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INTEGRATION OF CRYPTOCURRENCIES INTO NATIONAL FINANCIAL SYSTEMS: FEATURES OF CIRCULATION AND REGULATION

INTEGRAÇÃO DE MOEDAS CRIPTOGRÁFICAS NOS SISTEMAS FINANCEIROS NACIONAIS: CARACTERÍSTICAS DE CIRCULAÇÃO E REGULAMENTAÇÃO

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Abstract: Over the past 15 years, cryptocurrencies have found their place in the everyday lives of many people due to their unique properties. However, they have not been legitimized at the state level in all countries. This study aims at analyzing the international experience of regulating cryptocurrencies to introduce them into financial systems. Using the methods of document analysis and expert survey, the authors of the article explain the nature of cryptocurrency, the reasons for its emergence, and the possibility of its regulation. Based on international experience, the authors determine the main models for regulating cryptocurrencies by national legislation. The authors prove that a significant number of people prefer using cryptocurrencies as a means of payment and digital financial assets over traditional (fiat) money. The use of cryptocurrencies poses a problem in implementing the state financial policy. This is conditioned by conflicting goals and objectives of the state policy, which does not allow recognizing cryptocurrencies as monetary units of account and means of interstate payments. The article dwells on the possibility of resolving these contradictions since this will have to be done in the future. The main trend in the regulation of cryptocurrencies is an approach where their prohibition is an ineffective and even socially dangerous mechanism. In this regard, it is necessary to develop state stablecoins as an alternative to private cryptocurrencies.

Keywords: Cryptocurrency. Blockchain technology. Fiat currencies. Digital financial assets. Means of payment.

Resumo: Nos últimos 15 anos, as moedas criptográficas encontraram seu lugar na vida cotidiana de muitas pessoas devido às suas propriedades únicas. Entretanto, elas não foram legitimadas a nível estadual em todos os países. Este estudo tem como objetivo analisar a experiência internacional de regulamentação de moedas criptográficas para introduzi-las nos sistemas financeiros. Usando os métodos de análise documental e pesquisa de especialistas, os autores do artigo explicam a natureza da moeda

criptográfica, as razões de seu surgimento e a possibilidade de sua regulamentação. Com base na experiência internacional, os autores determinam os principais modelos de regulamentação das moedas criptográficas pela legislação nacional. Os autores provam que um número significativo de pessoas prefere utilizar moedas criptográficas como meio de pagamento e ativos financeiros digitais em vez do dinheiro tradicional (fiat). O uso de moedas criptográficas representa um problema na implementação da política financeira do Estado. Isto é condicionado por metas e objetivos conflitantes da política estatal, o que não permite reconhecer as moedas criptográficas como unidades monetárias de conta e meios de pagamentos interestaduais. O artigo se debruça sobre a possibilidade de resolver estas contradições, uma vez que isto terá que ser feito no futuro. A principal tendência na regulamentação das moedas criptográficas é uma abordagem em que sua proibição é um mecanismo ineficaz e até mesmo socialmente perigoso. A este respeito, é necessário desenvolver moedas estatais estáveis como uma alternativa às moedas criptográficas privadas.

Palavras-chave: Moeda criptográfica. Tecnologia Blockchain. Moedas Fiat. Ativos financeiros digitais. Meios de pagamento.

1. Introduction

The current development of the financial sector is characterized by the widespread use of modern (in particular, digital) technologies (Zhdanova, 2023). One of these technologies is blockchain based on the principle of a distributed and decentralized ledger (Mokrova et al., 2021). This principle allows using digital records created by computer tools as means of payment and attracts the attention of many parties (Kirillova et al., 2022). Their interest can be explained by the desire to organize monetary and commodity exchange beyond state control. Developers need guarantees that the parties will fulfill their obligations under the transaction. Due to the properties of blockchain (Ukhina et al., 2022), these guarantees are more reliable than those in common monetary settlements and have a higher transaction speed. Currently, a large number of people use cryptocurrencies to make payments and investments and pay for goods and services around the world. According to Crypto Guru, the average level of cryptocurrency ownership was 3.9% in 2022, which means that more than 300 million people use cryptocurrency worldwide (Cryptor.guru, 2022). However, the creation of such a shadow financial system does not suit the financial authorities of many states (Kuzubova et al., 2022). They reacted to the emergence of a new financial tool with varying degrees of wariness: from showing some interest to imposing a complete ban on cryptocurrencies.

Modern scholars consider the regulation of relations related to the creation and circulation of cryptocurrencies. The main areas of research are as follows: to define the goals and objectives of the legal regulation of cryptocurrencies with due regard to the risks and threats

posed by the unregulated circulation of cryptocurrencies (Gorbenko & Rozhdestvenskii, 2022; Pavshukova, 2022); to analyze prospects for the development of cryptocurrency circulation and its regulation (Gabrielyan, 2017; Gorbunova, 2017); to determine the taxation of transactions and income received using cryptocurrency (Golubitchenko, 2018; Titorenko, 2022); the possibility of using digital currencies in the state banking system (Chadaeva, 2022; Kochergin, 2022). Despite a large number of scientific studies, there is still no effective unified model of regulation that can be adopted by all states. Therefore, there is a need to find possible directions for the formation of an effective state policy for regulating cryptocurrencies. This article aims at searching for effective models to implement and use cryptocurrencies in the state financial system. The research hypothesis is as follows: in the current context, the most promising model for the legal regulation of cryptocurrencies is the use of stablecoins (Vasyukov et al., 2021) and digital currencies of central banks (Zenin et al., 2022) in the financial system, along with restrictions on the circulation of private cryptocurrencies (Fokina et al., 2023). To prove this hypothesis, it is necessary to solve the following tasks: to reveal reasons for the emergence of cryptocurrencies; to analyze the regulation of the issue and circulation of cryptocurrencies in various states (comparative analysis); to determine prospects for the development of cryptocurrency regulation in the world and the Russian Federation.

2. METHODS

To solve the tasks, we used a set of theoretical and empirical methods. With the help of this set of methods, we processed the information necessary for the study, whose sources can be divided into two groups. The first group should include scientific articles published in journals indexed in Scopus and Web of Science, containing conceptual provisions on the regulation of cryptocurrencies. The second group comprises legislative norms, statistical data, and expert opinions. Legislation and literary sources on the research topic were studied using analysis and synthesis, systemic-structural and historical methods, as well as comparison and generalization. Other information, such as expert opinion, was obtained empirically using survey methods, mathematical processing of survey results, and tabular methods of presenting these results. While obtaining expert opinions, we interviewed employees of the banking sector (regional branches of the Central Bank of Russia and Sberbank of Russia in three regions of the Central Federal District). The respondents were 30 financial analysts, specialists from departments of development and innovation. The criteria for selecting experts were as follows: five or more

years of work experience with cryptocurrencies and at least three articles on similar topics published in journals indexed in Scopus and Web of Science. The respondents were informed that the results of their survey would be published. The questions were sent by e-mail and concerned the legal regulation of cryptocurrencies since it is difficult to technically prevent their release and circulation at the state level. The respondents were given 20 days to answer the questions, which seemed to be enough time considering their possible employment. The answers revealed a variety of scientific opinions and were divided into three categories in terms of their content. Further, these answers were mathematically processed.

3. RESULTS

3.1 Development of Cryptocurrencies as Monetary Tools

The first decade of the 21st century saw the emergence of digital elements capable of performing the functions of money in the global financial system. In 2008, blockchain technology emerged and gave rise to a mathematical algorithm that represents the first digital currency, i.e. Bitcoin. In 2009, the first Bitcoins were generated. Their appearance coincided with the global financial crisis and the introduction of measures to combat it. To counterbalance the mortgage crisis, the financial authorities (for example, the US Federal Reserve System) developed measures of financial support for large companies (and their investors) which found themselves in a difficult financial situation due to inefficient management in various sectors of the economy (Bass, 2019). The so-called quantitative easing (QE), i.e. the purchase of assets issued for these purposes and their direct financing to cover the liquidity deficit, as well as the gradual transition of these trillions into the turnover of commodities, should have led (and, in fact, led) to serious inflationary consequences. Due to the globalization of financial systems, the inflationary processes generated by the QE series (QE 1, 2, 3, 4) were also caused by the COVID-19 pandemic and spread to the whole world. In the US, official inflation fluctuated between 6.5 and 9.1% in 2022, which are the highest rates over the past 50 years (RIA Novosti, 2023). This situation unsettled many businessmen, their clients, and investors, which conditioned the creation of new money. According to their developers, this money does not have the above-mentioned shortcomings, in particular, the possibility of uncontrolled issue aimed at protecting the interests of a small group of entrepreneurs and investors to the detriment of the majority. Bitcoins and other private digital currencies (Ethereum) do not have such shortcomings and become an alternative to the dollar in various (including international) transactions. The

agreement concluded by the Bitcoin users and creators (miners) makes it impossible to issue additional Bitcoins. Furthermore, mining costs (the cost of equipment, software, electricity, etc.) form the basis of its value. In 2011, BitPay was established in the US and began to accept Bitcoin payments and convert them into fiat currencies. Within two years, it served 10,000 clients and made transactions worth 34 million dollars (approximately 270,000 Bitcoins). The number of customers and transaction volumes were growing rapidly. In 2019, this company was responsible for cryptocurrency transactions of 1 billion dollars (Kulakov & Maklakova, 2021). Thus, high interest in Bitcoins and other cryptocurrencies is confirmed by the dynamics of their price on cryptocurrency exchanges created specifically for the distribution and exchange of digital currencies.

3.2 Regulation of Cryptocurrencies: International Experience

Indeed, the release and circulation of cryptocurrencies could not but catch the attention of financial authorities. Since the emergence of Bitcoins and other private money circulating in uncontrolled digital financial systems, they have been trying to govern and regulate these assets. State financial authorities and international financial organizations realized what a breakthrough was made with the introduction of blockchain technology and the creation of cryptocurrencies. This understanding was facilitated by the rapid spread of various cryptocurrency transactions around the world. Some countries (US, EU countries, UK, Switzerland, Japan, Australia, Canada, Brazil, Israel, Kuwait, New Zealand, Singapore, South Korea, and Thailand) (Plus World, 2022) legalized the use of cryptocurrencies and allowed mining, but restricted operations with cryptocurrencies as a digital asset and a means of payment (for example, banking transactions are prohibited). Currently, two countries recognize Bitcoins as an official means of payment: El Salvador (since September 2021) and the Central African Republic (since April 2022) (Plus World, 2022). In theory, it means that all businesses in these countries are required to accept Bitcoins along with the national currency. In some countries (Afghanistan, Algeria, Bangladesh, Bolivia, Pakistan, Saudi Arabia, and Vietnam), any use of cryptocurrency is prohibited (Kulakov & Maklakova, 2021). However, most countries just ignore cryptocurrencies, adhering to the principle "everything which is not forbidden is allowed" (Antoncheva & Apanasenko, 2020, p. 134).

The Russian Federation has become involved in the regulation of cryptocurrencies only recently, although its citizens actively use cryptocurrencies. In 2021, up to 14.5% of visitors to

crypto exchange websites were from Russia. According to Bloomberg (Pismennaya, 2022), Russians own about 12% of the world's cryptocurrencies. Mining capacities in Russia exceeded 11% of the global share in mid-2021 (University of Cambridge & Cambridge Centre for Alternative Finance, n.d.). Due to such active use of crypto exchanges and crypto investments with the conversion of fiat money into cryptocurrencies, the Central Bank of Russia issued recommendations for credit institutions in 2020. It highlighted three groups of risks associated with cryptocurrencies: the welfare of citizens (the loss of investments), financial stability (reduction of the fiat sector of the economy, a threat to the sovereignty of the national currency), and illegal activities (money laundering, drug trafficking, terrorist financing, illegal arms sales, illegal withdrawal of funds abroad, extortion, corruption) (Bank of Russia, 2022).

In 2020, the law "On Digital Financial Assets" was adopted, where a digital currency is understood as

> a set of electronic data (digital code or designation) contained in the information system that are offered and/or can be accepted as a means of payment that is not the monetary unit of the Russian Federation, the monetary unit of a foreign state and/or an international monetary or accounting unit, and/or regarded as an investment and having no person liable to each owner of such electronic data. (State Duma of the Federal Assembly of the Russian Federation, 2020).

The main body of the law regulates digital financial assets not considered within the framework of this article. One of its shortest articles (Article 14) is concerned with the regulation of digital currencies, namely:

– The issue and organization of the circulation of digital currency are defined. However, there are no requirements for their regulation or references to federal laws that have to be adopted;

– The use of digital currency as a means of payment in Russia is prohibited (4, Clause 5 and Clause 7 of Article 14);

– Claims to the ownership of digital currencies are subject to protection only if the relevant tax authorities are informed (4, Clause 6 of Article 14). For the same purposes, digital currencies are recognized as property (4, Clause 1 of Article 17).

Table 1. Trends in the further development of the legal regulation of cryptocurrencies in Russia

Question	Answer	% of answers
What trends do you see in the further development of the legal regulation of cryptocurrencies?	Complete ban on issuance and circulation as means of payment	15%
	Prohibited circulation as means of payment, the possibility of circulation as a digital asset together with other assets	52%
	Limited use as a means of payment, the possibility of circulation as a digital asset together with other assets	33%

Based on the expert survey (Table 1) and the analysis of different policies concerning cryptocurrencies, we identified different attitudes toward their permission, prohibition, and restriction. Based on this criterion, we can develop several models of regulation.

The results of a comparative analysis of the legal regulation of cryptocurrencies are presented in Table 2.

Table 2. Models of the legal regulation of private cryptocurrencies in various countries of the world

Model No.	Legal regulation	Countries
1	Prohibited issue, circulation, and use as a means of payment	Afghanistan, Algeria, Bangladesh, Bolivia, Pakistan, Saudi Arabia, Vietnam
2	Prohibited use as a means of payment, restrictions on emission and turnover	China, Russia
3	Recognized as a full-fledged financial asset, restrictions on use as a means of payment	US, Canada, Israel, EU countries
4	Recognized as a means of payment like the national currency	El Salvador, Central African Republic
5	Not prohibited, not regulated by law, used based on the principle of "everything which is not forbidden is allowed"	Some African and Asian countries

4. DISCUSSION

According to several authors (Gorbenko & Rozhdestvenskii, 2022), the main difficulty for the introduction of private cryptocurrencies into real economic turnover is their anonymous and decentralized nature, i.e. the inability to determine the legal entity that owns a particular cryptocurrency. As a result, cryptocurrencies can be used both for legal economic activities and money laundering (Afanasev, 2020) (drug trafficking, extortion, etc.), for example, for financing terrorism (Zelenkov et al., 2021) and other illegal activities. However, this problem can be solved (Gorbenko & Rozhdestvenskii, 2022). Some technologies help determine not only the ownership but also the source of cryptocurrency assets. The introduction of these mechanisms has not been reflected in the corresponding laws. In this regard, private cryptocurrencies (for instance, Bitcoin) will not receive the full-fledged status of money on a global scale in the near future. Their distribution will be limited to the sphere of digital assets and closed payment networks. Some countries that previously encouraged the issuance and circulation of cryptocurrencies are restricting and banning them. On September 24, 2021, the People's Bank of China declared all activities related to cryptocurrency illegal, including its mining, purchase, storage, and sale (Getmatch, 2022). As practice shows, many states are moving towards the creation of centralized digital currencies backed by real assets and national digital currencies. The first case is the creation of secured digital assets in the form of the national cryptocurrency El Petro in Venezuela. Being digital, this currency is backed by oil reserves.

In Russia, a law on the digital ruble has been adopted and comes into force. The stable functioning and circulation of the digital ruble will be ensured by the Central Bank of Russia. The digital ruble will perform all functions of traditional money in civil transactions (Shumilova, 2022). The legislation provides that the digital ruble will be an alternative way to make payments, combining the features of cash and non-cash funds. A digital asset can be called a "state stablecoin" or "digital currency of the central bank". The US Federal Deposit Insurance Agency (FDIC) defines stablecoins as digital assets developed to maintain a stable value concerning the national currency and other assets (President's Working Group on Financial Markets, 2021). The Basel Committee on Banking Supervision (BCBS) distinguishes between cryptocurrencies and stablecoins, with the latter pegged to traditional assets such as fiat currencies (Basel Committee on Banking Supervision, 2021). In particular, cryptocurrencies have a risk factor of 1250%, which should drastically reduce bank investments in this type of asset. According to the consulting company PricewaterhouseCoopers (PWC), over 60 countries are currently developing such digital currencies, and in some countries, they are already being tested (Bondarchuk, 2021). The stability of stablecoins can be achieved by pegging them to any world currency (dollar, euro,

yen, yuan, etc.), real assets (gold, oil), or a basket of other digital currencies. Stablecoins pegged to fiat money or physical assets counterbalance the main drawback of cryptocurrencies for the state, i.e. the impossibility of their centralized regulation. Stablecoins can be purchased on exchanges and used to buy reserve assets or decentralized cryptocurrencies. Stablecoins allow one to quickly conclude transactions and get rid of some assets, including cryptocurrencies, in case they drop in value. They can be issued as a loan and liquidity tool for trading and used for cross-border transfers in places where access to dollars is limited. Supporters of stablecoins believe that they are promising means of payment for households and businesses (Kochergin, 2022).

In addition, many scholars (Kochergin, 2022; Kulakov & Maklakova, 2021) see prospects for the introduction of digital currencies as a new form of money issued by the central bank as opposed to the spread of private digital currencies. The study conducted by the Bank for International Settlements in mid-2021 demonstrated that 86% of central banks, representing countries with 72% of the world population and 91% of the global GDP, studied the issue of national digital currencies (Boar & Wehrli, 2021). About 20 countries have started implementing or have implemented pilot projects for issuing CBDC. The world's leading central banks, such as the ECB, the US Federal Reserve, the Central Bank of Japan, the Bank of England, etc. have announced their intention to issue their own digital currency. Some central banks, including the Central Bank of the Bahamas, the East Caribbean Central Bank, and the People's Bank of China, are issuing their national digital currency (Chadaeva, 2022).

It seems that the introduction of digital currencies by central banks can solve some problems in the regulation of cryptocurrencies. Having a national digital currency, it is possible to significantly limit the distribution of private currencies, while not preventing the introduction of digital technologies into the sphere of public finance. Due to the unlimited possibility of issuing currencies by central banks, cryptocurrencies can increase their investment attractiveness as a digital asset protecting against inflation.

5. CONCLUSION

The information analysis and expert survey conducted in the course of the study allow us to conclude that the policy of most countries regarding the legal regulation of private cryptocurrencies does not provide for their full introduction into the financial system as a new type of money. Their key role is likely to be limited to digital asset investments. Thus, the

research hypothesis seems to be proven. This analysis indicates a lot of contradictions caused by the circulation of private currencies and the desire of states to fully control the financial sector. Further analysis of these contradictions can contribute to the topic under consideration.

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