Features of the Introduction of the Digital Currency of Central Banks

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Abstract. Due to the rapid development of network technologies and the digital economy, the public is interested in the convenience of retail payments. The demand for simplicity, security, versatility and privacy is growing day by day. Many countries, central banks or monetary policy authorities in countries and regions are closely monitoring the achievements in the development of financial technologies and, in these conditions, the digital currency is moving from theory to reality. Innovative forms of private digital money are emerging in response to changing needs that are changing the way we pay and the payment landscape more broadly. In an attempt to defend sovereignty, many countries, including Russia, are actively developing their own digital currencies, the issuers of which will be central banks. In these conditions, there is a need to study the main features of the introduction of digital currency by central banks, the advantages of the introduction and its disadvantages. This article evaluates and analyzes the consequences of the introduction of digital currency by central banks, identifies the key problems of their functioning, and develops possible solutions to these problems.

1 Introduction

Money plays a very important role in the economic sphere of society. All over the world, in particular in Russia, along with the development of the economy and technology, there are changes in money circulation. More and more Russian citizens use non-cash money to make payments and transfers, as well as to pay for goods and services, in addition to cash. At the same time, there is a growing demand from business participants to increase speed, convenience, security and reduce fees, which is possible only with the use of advanced technologies. At the same time, the use of digital financial technologies by banks, businesses and the state is actively expanding. All this requires exploring the possibility of issuing a central bank digital currency in Russia as another form of money capable of responding to the challenges facing the financial market.

Digital money (or digital currency) refers to any means of payment that exist in purely electronic form. Digital money is not physically tangible, like a banknote or coin. Accounting and translation is carried out using online systems. [6]

Digital money is similar in concept and use to its monetary counterpart in that it can be a unit of account and a means for daily transactions. But it's not cash. For example, rubles

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in your online banking account are not digital money, because they take physical form when you withdraw them from an ATM.

- Digital money is money in a purely digital form. It is not a physical, intangible asset - it is not like cash or other commodities such as gold or oil.
- Digital money can simplify the existing financial infrastructure, making money transactions cheaper and faster. They can also make it easier for central banks to conduct monetary policy.
- Digital money is vulnerable to hacking and can compromise user privacy. [8]

The main methods used in the course of the study are the analysis of the results obtained during the study of articles, journals and books, the derivation of general patterns, the generalization of the information obtained during the study of this topic.

The Central Bank's digital currency will be an electronic form of money that can be used by businesses and households to make payments and settlements. The introduction of a digital currency can open up new opportunities for making payments and maintaining financial and monetary stability by the Central Bank.

Digital currencies can prevent illegal activity because they exist in a digital format and do not require serial numbers to be tracked. Cryptography and a public ledger allow the central bank to easily track funds throughout its jurisdiction, thereby preventing illegal activities and illegal transactions using digital currencies.

Given these advantages, digital money has become a priority for several governments around the world.

The interest of central banks in the research and experiments of the Central Bank varies significantly. However, these interests are usually divided into two large categories.

Some central banks primarily seek to solve the problems of today, while others are exploring the possibilities of the future. In some jurisdictions, the Central Bank is designed to address a specific problem - inefficient payment systems, weak banking infrastructure, or reduced use of cash - or to advance national policy goals such as supporting the inclusion of payments and protecting monetary sovereignty. For many advanced economies, the main motivations are focused on potential innovations in the field of payments and general readiness for a potential future state. [6]

Digital currencies of the Central Bank (CBCD) are currencies issued by the central bank of a country. They are separate from fiat currencies, which are also supported by the authority and obligation of the central bank, that is, they are another obligation of the institution. Central banks facilitate the implementation of monetary policy by eliminating intermediaries from politics by establishing a direct link between the government and the ordinary citizen.

2 Research Methodology

One of the indisputable advantages of the introduction of digital currency by central banks is the opportunity for people and systems to connect digitally, which is due to the growth of mobile and fixed networks and is supported by existing technological standards and protocols (for example, credit and debit card payment schemes; SEPA - a Single euro payment Zone). Expanding connectivity is also at the heart of efforts to expand access to financial services through digital money, where the lack of banking and monetary infrastructure and the ability of people to authenticate their credentials have traditionally been cited as a major problem.

3 Results and Discussions

The introduced digital currency as an additional (third) form of money is actually an act of replacing cash and non-cash means of payment (which have become archaic for the state)
with more relevant for the modern state (more in line with the interests of the state), corresponding to the era of the digital economy and digitalization of social relations.[7]

Digital currency can contribute to the stability and competitiveness of the payment system for households and businesses. Although the CBCD creates a number of opportunities, it can create significant problems for maintaining financial stability. Thus, the new currency will be relevant to almost everything that the Bank does, and its implementation will require very careful development.

Table 1. The volume of money supply (M2) in Russia for the period 2011-2021, in billion rubles.

<table>
<thead>
<tr>
<th>Period</th>
<th>Money supply (M2), billion rubles.</th>
<th>Cash (M0), billion rubles.</th>
<th>Non-cash funds, billion rubles.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>20 011.9</td>
<td>5 062.7</td>
<td>14 949.1</td>
</tr>
<tr>
<td>2012</td>
<td>24 204.8</td>
<td>5 938.6</td>
<td>18 266.2</td>
</tr>
<tr>
<td>2013</td>
<td>27 164.6</td>
<td>6 430.1</td>
<td>20 734.6</td>
</tr>
<tr>
<td>2014</td>
<td>31 155.6</td>
<td>6 985.6</td>
<td>24 170.0</td>
</tr>
<tr>
<td>2015</td>
<td>31 615.7</td>
<td>7 171.5</td>
<td>24 444.2</td>
</tr>
<tr>
<td>2016</td>
<td>35 179.7</td>
<td>7 239.1</td>
<td>27 940.6</td>
</tr>
<tr>
<td>2017</td>
<td>38 418.0</td>
<td>7 714.8</td>
<td>30 703.2</td>
</tr>
<tr>
<td>2018</td>
<td>42 442.2</td>
<td>8 446.0</td>
<td>33 996.2</td>
</tr>
<tr>
<td>2019</td>
<td>49 195.3</td>
<td>9 394.0</td>
<td>39 801.3</td>
</tr>
<tr>
<td>2020</td>
<td>51 660.3</td>
<td>9 658.4</td>
<td>42 001.9</td>
</tr>
<tr>
<td>2021</td>
<td>58 652.1</td>
<td>12 523.9</td>
<td>46 128.2</td>
</tr>
</tbody>
</table>

The table shows the volume of money supply (M2) in Russia for the period 2011-2021 in billion rubles and the share of cash and non-cash in the total volume. The volume is growing every year, and the share of non-cash money in circulation is also growing. As we know, M2 is all cash in circulation + money in term accounts.

In Russia, the introduction of the digital ruble should have an impact on reducing the volume of cash turnover on the one hand, on the other hand this can become a big barrier, since the digital ruble is the third monetary sign. In other words, there are rubles, ordinary paper coins, there are rubles on accounts, bank cards, and there will already be digital ones, which will be stored not on the accounts of the banking system, but in terminals owned by the central bank. It turns out that the introduction of the digital ruble is a whole revolution in money circulation, which, of course, carries risks.

For example: your accounts are not stored in the accounts of the banking system, but in the terminals of the central bank. And, let's say, the central bank needs you to spend your money in order to stimulate the economy or, pursuing other goals, rather than accumulate them at home. And the central bank may make such a demand, for example, it is necessary to spend some amount of money during, for example, a month, otherwise the terminal will be blocked. Here is an example of the risk that carries, exclusively, a digital currency. Since it is impossible to force you to spend your money if they are in bank accounts, the Central Bank cannot influence this.

The introduction of the digital ruble has both positive and negative aspects. The positive ones include:

– high security of the payment system,
– ease of use,
– reduction in the share of shadow transactions,
– combining the advantages of cash and non–cash funds,
– reducing transaction costs,
– regulating the burden on the banking sector,
– minimizing dependence on the dollar, and, consequently, reducing dependence on possible sanctions,
– new opportunities for transitional payments,
- increasing the financial stability of the country.
Among the main negative aspects, it should be noted:
– low level of financial literacy of the population,
– loss of competitive sense among existing electronic payment systems,
– insecurity of use,
– possible use for illegal purposes,
– high volatility, that is, currency fluctuations,
– assignment of all responsibilities to the Central Bank of the Russian Federation.
Also, the disadvantages of the Central Bank's digital currency include the following:
1. Initial expenses
2. Scaling issues
3. Possible loss of financial confidentiality of citizens/
In the case of the implementation of the digital ruble project, the state will be able to use it to make settlements, accept payments and, in addition, to make payments in favor of citizens and businesses. To ensure transparency and impartiality of contract execution, smart contracts (applications that include the terms of the transaction in the form of a digital code) can be used. This is especially important, for example, in the implementation of public procurement.

It should also be noted that the emergence of a new form of money will lead to increased competition in the financial market, and, given the fact that this project is considered federal and cross-cutting, its implementation will undoubtedly lead to cross-industrial partnership and innovative infrastructure solutions. Based on this, the Central Bank of Russia should invite experts and market participants to jointly discuss solutions for the implementation of this project.

An important point is that when using the digital ruble, the Central Bank retains a dominant role in the monetary system of the state. Thanks to this, its integrity is preserved, the security level of the new asset is increased, legal and administrative barriers are removed, and equal access to the introduction and use of the digital ruble is ensured throughout the state and in all economic sectors.

The introduction of the digital ruble will require the creation of a new additional infrastructure so that it can be used for payments. This infrastructure should be reliable and convenient for use by citizens and organizations in order to carry out financial transactions online and offline [1].

So, as a result of public discussions in 2020-2021, the Bank of Russia decided to use a two-tier retail model of the digital ruble (model D). This model is more in line with the interests of financial market participants and implies that the Central Bank will become the issuer of the digital ruble and the operator of the digital platform. In addition, the structure of the banking system will remain unchanged, therefore, banks will also continue to provide the entire list of banking services with cash and non-cash rubles and make most of the payments in the country's economy. In addition, the Bank of Russia will continue to regulate the financial sector, implement monetary policy and perform its other functions through transactions with the banking sector, issue cash currency and make government payments.

According to the data of the Central Bank of the Russian Federation, the digital ruble platform is currently being tested and opening, replenishing virtual wallets and making transfers, paying for goods and services with their help. The participants of the pilot group are 15 of the country’s largest banks, including Sberbank, VTB, Alfa—Bank, Gazprombank and others. In addition, mobile applications developed by some banks from this group are being tested.
Further, after debugging all the necessary systems, it is planned to implement a pilot project in 2023, in which real customers with real digital currency will already take part. In 2024, the connection of all credit institutions to the digital platform will begin and the number of available payment options and transactions using smart contracts will increase.

In addition, the Federal Treasury is a special participant in the digital ruble platform and, as soon as it is ready, payments will be made using the digital ruble in favor of the state and from the state in favor of individuals and legal entities.

In 2025, the Central Bank intends to implement the use of the digital ruble offline. This is stated in the draft of the Bank of Russia, published in August 2022 and dedicated to the main directions of the unified state monetary policy for 2023-2025. The regulator plans to connect non-bank financial intermediaries, financial platforms and exchange infrastructures to such settlements [8].

The appearance of the digital ruble will simplify monetary calculations, reduce costs, increase financial accessibility for various categories of economic entities and will have a number of other advantages. But at the same time, it will also give rise to a number of contradictory provisions on the introduction of the digital ruble, primarily related to the lack of practical knowledge about the use of this type of currency.

A well-designed digital currency of the Central Bank may have the potential to increase financial stability. By supporting a sustainable payment system and preventing some of the risks associated with new forms of privately created money. In other words, digital currency is more stable, controlled, and therefore safe compared to digital money, cryptocurrency.

The implementation of this reform involves a long, rather time-consuming complex process that does not currently have certain guarantees of its implementation, but has an incentive for its implementation with qualitative analysis, the availability of alternative implementation mechanisms and the use of experimental knowledge.

Significant aspects that need to be taken into account when developing and implementing a digital ruble project are [2]:

1. Gradual implementation. The mandatory acceptance of the digital ruble by all trade and service enterprises will lead to global changes in the financial infrastructure, therefore, the implementation of the digital ruble project is virtually impossible at the same time. Based on this, the digital ruble needs to be implemented in stages so that the banking system has the opportunity to adapt.

2. Ensuring confidentiality at the level of the Central Bank and commercial banks. To do this, the following conditions must be met: – preservation of trade secrets; – compliance with the requirements of the law on personal data protection, as well as the requirements of the Civil Code of the Russian Federation. In addition, depending on the scope of use of digital currency, there may be several levels of confidentiality: budget – fully open, commercial – extremely closed. The development of amendments to the legislation of the Russian Federation began in January 2022.

3. The ability to make payments offline. Even if Internet access is provided throughout the country, calculations in offline mode are still necessary. It is planned that over time it will be possible to make transfers or pay in digital rubles in the store even without access to the Internet or mobile communication. This requires the development of mechanisms that would ensure the transfer of rights from one participant of operations to another with a guarantee that the former owner cannot reuse the money. [8]

4. Ensuring information security. To do this, it is necessary to use certified cryptographic algorithms and provide high protection against hacking of identification and authentication mechanisms, as well as system protocols that use cryptographic tools.

5. Implementation of timely modernization. In the process of introducing digital currency, it is necessary to provide for timely modernization with the possibility of data migration, because modern solutions on a distributed registry have limited opportunities to
change the format of data stored in the blockchain, due to the specifics of the technology itself.

Banks can provide significant support to the digital ruble project and start piloting new services, provided they are involved and there are clear prospects for using the Central Bank. The introduction of the digital ruble seems to be a necessary step and a boon for society and the economy, but it brings new challenges for the industry and the economy as a whole.

4 Conclusions

The introduction of the digital ruble should not cause banks difficulties with financing – the Central Bank of Russia will provide them with the necessary refinancing. In the conditions of competition between banks and the immutability of interest rates in the money market, loans should not become more expensive. At the same time, thanks to the advent of the digital ruble, part of the banks' interest income will be redistributed among their customers. All these actions signal the inevitability of the widespread availability of state digital currencies for citizens in the coming years.

References

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