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THE USE OF CRYPTOCURRENCY AS A PAYMENT INSTRUMENT IN THE REPUBLIC OF SERBIA*

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Abstract: Changes in the payment systems of some countries, initiated by the use of cryptocurrencies, have opened up many dilemmas in the economic literature. Although knowledge of this phenomenon has not been yet sufficiently crystallized, some states managed to regulate its use. In this paper, we investigate whether cryptocurrencies can be considered as a currency, which has drawn increasing attention from regulators who are concerned about tax, insurance and other consequences related to the legal treatment of cryptocurrencies. The subject of the paper is to analyze the history, characteristics and level of cryptocurrency regulation in the world. The aim of the paper is to analyze the possibilities for regulating cryptocurrencies in the Republic of Serbia through the analysis of countries where the use of cryptocurrencies is legal.

Key words: cryptocurrency, bitcoin, legal regulation of bitcoin, Republic of Serbia

INTRODUCTION

In recent years, cryptocurrencies have become very popular. However, since the history of cryptocurrency emergence is relatively short, on the one hand, and this area is insufficiently researched, on the other hand, a clear picture of this phenomenon has not been built yet. The definition of this phenomenon is very complicated (Limba et al., 2019). Although there are many different definitions in the literature, the opinion of the academic community is divided. There are many definitions where cryptocurrencies are looked from a mathematical point of view and the field of natural sciences, while authors in the field of social sciences have a different approach to this phenomenon. Discrepancies in the consideration of this phenomenon appear when defining it as a currency. According to one group of authors, cryptocurrencies are not money, while according to another group of authors, they really are. The foundations of cryptocurrency were laid at the end of the 20th century. Well-known professor David Chaum presented the technology of "blind" signature, which is still the basis of encryption. and which enabled the verification of transactions without prior identification of signatures. The same scientist, is the creator of the idea of eCash, and in that way he introduced many innovations in the way banking works. Analogously, the method of payment was additionally changed, but also the attitude towards money. Based on this concept, new concepts such as b-money, Bit Gold, Proof of Work and others have been developed. During the World Financial Crisis in 2008, the concept of bitcoin appeared, which was then considered as the first functional cryptocurrency. The concept was presented by Satoshi Nakamoto. In the following years, this first functional cryptocurrency began to function. The advantages of this cryptocurrency were undoubtedly based on anonymity, lower costs of transactions, but also many others. After bitcoin, in 2011, the new cryptocurrency Namecoin came to the fore. Today, there are more than 1000 cryptocurrencies, and most of them are derived forms of bitcoin. New cryptocurrencies have taken over the way small cryptocurrencies work with small changes and are called altcoins (Hileman & Rauchs, 2017, p. 15).

Today, there are several ways to get cryptocurrency. Through cryptocurrency vending machines, online exchange offices, through platforms that enable direct contact with the cryptocurrency seller. There are several types of cryptocurrency machines (ATMs) in Serbia, which enable the purchase and sale of cryptocurrencies. It is usually about buying and selling bitcoin. There are a total of 6 cryptocurrency buying and selling machines in Serbia. There are two in Belgrade, three in Novi Sad and one in Nis (Coin ATM Radar, Bitcoin ATMs in Serbia, 2020).

The aim of this paper is to point out the perspective of cryptocurrency payments in the Republic of Serbia. The subject of this analysis is the available literature on cryptocurrencies, on the basis of which a clear picture of this phenomenon will be given. The second part analyzes the definition of cryptocurrency from the aspect of the author's division on whether cryptocurrencies can or cannot be considered as money. The third part analyzes the level of regulation of cryptocurrencies in the world and in Serbia. In the fourth part, conclusions are given.

1. LITERATURE REVIEW

There is a divided opinion among theorists whether cryptocurency can be considered as a money. The facts that go in favor of the topic that we can achieve bitcoin with money are the following:

- Bitcoin is used by a large number of people (Blockchain Charts, 2020);
- Can be easily mistaken for goods;
- Can be easily exchanged for other currency;
- We can trade with Bitcoin on the markets.

The World Economic Forum (2016), in accordance with these characteristics, emphasizes the potential of cryptocurrencies and that they could be the future of financial infrastructure. Therefore, the following values have been identified for bitcoin: the potential for simple and efficient payment, the basis of the infrastructure for future financial services and for the use of technology in several ways. Grinberg (2012) states in his research that bitcoin is a digital but decentralized currency, which means that it is an anonymous currency. The theorist Blundell-Wignall (2014) points to the shortcomings of bitcoin, stating that one of the biggest shortcoming is consumer protection, as well as the fact that anonymity can bring some activities that cannot be controlled. He cites money laundering as an example as an illegal act. Cryptocurrencies are used as financial instrument. Therefore, according to Briére bitcoin is called alternative instrument with diversification benefits. He defines bitcoin as a digital, or virtual currency that uses peer-to-peer technology to facilitate instant payments. Maggi (2014) points out that bitcoins are not a flet currency or currency that a government has declared to be legal tender, and bitcoins are not controlled by a single entity like a central bank and are therefore sometimes referred to as a decentralized currency. Guided by an updated topic, whether bitcoin can be considered as a global currency, the European Commission organized a virtual conference in April 2015 to discuss this topic. The conclusions of this conference were the necessity of further research for a better understanding of the socio-economic and monetary aspects of bitcoin (Ciaian et al., 2016). According to Ciaian et al. (2016), the advantages of bitcoin, which can facilitate its use as a currency, are: low transaction costs, high anonymity, high privacy, infinite division and the absence of inflationary pressures. Also, its characteristics that may hinder its use as a currency include the absence of tenders, difficulties in acquiring bitcoin, relatively high procurement costs, dependence on network externalities, the absence of a dispute resolution institution, deflationary pressure, high price volatility and cybercrime issues.

Several authors emphasize security as a fundamental problem facing bitcoin, compared to standard currencies (Moore & Christin 2013; Böhme et al. 2015; Yermack 2014). Although all transactions are done online, security poses a serious threat. The security problem is, first of all, attributed to the lack of an institution that would supervise and ensure the security of the functioning of Bitcoin. In addition, if bitcoin were viewed from the angle of a currency, its use would have to be preceded by an investment that involves costs related to the introduction of the Bitcoin protocol by companies and consumers, as well as the adoption of technology (Velde 2013).

Cryptocurrencies face with several challenges compared to standard currencies. One of these challenges is price instability, which is the biggest difference compared to the standard currency. Given that bitcoin is a relatively new currency, its pricing is still not well understood. In connection with this, only a few studies on the formation of bitcoin prices are available in the literature (Buchholz et al. 2012; Kristoufek 2013; van Wijk 2013; Bouoiyour & Selmi 2015). Some theorists argue that bitcoins cannot be considered as a currency and equate them with speculative investments that are similar to internet stocks traded in 1990.

Money has the following functions: the function of the medium of exchange, the function of the unit of account and the function of the store of value (Đurović Todorović, 2010). Bitcoin to some extent satisfies the first of the three listed functions, as it appears in an increasing number of traders, and especially in the internet markets. However, the benefits of bitcoin on a global scale remain insignificant, indicating that few people use it widely as a medium of exchange. Also, bitcoin does not represent a unit of account, because the value of goods is not expressed by it. If the value of retail goods were expressed to four or five decimal places, there would probably be confusion for both buyers and sellers. When it comes to the function of a store of value, bitcoin faces a great challenge due to the high volatility of its market, but also other security-related problems such as possible theft, hacker attacks and the like. These characteristics indicate that bitcoin cannot be viewed as a currency. According to Cvetković (2019), bitcoin is seen as a payment service, a financial instrument, a new e-commerce. "It is treated as capital, taxable property, currency, real or obligatory right, contractual claim, security, identification mark" (Cvetković, 2019, p. 120). The main difference between currency and bitcoin is its decentralization. That is, the absence of a bank, state or supranational institution that issues and controls it.

Bitcoin cannot be deposited in a bank, which is a characteristic of modern currencies. Also, bitcoin must be kept in "digital wallets" which are relatively expensive to maintain. Also, no form of insurance for bitcoin owners has been developed that is comparable to deposit insurance (Yermack, 2013). It is based on mathematics and self-interest, and for that reason the question arises "how to regulate this phenomenon: restrictive - which is a lost battle in advance, or" soft ", by supporting innovation at the expense of legal security" (Cvetković, 2019, p. 120).

2. CAN BITCOIN BECOME A GLOBAL CURRENCY?

As a global phenomenon, cryptocurrencies have begun to gain the attention, not only of academics, but of the entire population interested in investing. Today there are more than a thousand different cryptocurrencies. However, there is no precise figure on that number. Figure 1 shows the total market capitalization of all cryptocurrencies in the period 2013-2020. We can conclude, based on the observed period, that the market capitalization shows a growth trend, and that it amounted to about 196 billion dollars on April 16, 2020. Bitcoin is still the most important currency on the cryptocurrency market, and when it comes to its participation, it is amounted to 64.15% of the total market capitalization (April 16, 2020). "Out of several hundred, bitcoin is the most popular cryptocurrency, created in 2009" (Cvetković, 2018, p. 120). Namely, bitcoin started operating in January 2009, based on blockchain technology, bitcoin offered numerous advantages, among which anonymity and low transaction costs are listed as the most significant in the literature.



Figure 1. Total market capitalization of cryptocurrency in dollars, 2013-2020.

Although it is still debated whether a cryptocurrency is an alternative currency or just a

Source: Total Market Capitalization, accessed 16.04.2020. Availabe on: https://coinmarketcap.com/charts/.

speculative asset, governments and regulators are beginning to consider it more and more within the regulatory framework (Bartos, 2015).

Although bitcoin is similar in functionality to electronic money, there are explicit differences between them. In the Republic of Serbia the Law on Payment Services was passed, which established an appropriate legal framework for the use of e-money in 2014. However, as electronic money is a substitute for cash, it is also issued by banks, electronic money institutions, public postal operators, the National Bank, the Treasury or other public authorities. Decidently, there is a legal entity that appears in the Law as the issuer of electronic money. This is a big discrepancy between bitcoin and electronic money, which also gives the answer to the question: does bitcoin can represent electronic money.

Given that the use and trade of bitcoin is allowed in some countries, bitcoin is accepted as a means of payment within their legal systems. First of all, these are the countries from the G7 group (G7), among which are: Canada, France, Germany, Italy, Japan, the United Kingdom and the United States. Bitcoin as a type of payment was also allowed by some European countries, but some were also prohibited by bitcoin payments. Bitcoin transactions are banned in Sweden, China, Saudi Arabia and Egypt, among others. Bitcoin is in principle legal in Europe (Cvetković, 2019). However, there are large discrepancies and divergent attitudes in state legislation. There are countries that have a liberal attitude towards bitcoin, such as the Netherlands and Germany. However, most countries look at this phenomenon with caution.

In Germany with the recognition of bitcoin as one of the payment mechanisms, bitcoin was declared "private money" in 2013, by the Federal Ministry of Finance and the Federal Financial Supervision Authority, which cannot be identified with currency, foreign currency or electronic money. Japan declared the cryptocurrency legal in April 2017 by the Payment Services Act, which means that the cryptocurrency is accepted in Japan as a means of transaction. In Singapore, cryptocurrency has also been declared as a legal currency. Namely, Singapore is the first country in the region of Southeast Asia that, unlike its neighbors, accepted cryptocurrency as a mean of payment. Interestingly, in Malaysia, the use of cryptocurrency is also accepted and supported by Bank Negara Malaysia.





Source: https://cryptonews.com/guides/countries-in-which-bitcoin-is-banned-or-legal.htm

There is a variety of cryptocurrency regulations around the world. Therefore, all states that considered cryptocurrency regulation were grouped into four groups. The cluster analysis was conducted on the basis of a survey of countries that have considered the regulation of cryptocurrency and includes an analysis of 59 countries around the world. The first cluster involves states that have regulated the use of cryptocurrencies by law. The second cluster includes countries that are considering regulations, but have not passed them. The use of cryptocurrency is allowed in this country. The third cluster includes countries in which the use of cryptocurrencies is restricted, while the fourth group includes countries in which cryptocurrencies are prohibited.

Figure 3. Dendrogram using hierachical clustering of countries

	Dendrogram using Ward Linkage							
	0	5 Rescaled I 5 10	istance Cluster Combi 15	ne 20 25				
Vanuatu	58							
Vietnam	59							
Afganistan	50							
Saudi Arabia	56							
Quatar	57							
Bangladesh	54							
The Republic of Macedonia	55							
Algeria	52							
Bolivia	53							
Pakistan	51							
Egypt	48							
American Samoa	49							
China	41							
Zambia	46							
Nepal	47							
Indonesia	44							
Morocco	45							
India	42							
Ecuador	43							
Tanzania	39							
Uruguay	40							
Albania	17							
Tunisia	37							
The United Arab Emirates	38							
Paraguay	35							
Peru	36							
Nigeria	33							
Panama	34							
The Maldives	31							
≻ Mauritius	32							
Kyrgyzstan	29							
Malaysia	30							
Kenya	27							
Kosovo	28							
Jordan	25							
Kazakhstan	26							
Gabon	23							
Jamaica	24							
Columbia	21							
French Guiana	22 19							
Argentina Barbados	20							
	18							
Andorra	18							
Belarus Hong Kong	16							
Japan	1							
Singapore	13							
Georgia	14							
Bermuda	11							
Slovenia	12							
The United Kingdom	9							
Germany	10							
Lithuania	7							
Estonia	8							
Switzerland	5							
The Netherlands	6							
Malta	3							
Ukraine	4							
Gibrattar	2							

Source: Author's calculations using SPSS.

The degree of regulation	of the use of cryptocurrency in the world	
Regulated by law	Number of countries	16
	% of the total number of analyzed countreis	12.2%
Legal use without legal	Number of countries	24
regulations	% of the total number of analyzed countries	36.6%
Limited use	Number of countries	9
	% of the total number of analyzed countries	20.6%
Prohibited use	Number of countries	10
	% of the total number of analyzed countries	30.5%
Total	Number of countries	59
	%	100.0%

Table 1. Characteristics of the groups of countries obtained by hierarchical clustering	Table 1.	Characteristics	of the	groups o	f countries	obtained	by	hierarchi	cal	clustering
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Source: Systematization of the authors

China belongs to the group of countries that are opponents of this phenomenon and decisively reject its usage. China developed its own cryptocurrency in 2017 and does not recognize the possession of cryptocurrencies circulating in the world (Sukarno & Pujiyono, 2019). We can conclude that most countries have allowed the use of cryptocurrency, but have not legally regulated it.

The electronic method of performing payment protection operations, the of electronic transactions, as well as the responsibility for the correctness of electronic messages in electronic payment operations are regulated by the decision on the electronic method of performing payment operations (Official Gazette of RS, 2004). However, with the Law on the National Bank of Serbia, Serbia decisively stated that it does not guarantee the use of virtual currencies. Any investment in virtual currency will not be regulated and hedged by the National Bank of Serbia. Bitcoin as a virtual currency is unregulated in the Republic of Serbia. On the other hand, any consideration of some type of regulation should look in detail at the functioning and rules of cryptocurrency trading. Given that the rules of trading and the way this phenomenon works cause a lot of unknowns and ambiguities, and the arrangements are not clear enough, the question is whether a mechanism for protection of those who trade in this virtual currency could be developed at all. The National Bank of Serbia issued two statements, in 2014 and 2016, respectively, that "anyone who invests in bitcoins or engages in any other activity, which includes virtual currencies, does so at their own risk, bearing financial and non-compliance risks. which regulate foreign exchange operations, taxation and trade "(National Bank of Serbia, 2014; National Bank of Serbia, 2016). The position of the National Bank of Serbia is that bitcoin is not a legal tender in the Republic of Serbia and therefore cannot be subject to sale. Additionally, if the prices of goods and services were expressed in virtual currency, it would be contrary to the provisions of the law (Živanović, 2017). "According to the current regulations of the National Bank of Serbia, bitcoin is not recognized as money and is not regulated by legal acts, so in accordance with that, the purchase of bitcoin currency is considered an exchange of goods" (Karić & Mirjanić, 2018, p. 1046). However, the National Bank of Serbia also stated that, when there is a need to regulate or to provide answers related to cryptocurrencies it will consider them.

In Serbia, the circumstances for the adoption of adequate regulations is difficult, and Serbia will undoubtedly face numerous challenges that cryptocurrencies impose when joining any type of regulation. Primarily, cryptocurrency technology is the basis of their successful functioning. Therefore, it is necessary to find solutions for mining procedures, but also for all the specifics that cryptocurrencies bring. Although platforms have appeared in the world that enable very simple access to and storage of cryptocurrencies, the vulnerability of the entire system has also increased. The virtual currency itself and its management bring numerous risks for which if the state controls them, it must find solutions. That is very difficult. Especially in the processes of hyperproduction of continuous new cryptocurrencies and the growth of criminal activities that are encouraged by their nature. Given that cryptocurrencies are still an insufficiently known phenomenon, it takes explicitly a long time for the process of their regulation to be effective. In addition, the accounting treatment of this phenomenon is a great challenge for our country and, from a technical point of view, a great expense.

CONCLUSION

An anonymous group of developers (Nakamoto, 2008) has undoubtedly imposed many grounds for further research into phenomena such as the virtual currency bitcoin. Bitcoin is especially interesting to economists as a virtual currency, precisely because of its potential to disrupt existing payment systems, and even monetary systems in one country.

In the Republic of Serbia, in the near future, there is no basis for regulating this virtual currency. Namely, it is necessary that the consideration of regulations be based on research and a clear picture of the performance of cryptocurrency, which has not been created by scientists yet. In order for a country to offer regulation for a virtual currency, it would need to achieve primary confidence in its value (Böhme et al., 2015). Although proponents of bitcoin predict that its use will expand, bitcoin is still the subject of numerous experiments, research and an attractive medium of exchange when it follows a whole range of unknowns. Also, a number of issues are open in the monetary economy, although bitcoins as a virtual currency can be destroyed and if their users forget their private keys, they can initiate undesirable movements.

The cryptocurrency market encompasses a large number of cryptocurrencies whose market capitalization is nearly \$ 200 billion and tends to evolve in different directions. Given the high volatility of this market, the use of cryptocurrency as digital money does not imply the performance of three basic functions of money. Also, the challenges related to cryptocurrencies are based on technology, regulation and a good knowledge of this phenomenon. Therefore, their potential and development in Serbia is limited.

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SUMMARY

In the last few years, cryptocurrencies have become very popular. However, there is a divided opinion among theorists as to whether cryptocurrencies can be considered as a curreency. The facts that favor the bitcoin relationship with money are as follows: bitcoin is used by a large number of people, it can be easily exchanged for goods, it can be easily exchanged for other currencies, bitcoin is traded in the markets. However, cryptocurrencies don't have functions that money has as a medium of exchange, a measure of value and store of value. Bitcoin, as the first functional cryptocurrency, satisfies a certain extent first of the three listed functions, as it is appearing to an increasing number of traders, and especially in internet markets. However, worldclass bitcoin benefits remain negligible, indicating that few people use it widely as a medium of exchange. Also, bitcoin is not a unit of account because the value of the commodity is not expressed by it. If the value of retail goods were expressed at four or five decimal places, there would probably be confusion for both buyers and sellers. When it comes to the value-saver function, bitcoin faces a great challenge due to the high volatility of its market, as well as other security issues such as possible theft, hacking attacks and so forth. These characteristics indicate that bitcoin cannot be viewed as a currency. On the other hand, we are witnessing the great use of bitcoin and other cryptocurrencies in the world. Also, an increasing number of states are striving to define their use by legislation. This paper analyzes the nature of cryptocurrencies and answers the questions of whether cryptocurrencies can be considered as a currency and whether it can be regulated in Serbia. There is a wide range of regulations of cryptocurrency around the world. Therefore, we grouped the states into four groups. The cluster analysis is based on a survey of countries that have considered the regulation of cryptocurrency and includes the analysis of 59 countries in the world. The first cluster involves states that have regulated the use of cryptocurrency by law. The second cluster belongs to states that are still considering regulations. Cryptocurrencies are allowed in these countries. The third cluster belongs to countries where the use of cryptocurrencies is restricted, while the fourth group consists of countries where cryptocurrencies are banned. We can conclude that the largest number of countries allowed the use of cryptocurrences without any regulations yet. We can also conclude that in the near future, there wan't be any basis in the Republic of Serbia for regulating this virtual currency. Specifically, the consideration of regulation needs to be backed up by research and a clear picture of cryptocurrency performance, which has not been created by scientists yet.