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PHENOMENON BITCOIN: MONEY OF FUTURE OR JUNK COMMODITY?

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Abstract

The paper is aimed at a very accurate topic which is problematic of cryptocurrency Bitcoin. The main aim of this paper is to evaluate the potential of this most important cryptocurrency to serve as full-value money. The matter of the first chapter is introducing the Bitcoin concept including its characters and history. In this phase, we are thinking about Bitcoin as a commodity. The analysis of cryptocurrency Bitcoin within currency relations framework is subject for next chapter. Each commodity, which has a role of money, must fulfil three criteria. This commodity must be convertible, relative stable and liquid. This paper discusses the evaluation of these aspects. Based on the analysis, we can contribute to the question whether bitcoin can be used as full-value money in the future. The paper is not concerned on technical aspects like the algorithm of mining, blockchain technology or account safety.

Keywords: Bitcoin, Cryptocurrency, Liquidity, Stability, Convertibility

1 INTRODUCTION

Forbes Magazine declared 2013 to be ‘The Year of the Bitcoin’. (Christensen, 2013) This cryptocurrency is the phenomenon of today´s times. But we can say now, the Year of the Bitcoin is 2017. True madness about Bitcoin has started in June 2017. After half year, Bitcoin price peaked on incredible level 20 000 USD/BTC.

Almost everyone has heard about Bitcoin. This cryptocurrency attracts the attention of financial professionals and the general public. Critics say that it's just a speculative bubble. Many sceptics, since the issue of the Bitcoin, put the question "Why use virtual currency instead of traditional currencies? On the other side, Bitcoin supporters see this reality as the beginning of a new era of free money.

Cryptocurrencies are also a great challenge for the academic sphere. There exist almost 2000 cryptocurrencies today. (coimarketcap.com, 2018) It is necessary to understand how Bitcoin works and what is its position in the contemporary monetary system. And above all, it is necessary to answer the question: "What is Bitcoin?" Is it the currency of the future, or is it merely just a Ponzi scheme for the internet age? Obviously, this is the question that everyone with an interest in Bitcoin is curious to find out.

Today, intensive discussion is taking place about cryptocurrency classification. Is Bitcoin currency or investment asset? (Bitcoin.com, 2018) Next type of discussion is about ecology aspects for cryptocurrencies. Process of minning is very demanding on energy power. Cryptocurrencies are still not fully understood, especially from the monetary point of view. Saito (2014) discuss the problematic of financing of illegal activities.

For economic and academic sphere is research about monetary aspects of cryptocurrencies very accurate and relevant. Cryptocurrencies represent new element in international monetary system. These elements create new relations among all elements in this system. Cryptocurrencies are not a matter of small groups of IT experts but it is thing which influences the current world currency arrangement.

2 THE PRINCIPLE OF BITCOIN

Bitcoin can be described as a virtual asset which is absolutely identical across markets where is traded. The market for this asset operates 24 hours daily and 7 days in a week. If the market participant has an access to the internet then data from this market are available immediately. (Pieters, Vivanco, 2017)

Urquhart (2016) describes bitcoin as a cryptocurrency which has received substantial attention given by its innovative features, simplicity, transparency and due to increasing popularity.

Virtual currency Bitcoin is an alternative to traditional coins because it does not depend on a specific bank or state, is not controlled by any state and is protected of inflation. Georgetta et. all (2016) The similar view is possible to find in the book by Stroukal and Skalicky (2015). Authors character Bitcoin as a digital P2P currency (no as commodity). In addition, the authors describe Bitcoin as "good money". The characteristics of good money are divisibility and interchangeability. Authors also state that good money does not need internal value. That is generally true. At the first sight is possible to state that bitcoin is a very hopeful alternative for classic fiat money. The same view as mentioned authors has Graf (2013). Bitcoin is understood as a full-value money. The more caution argument is presented by Heissler et. all (2016). According them Bitcoin can have (but only in case of stable value) the character of good money.

On the other side, Baeck and Elbeck (2015) arguing that Bitcoin should be understood as a speculative commodity rather than a currency. Rate of divisibility and interchangeability is not enough here. The same view has Shostack (2016) who says that Bitcoin has price only within using as a transaction service.

Georgetta et. all (2016) claim, that individuals attracted to new technology and virtual coins followers, believes there are a number of advantages of using them:

1) Protection of Privacy for Bitcoin users

2) Facilitates people's ability to buy of anywhere

3) Secured financial data (blockchain technology)

4) System does not allow seizure

Bitcoin was launched in 2009. The global financial crisis has reached its peak this year. The market price has reached level from 0 USD to 20 000 USD per 1 Bitcoin (in December 2017) since launched. At the time of writing this paper (February 2018), the Bitcoin price have been oscillated from 8,000 to 11,000 USD per 1 Bitcoin.

For the purpose of conceptual purity, there will be use concepts "currency" and "money" as synonyms. The currency can be defined according to Holman (2003) as national money unit which is issued by law. Naturally, Bitcoin has never been "issued". However, this fact is not an obstacle to that Bitcoin can serve as an instrument of market exchange.

There are several ways to get Bitcoin. The first way is minning. It is process of creating new Bitcoins with using mathematic algorithms. Common user can buy Bitcoin on cryptocurrency stocks. Very popular way is using Bitcoin ATM. In Czech Republic, there is a relatively wide network of these machines. If investor want to speculate on BTC price development he can use CFD (Contract for Difference) on Cryptocurrencies. Some FOREX brokers provide this service (XTB). It is possibility how to speculate with Bitcoin without its hold. The investor holds only derivate which works as stock swap.

3 BITCOIN AS A MEDIUM OF EXCHANGE

If we want to evaluate the potential of Bitcoin to serve as money of the future we need to study the economic characteristic of Bitcoin and also its position within monetary systems which including the links among Bitcoin, cryptocurrencies.

Cryptocurrencies (respectively crypto-assets) form unique monetary system. This system is in a form other than that we know in the case of conventional currencies. At present, there are approximately 1 500 crypto-assets, which are commonly referred to as cryptocurrencies. Bitcoin represents the dominant crypto-asset in this system with a market capitalization of 178 billion USD. (Coinmarketcap.com, 2018) Cryptocurrency system is possible to describe with using an analogy as the aggregate of existing links among individual cryptocurrencies to whole system and whole system to individual cryptocurrencies. This system can be examined (according to Nemecek, 2000) from the point of view within monetary relations.

In the case of Bitcoin, we should start with an analysis of basic fundaments (see figure 1 below). The first one is the Bitcoin price. The price has already been analysed in the previous chapter. The price and volatility of Bitcoin will be discussed in the next chapters. Total market capitalization reached 178.5 trillion dollars in February 2018. A very interesting indicator is the number of daily transactions. At the time of article writing, it takes about 192K transactions each day. Here we can observe an interesting fact. While bitcoin and market capitalization has increased since the begin of February, the number of daily transactions has been steadily decreased. This can be explained mainly by the speculation theme.

Bloomberg issued an article where is published the fact about decreasing number of the places where is possible to pay with Bitcoin. This fact also supports the assumption of a growing speculative motive. (Bloomberg, 2017)

The basic questions that arise in the case of cryptocurrency systems are the convertibility, stability and liquidity requirements of individual cryptocurrencies. In the following chapters, we will attempt to analyse how Bitcoin achieves to these important requirements.

Figure 1 - Basic Bitcoin Fundaments. Source: bitcoin.org (2018)

3.1 Question of Convertibility

In the case of Bitcoin, convertibility is understood as a possibility to convert one cryptocurrency into another cryptocurrency. Cryptocurrency which can be converted by anyone, at any time, for any purpose and in any quantity, can be described as well convertible. There exist almost 30 cryptocurrencies which can be converted into Bitcoin directly. The selection included the most important cryptocurrencies, such as Ethereum, Ripple or Monero. The list of other cryptocurrencies is available on the webpage: changelly.com (2018)

It is also possible to make indirectly conversion with using of classical currencies. However, in this case, we cannot speak about true convertibility. This fact is a reason why is classical currency existing still essential for the functioning of cryptocurrency market (especially for non-convertible cryptocurrencies).

The exchange ratio for the most important cryptocurrencies is quoting around their market values (see webpage: bestchange.com). We can observe that spreads are relatively narrow. However, exchange rates vary across platforms for cryptocurrencies conversion considerably. For illustration see figure 2 where are showed exchange ratios between Bitcoin and Ethereum.

In the case of Bitcoin, the convertibility is limited by the fact that there are bans on Bitcoin in some countries. Bitcoin has been banned for example in Taiwan, Russia, Bolivia, Colombia and Bangladesh. It can be assumed that the ban on Bitcoin will be gradually expanded. Cryptocurrencies are a threat especially for undemocratic governments with a problematic monetary policy (for example in the case of high-inflation).

Exchanger	Give	Get ▼	Reserve	Reviews
Bitochek	1 BTC min 0.01	13.08230000 ETH	8.82	0/3
AlfaCashier	1 BTC min 0.00445631	13.06745800 ETH	171.65	0/75
Cashex	1 BTC min 0.01	13.06636737 ETH	7.01	0/2
24PayBank	1 BTC min 0.003	13.06210000 ETH	9.01	0/7
WestChange	1 BTC min 0.05	13.05325100 ETH	12.52	0/40
WMGlobus	1 BTC min 0.003	13.05315100 ETH	13.33	0/12
IObmen	1 BTC min 0.005	13.05247300 ETH	42.39	0/3
BaksMan	1 BTC min 0.005	13.04940000 ETH	594.70	0/1
100Btc	1 BTC	13.04580000 ETH	7 971.87	0/2
Bankcomat	1 BTC min 0.003	13.02980000 ETH	41.87	0/3
Xchange	1 BTC min 0.005	12.91390000 ETH	37.09	0/10

Figure 2 - BTC/ETH exchange rates sample. Source: bestchanges.com (2018)

Another problem that makes Bitcoin's conversion difficult is high exchange rate volatility. This problem will be discussed in chapter stability (3.2.). The volatility of Bitcoin and Ethereum is there compared with the volatility of currency pair EUR/USD. Bitcoin is likened to gold by his supporters, but this comparison is not accurate. The last barrier for Bitcoin convertibility is connected with the impossibility to convert cash. Bitcoin can only exist in virtual space.

Despite the above, Bitcoin can be considered a relatively well convertible cryptocurrency. In the near future, banks will not be so willing to do conversional operations with cryptocurrencies. Cryptocurrencies can be converted only with using specialized web platforms. However, those platforms are without any regulation. In compare with the level of convertibility in the case of conventional currencies those will always be significantly more convertible. The reasons for this assumption are described above.

3.2 Question of Stability

In the case of the stability parameter, the following question should be answered: Is it necessary for Bitcoin to be stable? In other words, is it possible to stabilize Bitcoin in any way? However, the notion of stability must be understood in a relative sense. (Nemecek, 2000) A stable currency can be considered as one for which its internal and external stability changes only slowly. The exchange rate of this currency oscillates around the chaotic attractor. (Sadil, 2016)

Bitcoin is unstable in its principle (see Nakamoto, 2008). Its price is influenced by market forces, supply and demand. Demand for Bitcoin is based on two motives, transactional and speculative. At present, it is clear that the speculation motive is stronger than the transaction motive. This assumption can be supported by the fact that the volume of payments is decreasing while Bitcoin's price is rising in the month February 2018. This is evident from the figure, which is mentioned in Chapter 3.

As already mentioned, we recognize internal and external stability. Internal stability means stable purchasing power. In the case of Bitcoin, the instability of purchasing power is apparently. In 2010, it was possible to buy two pizzas for 10,000 BTC. At present, those would be worth over $ 115,000,000. (bitcoin.org, 2018)

The Bitcoin Price is showed in figure 3 below. We can also measure parameter of stability with using volatility. The Bitcoin price is currently 20x more volatile than the most traded currency pair EUR / USD. (bitvol.info., 2018) The development of volatility in last year is also showed on figure 3 below. The average value of standard deviation of daily returns is between 5 and 6 percent. Actually volatility (measured by standard deviation of daily returns) of currency pair EUR/USD moves around 0,4 % in March 2018. (authors calculation)

Figure 3 - Bitcoin/USD Volatility index (bitvol.info., 2018)

Let's also consider external stability. This means the stability of Bitcoin courses against other cryptocurrencies. At first, we can observe the exchange rate for cryptocurrency pair Bitcoin/Ethereum. This rate is showed in figure 4 below. We can see, that exchange rate was very instable last year. In the present time, the 1 Bitcoin unit is equal 11,6 Ethereum units (at the end of February 2018).

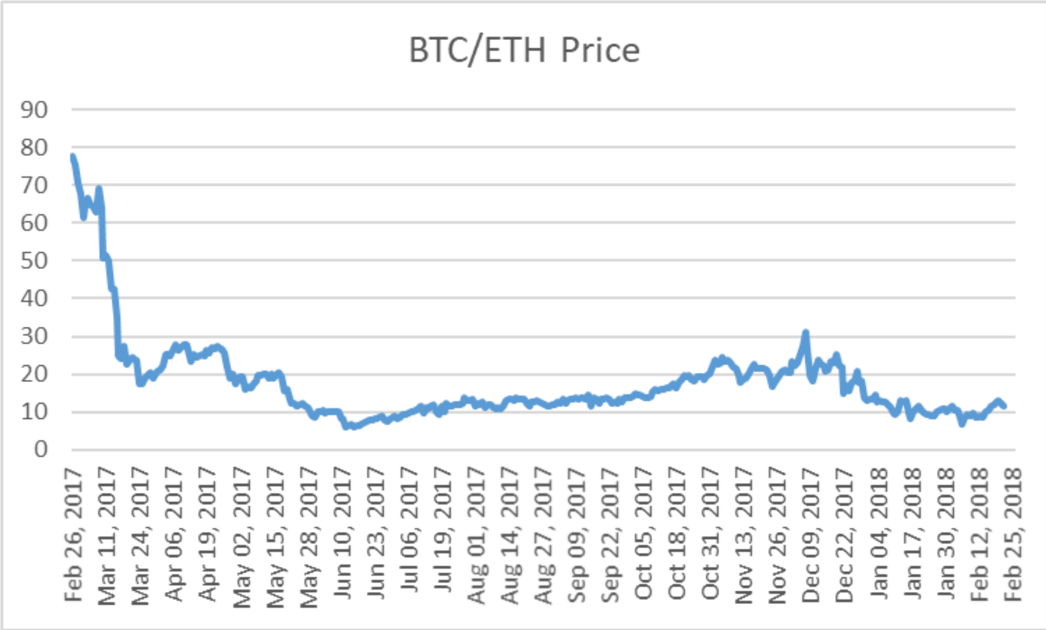

Figure 4 - Bitcoin/Ethereum exchange rate. Source: author´s own calculation

And secondly, there is also possible to study correlation between Ethereum and Bitcoin prices. Figure 5 shows the daily returns ratio for the Bitcoin and Ethereum. There is also possible to observe high instability here. Correlation coefficient between Ethereum and Bitcoin daily returns is only 0,18. This result means weak relation between price of those two cryptocurrencies and visible high volatility for both of them. (author´s own calculation)

It is clear from the above that Bitcoin does not fulfil the stability requirement. Bitcoin cannot be pegged to anything. There is also no chance to stabilize its price. Its price is left to purely market influences. So, could it be working in these conditions? The answer is very difficult. Generally, the existence of reflexivity in complex economic systems means that also Bitcoin is vulnerable to making price bubbles. The impossibility of regulation, in this case, is an obstacle.

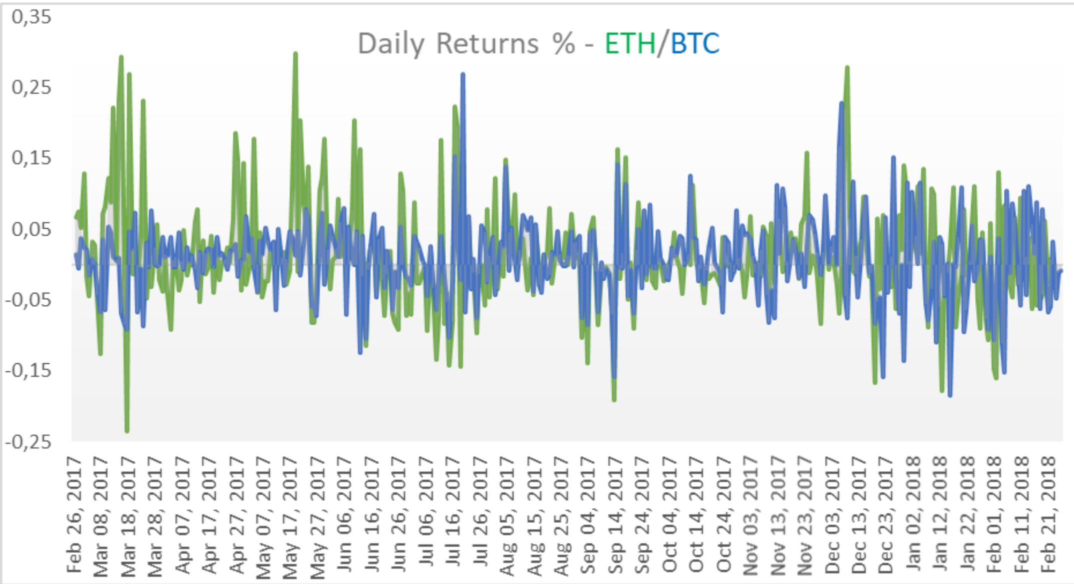

Figure 5 - Standard Deviation of Daily Returns for ETH and BTC. Source: author´s own calculation

3.3 Question of Liquidity

In case of liquidity, it is necessary to deal with obligational argument by opponents of Bitcoin. Those claim that with according to final limited amount of Bitcoin there exist risk situation. It is assumed that will be not enough of Bitcoin. So, the asks are simple. Will be enough Bitcoin in the future? And does the deflation design mean an essential problem for Bitcoin's using? The question of liquidity is also related with the significant asymmetry between the holders of Bitcoin which is also mentioned here.

The Bitcoin opponents state legitimate arguments. At first, Bitcoin is constructed to reach infinite deflation. The amount of Bitcoin is limited to 20 million units. Deflation means, according to Mises (2006), the drop in the amount of money which cause a grow of purchase power of money unit. This decrease is not compensated by an equal decline in money demand.

We must recognize price and monetary deflation. In case of Bitcoin, it is not possible to expect price deflation. The amount of Bitcoin in its circulation is strictly limited. With increasing number of Bitcoin users is possible to assume increasing demand for Bitcoin. Because of limited amount, it is possible to assume a gradual appreciation of this cryptocurrency.

Figure 6 shows the plan of Bitcoin mining. We can observe here that almost all Bitcoins have been already mined. Bitcoin is also endurance against inflation. According to asymmetric distribution, the loss of Bitcoins from the most significant accounts can have a significant impact on its value. It can be said that monetary deflation if it will be significant, represents a difficult problem for Bitcoin. It cannot be used in the current banking environment for the mentioned characteristics. It can be used only for 100 % reserve coverage banking system. For example, DeSoto (2006) describes the characteristics of this system. The inability to use Bitcoin in the partial reserve system is a serious barrier for Bitcoin for today's times.

On the other side, Bitcoin's proponents do not see in its fixed amount an obstacle for its functioning. Supporting arguments can be found in the theory of the Austrian School of Economics. Bitcoin defenders often use an analogy with the gold standard. These arguments stem from the work of Rothbard (1990) and Mises (2006). The logic of this argumentation is as follows: Bitcoin, as well as gold, will not be lacking because its value can be constantly divided. According to the Gold Commission report (in Nemecek, 2000), the golden standard of the international monetary system did not suffer from a lack of gold. This is also argued in the case of Bitcoin.

Let us briefly discuss the asymmetric among Bitcoin holders. There is apparently that almost 2 percent of Bitcoin holders hold 96 percent of Bitcoin units (see figure 7). It is theoretically possible that those holders are able to influent Bitcoin value significantly. The market with Bitcoin has oligopoly character. However, the asymmetric distribution may not pose a problem under "relative stability" conditions. Bitcoin has not been able to stabilize. This feature makes Bitcoin a fragile currency. Great changes in the volume of Bitcoins held may have a significant impact on the stability and liquidity of this currency.

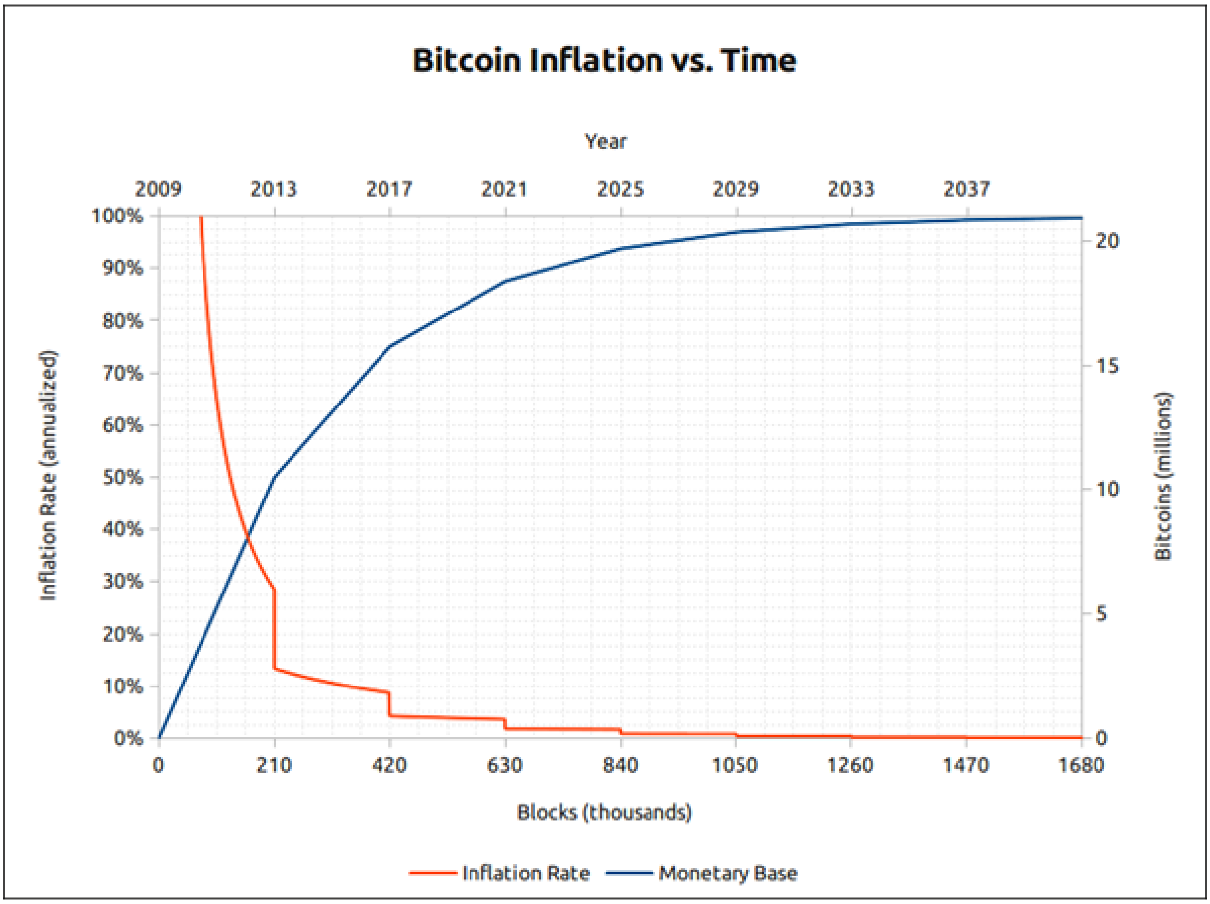

Figure 6 - Bitcoin Inflation vs. Time. Source: bitcoin.org (2018)

Balance	Addresses	% Addresses (Total)	Coins	$USD	% Coins (Total)
0 - 0.001	13403330	54.66% (100%)	2,246 BTC	23,855,921 USD	0.01% (100%)
0.001 - 0.01	4878651	19.89% (45.34%)	20,469 BTC	217,372,939 USD	0.12% (99.99%)
0.01 - 0.1	3912007	15.95% (25.45%)	125,143 BTC	1,328,976,626 USD	0.74% (99.86%)
0.1 - 1	1643969	6.7% (9.5%)	527,974 BTC	5,606,904,417 USD	3.14% (99.12%)
1 - 10	536956	2.19% (2.79%)	1,423,795 BTC	15,120,224,193 USD	8.47% (95.98%)
10 - 100	130996	0.53% (0.6%)	4,343,090 BTC	46,122,152,325 USD	25.83% (87.51%)
100 - 1,000	15664	0.06% (0.07%)	3,699,365 BTC	39,286,004,108 USD	22% (61.68%)
1,000 - 10,000	1527	0.01% (0.01%)	3,356,340 BTC	35,643,196,975 USD	19.96% (39.68%)
10,000 - 100,000	111	0% (0%)	2,984,769 BTC	31,697,237,021 USD	17.75% (19.72%)
100,000 - 1,000,000	2	0% (0%)	330,491 BTC	3,509,699,571 USD	1.97% (1.97%)

Figure 7 - Bitcoin distribution. Source: bitcoin.org (2018)

4 CONCLUSION

Cryptocurrencies are phenomenon for today's time. The market of cryptocurrencies is growing by incredible speed. Although there are great gaps in cryptocurrency research for academic and practical purposes. The hidden aim of those article is open discussion about cryptocurrencies, especially about Bitcoin. This cryptocurrency is the most important in today's time. It is evidently that Bitcoin is very accurate topic for wide public and investors.

This article is divided into two basic chapters. In the chapter 2, there was introduced the basic principle of Bitcoin. This part was followed by chapter 3 which deal with basic questions which are important for Bitcoin understanding. The main idea of this paper is to judge whether Bitcoin can serve as full-value currency. The questions of convertibility, stability and liquidity have been analysed in this paper. It is evident that Bitcoin is relative well convertible. There also exists the possibility to make direct conversion into other cryptocurrencies. In the case of stability there is evident that Bitcoin is not very unstable. There is no way to stable it. The price and purchase power are very variable. Standard deviation of daily returns was almost 8 % in 2017. For comparation, the same deviation for EUR/USD pair was 0,4 %. Correlation between Bitcoin and Ethereum was calculated only 0,18. That means weak relation between Bitcoin and Ethereum price development. This grade of this parameter is not sufficiently achieved. The last parameter was liquidity. The amount of Bitcoin is strictly fixed. There also exist high asymmetry in Bitcoin distribution. Almost 2 percent of Bitcoin holders hold 96 percent of Bitcoin units. Bitcoin inflation is going to zero due to this cryptocurrency construction. There is possible to expect a stable deflation trend.

Finally, there are a number of cryptocurrencies that work better, are less energy to consume, or even slightly inflationary. The market for crypts grows incredibly. Bitcoin, however, remains the first cryptocurrency that represents the beginning of the crypto-money era. However, if we look at it with the optics of Schumpeter's theory of economic cycles, it can be quite pessimistic. Bitcoin, as a significant innovation, can be seen as a monopoly gain. This "profit" is given in the form of its high price, which has given its founder, the "innovator", a reward for risk. As more cryptocurrencies are launched on the market, it can be expected that this monopoly gain will be gradually erased. It can even be assumed that Bitcoin will not survive the 21st century.

On the other side, the dream about free money is near as never before. Bitcoin will remain the first visionary concept. The era of golden standard money is thing of history. The future is unknown but it is almost certain that cryptocurrencies will have its place in global monetary system. It will be Bitcoin or another cryptocurrency? And how will be significant this position? Those asks will be answered in the future. In the present time, it is necessary to try to understand how cryptocurrencies working. This paper is a humble contribution to this very interesting area.

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