

PEDTR 2019**18th International Scientific Conference “Problems of Enterprise Development:
Theory and Practice”****DIGITAL CURRENCIES AS TOOLS FOR ELECTRONIC
PAYMENT SYSTEM DEVELOPMENT**

N. A. Petrov (a)*, A. M. Mikhaylov (b)

*Corresponding author

(a) Samara State University of Economics, 443090, Soviet Army Str., 141, Samara, Russia, petrovnkt@gmail.com

(b) Samara State University of Economics, 443090, Soviet Army Str., 141, Samara, Russia, 2427994@mail.ru

Abstract

The active development of information technologies, electronic systems and digital culture, which began in the twenty-first century, had a special impact on socio-economic relations in the life of people. Information ownership and development of IT-technologies have become an important need of society. Socio-economic relations began to go beyond commodity-money relations of everyday life, gradually moving into electronic space. The current stage of the economic system development is characterized by the active introduction of digital technologies in the banking sector. The implementation of international financial and technological startups, the creation of a new generation of consumers of banking services, as well technologies development lead to a large-scale transformation of banks. Changes in the life of society, the revolution in the field of IT-technologies also modified monetary forms and payment systems. Advances in information technology have created modern payment systems that use the latest advances in this area and allow making bank payments without leaving your home, paying in a store with a plastic card and purchasing goods online. Based on the technology of complex encryption of cryptographic banknotes (hereinafter referred to as cryptocurrencies), the number of payment transactions made in order to circumvent the current tax legislation and the number of operations in the shadow sector of the economy are increasing. And this, of course, is a negative consequence of digital currencies development as instruments of the financial market. There are also positive aspects, both in terms of cost reduction for counterparties of payments, and in increasing the speed of transactions.

2357-1330 © 2020 Published by European Publisher.

Keywords: Cryptocurrency, institutional regulation, electronic space, Blockchain, capitalization.

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 Unported License, permitting all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

1. Introduction

The so-called electronic or digital money is associated with payment systems development. Entering a new technological structure has changed technological processes from low-level to higher and more progressive, involving the introduction and development of nanotechnology, artificial intelligence systems, robotics, and global information networks. The emergence of electronic money, deprived of the material carrier of the universal equivalent, requires a study of their nature and generic basis, considering the new realities of the post-industrial economic structure. The changes have resulted in the emergence of a completely new phenomenon - cryptocurrency, which is based on the use of Blockchain technology. This is a fundamentally new underlying technology. It is not possible to assess its potential, but at the same time it has already had a great influence on the financial and economic sphere and has become a new achievement in cryptography. The electronic essence of cryptocurrencies is understood as a mechanism to exchange digital assets, the issue and accounting of which are decentralized. The functioning of emission and circulation of cryptocurrency occurs within a distributed computer network. Moreover, usually all information about transactions is not encrypted and is always available in clear text. At the same time, cryptography in the technological development of transaction chains is used as a security method based on asymmetric encryption.

2. Problem Statement

The key task of the study is to determine cryptocurrency functions as a tool of monetary circulation and its certain market value. The essence of the economic concept is expressed in its functions, which can be transformed in the context of new socio-economic relations in society, as well as changes in monetary and financial relations. The main value of money in the modern world and its electronic subspecies, like cryptocurrencies, is its direct participation in operations that have an economic and financial component, moreover, money combines these operations with each other and inextricably links all processes.

3. Research Questions

The questions of this study are to determine the essence of new financial market instruments - cryptocurrencies, and to determine the way how to create and circulate them. In our opinion, the aspect of studying the transformation of classical functions of money as an instrument of exchange, a measure of value, means of payment and accumulation is urgent. The use of cryptocurrency as a means of payment is currently very doubtful. Issuing a loan in cryptocurrency with unstable exchange rate differences and the absence of exchange value does not cause public interest.

4. Purpose of the Study

The purpose of the study is to determine the reasons for the emergence and active use of cryptocurrencies in transactions and, in addition, to analyze the prospects for expanding the volume of financial calculations based on Blockchain technology. The emergence of cryptocurrencies is a

consequence of competition between systems fixing the transition of value. So, today there are many services with their own advantages and disadvantages in the world.

5. Research Methods

The main methods of the study were the analysis of current payment transactions in the financial market and a descriptive approach that reveals the transformation of classical functions of modern money. The method of analysis and synthesis are also used. Expert opinions of the world's leading scientists are considered.

6. Findings

Consider the generally accepted functions of money in relation to cryptocurrency. The “standard of value” function is expressed in measuring the market value of goods, services, work performed, expressed in money in the form of a price. Considering the indicated function with respect to cryptocurrency, we can say that while it is not a generally accepted equivalent expressing value, it has no value and cannot satisfy a universal need (Baur & Dimpfl, 2018). The market value of cryptocurrency is acquired in the process of exchanging for fiat money or other types of cryptocurrencies in the electronic payment systems (hereinafter referred to as EPS) in which they circulate, or in cryptocurrency exchanges. Thus, at the present time, it is not the generally accepted equivalent of exchange value in the form of a price and does not reflect the standard of the value of goods, works and services (Konovalova, Kuzmina, & Semochkina, 2019). The “medium of exchange” function is the intermediation of money as part of the exchanging process for goods or rendered services and work. If we want money to be accepted as a medium of exchange, they must have value and be accepted for circulation in society. The circulation of cryptocurrency in EPS does not currently form a public interest as an intermediary in the process of acquiring goods or services both in real life and when making payments in EPS. The “means of payment” function provides for the ability of money to make payments as part of debt obligations. The use of cryptocurrency as a means of payment is currently very doubtful. Issuing a loan in cryptocurrency with unstable exchange rate differences and the absence of exchange value does not cause public interest. Considering the importance of “store of value” and “world money” functions in relation to cryptocurrency, we can say that the popularity of cryptocurrencies as a means of investment and a store of value is gaining momentum. The question is whether cryptocurrency can really be a store of value or it is public excitement fueled by speculators. Note that, against the backdrop of the uniqueness of technologies underlying cryptocurrency, and the huge interest in it from the public masses, the main actions carried out with cryptocurrency are based on speculation. Talk about the emergence of a new form of money in society, of course, fuels interest, but in fact this process replaces the concept of money. Having analyzed the basic functions of money in relation to cryptocurrency, we consider it most correct to apply the term “pseudo-money” to cryptocurrency. The element of cryptocurrency demand in relation to different types of goods and services or another type of cryptocurrency has different categories of convertibility. Moreover, in most cases, certain types of cryptocurrencies operate in only one virtual environment. In such electronic payment systems, the use of cryptocurrency as a means of payment or means of exchange for fiat currencies or other cryptocurrencies is significantly limited both within the

electronic payment system in which cryptocurrency is circulated and beyond. The functions that cryptocurrency seems to be charged with do not apply to the functions of money. But we must take into account the fact that with the development of market relations, forms of managing, electronic payment systems, it is quite possible to change the understanding of the economic essence of money, and then cryptocurrency can occupy its niche. The emergence of cryptocurrencies is a consequence of competition between systems fixing the transition of value. So, today there are many services with their own advantages and disadvantages in the world. "Cryptocurrencies in this sense are a new stage in the development of electronic money, while they are able to meet current increasing requirements for operations using electronic money, namely: instant payment speed from several seconds to several minutes" (Geiregat, 2018, p. 1145). The specifics of making payments in the modern world is the presence of intermediaries involved in this process, which, of course, affect the factors listed above and transformations in these systems. Modern EPS development, innovations on the Internet, the improvement of computing and information technologies have become the basis for the emergence and further entry of cryptocurrency. The digital form in which cryptocurrency is issued is cryptographic records, while generally accepted national monetary funds are issued in the form of value signs and have a physical form. Cryptocurrency is issued by private issuers, and national money is issued by monetary regulators. Cryptocurrency does not provide guarantees of various kinds of jurisdictions. Only by agreement of the parties it can take on individual functions specific to national means of payment, while referring exclusively to the virtual environment of a separate network community. Currently, the topic of the phenomenon of cryptocurrencies remains one of the most discussed in public and economic circles. In the presented analysis of virtual currency schemes of the European Central Bank, cryptocurrencies are defined as "an electronic representation of value not used by the Central bank, credit institution or issuer of electronic money, which under certain circumstances can be used as an alternative to money" (Chen, Yu, & Zhang, 2019, p.225). The main advantages of cryptocurrency, due to its positive characteristics for users, are high information security, cost savings and speed in payments, confidentiality. Weaknesses of cryptocurrency include the complexity of control over the network, high volatility, the lack of legal regulation, and the fact that the value of cryptocurrency is not supported with anything. All relationships are built only on the trust of EPS participants. Consider a few statistical data characterizing the development of cryptocurrencies. Currently, 1583 of their varieties are circulating in the world. As of 2018, their total capitalization amounted to 329.4 billion dollars USA. With a wide variety of cryptocurrencies presented in the world, the most popular are Bitcoin, Ethereum, Ripple, Litecoin. The leading place in capitalization of cryptocurrencies is Bitcoin, its specific gravity is 44.12%, Ethereum with a specific gravity of 15.61% takes the second position, and Ripple with a specific gravity of 7.58% is in the third place. In total, the most popular cryptocurrencies account for 75.09% of the total share of cryptocurrency capitalization in the world. These indicators are in dynamic motion, the share of capitalization of the first five cryptocurrencies is constantly being redistributed, while it has an active downward trend. For example, as of 2017, the share of Bitcoin in capitalization of cryptocurrencies was 54.22%, and Ethereum - 18.43%. At the same time, the share of other cryptocurrencies in their total volume accounted for 16.3% (Yi, Xu, & Wang, 2018). The total number of cryptocurrencies as of the indicated date was 1170. The decrease behavior in the share of the first five cryptocurrencies relative to their total volume indicates the stage of active popularization of cryptocurrency and the growth of public interest in

it as an asset as a whole, as well as the use of other alternative types of cryptocurrencies. An analysis of the overall cryptocurrency capitalization from 2013 to 2016 indicates that the growth in capitalization was quite smooth and gradual, without sharp jumps. In the indicated three-year period, the size of cryptocurrency capitalization grew from \$ 1.60 billion to \$ 17.71 billion USA, i.e. more than ten times. However, despite such significant changes, the most active cryptocurrency market growth period was in 2017: cryptocurrency market capitalization in 2017 increased by more than 33 times (Dimitrios, 2018). So, what the reason for the popularity of cryptocurrency is. First, there is understanding that a new period of market relations is beginning. Secondly, interest in new financial projects is growing in the world community. The changes taking place in the system of monetary relations are inevitable and do not go unnoticed by the regulators of all countries of the world, including for Russia.

Specialists from various fields of activity are working to form the regulatory framework for cryptocurrencies in the Russian Federation. The irrelevance of the topic of cryptocurrencies is a thing of the past. The process of growth and changes in the cryptocurrency market allows making an unconditional conclusion that the legislative regulation of cryptocurrencies is an important area that will make it possible to get great benefits for the development of the country's monetary system. Currently, financial regulators of foreign countries of the world are actively discussing and exploring issues related to creating a favorable climate for the further development of the cryptocurrency phenomenon. This position is supported by the great potential for new technologies in various fields of activity. In 2018, in Japan, any type of cryptocurrency was recognized as an official means of payment. The Japanese government made amendments to the regulatory framework, and in the future the country's leadership plans to more actively introduce cryptocurrencies into the digital economy of the country. In South Korea, popularization of cryptocurrencies has led to increased demand from the population. In Korea, it is already possible to pay in cryptocurrency in more than 6 thousand stores, while, according to experts, by the end of 2019, the number of stores accepting cryptocurrencies for payment will increase to at least 8 thousand. With the help of cryptocurrency, you can pay for both essential goods and services provided to the population. All payments in cryptocurrency are through a mobile application that converts cryptocurrency into traditional funds received in the account of a store or service that provides these services. The Chinese authorities took measures to tighten the regulation of the cryptocurrency market in their country, banned ICOs and cryptocurrency trading in 2018. At the same time, working with cryptocurrency is one of the main tasks to protect the national currency of China.

7. Conclusion

Cryptocurrencies operate exclusively in their unique electronic payment system, which is a prerequisite for the existence of cryptocurrencies. Cryptocurrency market value arises as part of its circulation in a unique electronic payment system. The unity of cryptocurrency and the electronic payment system in which it refers is its main and unique feature. But presented cryptocurrency circulation schemes are currently not full-fledged means of payment, as defined in the scientific literature. Cryptocurrency does not have standard cash functions, for this reason we cannot currently call it currency in the generally accepted sense of the word. As a means of payment, it is very ineffective; it is also an unreliable asset for saving value. Cryptocurrency as pseudo-money partially assumes the functionality of funds only in unique

digital peer-to-peer cash systems it supports, but it will not replace the generally accepted concept of cash soon. Currently, while developing cryptocurrencies the world community makes maximum efforts to create favorable conditions for the functioning of a new technological process. The issues of further studying the phenomenon of cryptocurrencies, identifying their unique functions with the possibility of subsequent transformation into new areas of the economic process come to the fore. The transition period of the current time with a deep study of cryptocurrency technology and its application will allow us to project the results of upcoming changes that do not have a picture of the future right now, but they are already predetermined by time.

References

- Baur, D. G., & Dimpfl, T. (2018). Asymmetric volatility in cryptocurrencies. *Economics Letters*, 173, 148-151. DOI: 10.1016/j.econlet.2018.10.008
- Chen, D., Yu, X., & Zhang, Z. (2019). Foreign direct investment comovement and home country institutions. *Journal of Business Research*, 95, 220-231. DOI:10.1016/j.jbusres.2018.10.023
- Dimitrios, K. (2018). Return and volatility spillovers among cryptocurrencies. *Economics Letters*, 173, 122-127. DOI:10.1016/j.econlet.2018.10.004
- Geiregat, S. (2018). Cryptocurrencies are (smart) contracts. *Computer Law & Security Review*, 34(5), 1144-1149. DOI:10.1016/j.clsr.2018.05.030
- Konovalova, M. O., Kuzmina, O. Y., & Semochkina, Y. V. (2019). Development of the Russian stock market under external shocks. In V. Mantulenko (Ed.), *International Scientific Conference Global Challenges and Prospects of the Modern Economic Development. European Proceedings of Social and Behavioural Sciences*, 57 (pp.1446-1456). London: Future Academy.
- Yi, S., Xu, Z., & Wang, G.-J. (2018). Volatility connectedness in the cryptocurrency market: Is Bitcoin a dominant cryptocurrency? *International Review of Financial Analysis*, 60, 98-114. DOI:10.1016/j.irfa.2018.08.012