, resulting in law enforcement officials increasingly seeing BTC as a crime prosecution tool.	√	√
Engle	2016	Is BTC Rat Poison	Cryptocurrencies are an unproductive speculative fad and therefore a poor investment and should simply be banned, as such posing a threat to domestic and international security.	√	
Masoni, Guelfi and Gensini	2016	BTC and Illegal Activities	BTC allows the anonymity of financial transactions when selling illegal and counterfeit drugs, exchanging pedo-pornographic material, and marketing stolen medical records.	√	
Tasca, Liu and Hayes	2016	BTC Economy	Current concerns about the use of BTC for illegal transactions are exaggerated because the BTC economy is still maturing.		√
Afilipoaie and Shortis	2015	BTC and Illegal Activities	Although BTC has some weaknesses in conducting illegal transactions, because publicly available information stored on the blockchain is vulnerable to law analysis, it will continue to be the most common cryptocurrency accepted and used on darknet to perform illegal activities.	√	
Ali	2015	Dangers of BTC deregulation	BTC has become both a useful tool for criminals and an increasingly common target for attacks - frequent attacks on BTC trade. In addition, it can be used for numerous criminal activities such as tax evasion and money laundering.	√	
Cheah and Fry	2015	BTC and Speculative Balloons	As with traditional asset classes, BTC prices are prone to speculative balloons, with empirical evidence that the BTC base price is zero.	√	
Eisl, Gasser and Weinmayer	2015	BTC and Portfolio Diversification	Analysis of BTC yields shows extremely low correlation with traditional asset classes. The inclusion of BTC in an already well-diversified portfolio is suggested, because although it increases the conditional value at risk (CVaR) of the portfolio, this additional risk is offset by high returns, which ultimately leads to better risk-return ratios of the portfolio.		√
Kubát	2015	BTC and Fiat Currencies	Comparison of results shows that the volatility (and therefore the risk) of BTC is significantly higher than for other currencies and assets.	√	

Source: Author's Research (2019)

Note: This list represents a number of papers relevant to shed light on the question: is BTC a "rat poison" or an asset class?, created between 2015 and September 2019. The Table shows a chronological list of selected scientific papers that have studied BTC from different angles selected according to the keywords listed in the research methodology described above.

Based on the conducted research i.e. conclusions drawn from the analyzed papers published in the observed period (2015-2019) and systematized in Table 2, it can be seen that in recent times (2018 and 2019) BTC is increasingly being referred to as a new asset class suitable for portfolio diversification, extremely volatile but also prone to rapid recovery. So, as the cryptocurrency market grows and evolves, and some serious players enter the game, such as JPMorgan, Facebook and

Samsung, so are the attitudes towards BTC and cryptocurrencies, from the extremely pessimistic ones that prevailed in the analyzed papers from 2015, then slightly less pessimistic in 2016, moderately optimistic in 2017 and 2018, to almost fully optimistic in 2019. Given that the BTC economy is still maturing (Tasca, Liu and Hayes 2016), and that we are just discovering the financial function of BTC, we cannot confidently confirm that BTC will dominate in the future or become a global reserve currency or prove to be a financial whim (Engle 2016), and the answer to these questions can only be given in time ahead.

6. DISCUSSION AND CONCLUSION

Cryptocurrencies are one of the areas that has deserved all the attention of the academic community, regulators and policy makers and investors since a decade ago, since BTC was first introduced by Nakamoto (2008). Only one in a row of reasons, and perhaps most important, lies in the fact that everything we know from traditional finance may not be relevant to the area. Crypto pessimists associate cryptocurrencies with cybercrime, money laundering, tax evasion, terrorist financing, arms and drug trafficking, child pornography payments (Arnold and Thompson 2014; Masons, Guelfi and Gensini 2016), and many other illicit activities that may lead to destabilization of the world economy. Warren Buffett considers the first and leading cryptocurrency of BTC a "rat poison squared", a "gambling device" which is not an investment because it has no usable value (La Monica 2018; Li 2019). On the other hand, crypto optimists consider it a new asset class, a cashless medium of exchange that has the potential to change the world of finance as we know it (Corbet et al. 2019) and the financial map of the world. BTC as the first decentralized digital currency was and remains the leader in the cryptocurrency market, both in terms of trading volume and prices achieved. Despite all pessimism and skepticism, there has been an increased use of cryptocurrencies, which can be linked to their low transaction costs, peer-to-peer system and free management design that has led to an increase in trading volume, volatility and cryptocurrency prices (Corbet et al. 2019). So, for example, between October 2016 and October 2017, BTC's market capitalization increased from USD 10.1 to USD 79.7 billion, while its price jumped from USD 616 to USD 4800, bringing this significant increase to investors on an annual basis a yield of 680% that no other asset class could offer, and in December 2017, BTC reached a price of USD 19,500 (Corbet et al. 2019). In addition, BTC prices have been steadily increasing year by year, with some serious entrants such as JPMorgan, Facebook and Samsung appearing on the market, which means it has potential.

However, as England and Fratrick (2018, 27) state, if we had to bet if gold or BTC would be more useful in ten, fifty or a hundred years, today we would bet on gold, but if BTC continues to hold or increase during the years there is hope for it and for all other cryptocurrencies. If this is the case, the pessimists should also become less pessimistic, as done by the leading BTC pessimist, Warren Buffett, among others, who called BTC "rat poison" in his 2018 statement (La Monica 2018), and when asked in 2019 (next year) if he would join the blockchain, he said that he was probably doing so indirectly only, and that he could not be expected to lead the way (Li 2019). In addition, through a systematic review and analysis of scientific research published in the previous five years (2015–2019), selected by keywords that reflect and summarize the views of BTC pessimists and optimists, we find that conclusions and attitudes toward BTC, its financial and economic characteristics and possibilities presented in the observed scientific studies vary from almost completely pessimistic, as they were in 2015, to almost completely optimistic in 2019.

Finally, there is a possibility that at some point in the future the following will be written in economic history: "It was more than obvious that BTC would fail or succeed" (England and Fratrick 2018, 26), but in today's moment when BTC and cryptocurrencies seem just experiencing their flourishing, the future is impossible to predict, nor to decide who is right: the pessimists or optimists. It is important that cryptocurrencies continue to evolve as do the markets in which they are traded, but as stated by Corbet et al. (2019) it is equally important to mitigate our expectations of their potential value and benefits to society, while at the same time cautioning and reflecting on the inherent dangers they might produce in our society. Learning any lessons from our past and asking whether BTC will join the history of speculative balloons like "Lalomania" and Dot-com or whether it will be new gold does not solve the dilemma of whether the future of finance may lie in the underlying blockchain on which cryptocurrencies are based (England and Fratrick 2018, 26; Corbeta et al. 2019).

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