PROSPECTS FOR THE DEVELOPMENT OF DIGITAL CURRENCY IN THE CONTEXT OF AN INNOVATIVE ECONOMY

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Abstract

The historical method, abstract and logical methods, comparative and statistical methods were applied within the research. The characteristic of digital currencies of Central Banks, their differences from cryptocurrencies is presented, possible models of their functioning are considered in the article. Some regularities between the needs of consumers for which the digital currency is issued, and the features of its design are offered. The international experience of digital money introduction is analyzed and some conclusions are drawn on the advantages and prospects of this tool. The authors conclude that the transition to digital currencies will lead to faster innovative development of the bank and monetary-and-credit systems and the payment market as well. The conclusions and recommendations, drawn in the article, can be useful for the specialists occupied with the development of approaches to realization of digital national currencies, development of their design. The authors of the article consider an innovative form of money, digital monetary unit or digital currency.

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Keywords: digital economy, innovation, payment market, digital currency, banking instruments

I. Introduction

In Russia the Central Bank of the Russian Federation started the development of the concept of digital rouble in 2020. In October, 2020 it published the special report for public consultations, in which the advantages of digital currency were described. In the conditions of the innovation economy new requirements to the communications, computing power, information systems and services appear. The innovation technologies development caused the emergence of a new form of money existence – digital currency (Plehova et al. 2020), (Bank for International Settlements, 2022; (Yakunina, 2022), (Imangozhina et al,2019), (Ivanova O. 2020), (Tutova V.A., 2024), (Yarovenko, 2021), (Khalilova, et al. 2022), (Kodasheva, G. et al, 2022), (Burkaltseva et al. 2022), (Rudyk et al,2022), (Petrova et al.,2022), (Niyazbekova &,Troyanskaya et al, 2021), (Patashkova, Y. et al.,2021), (Evmenchik, 2021), (Jazykbayeva, 2021), Niyazbekova, 2021), (Abramova et al.,2023), (Grekov, et al., 2016), (Niyazbekova et al., 2021;2023), Yakunina et al (2022), Mikhaylishin (2021) Kucherov I.I. (2018) Eskindarov M.A. et al. (2019) Andryushin S.A. (2019).

In April, 2021 the expert discussions took place in Russia; the discussion came to the end with

the publication of the concept of digital rouble, which described the role, possibilities of application as well as the models and mechanisms of the use of digital currency (Bank of Russia, 2020; 2021; 2022)[1]. Converting of cash or non-cash rouble into digital rouble will be performed as 1:1. Client will be able to save his or her funds in case of bankruptcy of the financial institution working with digital currency. Funds will be available through other financial institution as the actually monetary unit belongs to the Central Bank of the Russian Federation.

Moreover, according to the glossary of Committee on payments and market infrastructure of Bank for International Settlements, electronic money is defined as "the cost stored in an electronic form on the device like the smart card or the hard drive of the personal computer" (Bank for International Settlements, 2020[2]).

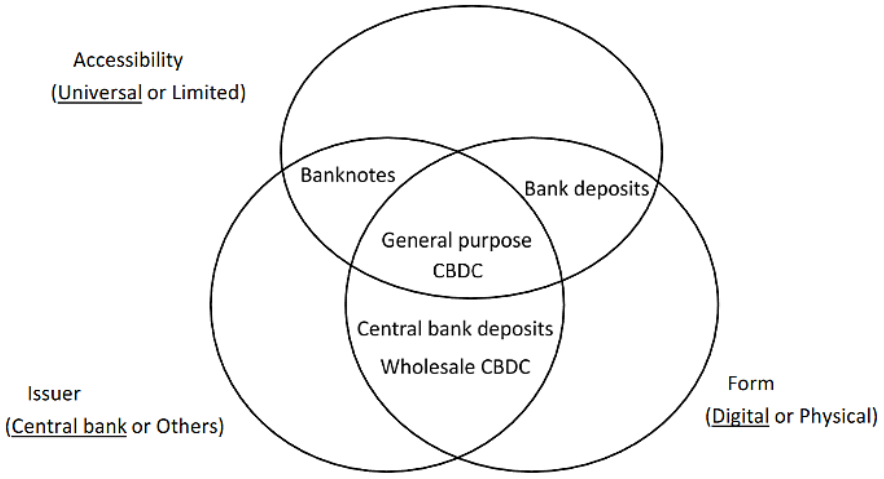

Figure 1: *Classification of Currency (according to Bank of Japan, 2020)*

Most representatives of Central Banks considered digital currencies of Central Banks (especially retail CBDC) negatively or scornfully up to 2019.

Many scientific works, devoted to digitalization of economy in general and the payment market in particular, were written from the moment of the beginning of work on the creation of digital rouble. The authors consider such Russian authors as Eskindarov M.A. (2019), Andryushin S.A.(2019), Serebrennikova et al. (2021), Mikhaylishin A.Yu. (2021), Kucherov et al. (2018), Tobin J. (1987) et al. to deserve attention. However, not all the matters have been taken rather up. For example, it is required to develop some recommendations on the choice of option of digital currency design, depending on the needs of their potential consumers.

II. Methods

Official data of Central Bank of the Russian Federation (Bank of Russia, 2020; Bank of Russia, 2021), Sveriges Riksbank (2022), Deutsche Bank (2022), People's Bank of China (2017)[3], Bank of Japan (2020)[4], etc. as well as the reports of analytical agencies served as epy materials for this research.

Historical method, abstract and logical methods, comparative and statistical methods were

[1] a) Bank of Russia (2020) Digital rouble. Report for public consultations. Moscow. 48 p. URL: http://www.cbr.ru/StaticHtml/File/112957/Consultation_Paper_201013.pdf (date of the address: 12.06.2024)
B) Bank of Russia (2021) Concept of digital rouble. Moscow. 31 p. URL: http://www.cbr.ru/Content/Document/File/120075/concept_08042021.pdf (date of the address: 12.06.2024)
C) Bank of Russia (2022) Digital ruble: testing start. URL: https://www.cbr.ru/press/event/?id=12685 (date of the address: 12.06.2024)

[2] Bank for International Settlements (2018) Central bank digital currencies, CPMI, Markets Committee Paper, 174, 1-34. URL: https://www.bis.org/cpmi/publ/d174.htm (date of address: 20.06.2024).

[3] Bank of China (2017) China Payment System Development Report 2016. China financial publishing house. 257 p.

[4] Bank of Japan (2020) The Bank of Japan's Approach to Central Bank Digital Currency. 19 p. URL: https://www.boj.or.jp/en/announcements/release_2020/data/rel201009e1.pdf (date of address: 20.07.2024)

applied within the research.

Official data of Central Bank of the Russian Federation (Bank of Russia[5], 2020; Bank of Russia, 2021[6]), Sveriges Riksbank (2022), Deutsche Bank (2022), People's Bank of China (2017), Bank of Japan (2020), etc. as well as the reports of analytical agencies served as epy materials for this research.

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III. Results

In Russia the Central Bank created the prototype of the platform of digital rouble by the end of 2021. 2022 The first pilot group consisting of 12 banks which assets are 70.4% of the total assets of 328 credit institutions for the end of 2021 was created for its testing in January (Table 1).

Table 1: *Structure of pilot group on digital rouble testing (Bank of Russia, 2022)*

Bank	Position in the rating according to the volume of assets	Volume of assets in the end of 2021, trillion roubles	Western sanctions against the bank after 24.02.2022
Sberbank	1	38.284	Blocking
VTB	2	19.361	Blocking
Gazprombank	3	8.707	Absent
Alfa-Bank	4	5.612	Blocking
Promsvyazbank	6	4.045	Blocking
Rosbank	11	1.579	Absent
Tinkoff Bank	13	1.278	Absent
DOM bank.RF	16	0.913	Absent
Ak Bars Bank	20	0.66	Absent
TKB bank	37	0.208	Absent
Sinara bank	57	0.116	Absent

The analysis of the world practice showed that though many countries go to creation of the digital currencies in a similar way, they can choose different models for their realization.

Types of architectures of retail CBDCs (Fig.2).

[5] Bank of Russia (2021) Concept of digital rouble. Moscow. 31 p. URL: http://www.cbr.ru/Content/Document/File/120075/concept_08042021.pdf (date of the address: 12.08.2024)

[6] Bank of Russia (2021) Concept of digital rouble. Moscow. 31 p. URL: http://www.cbr.ru/Content/Document/File/120075/concept_08042021.pdf (date of the address: 12.08.2024)

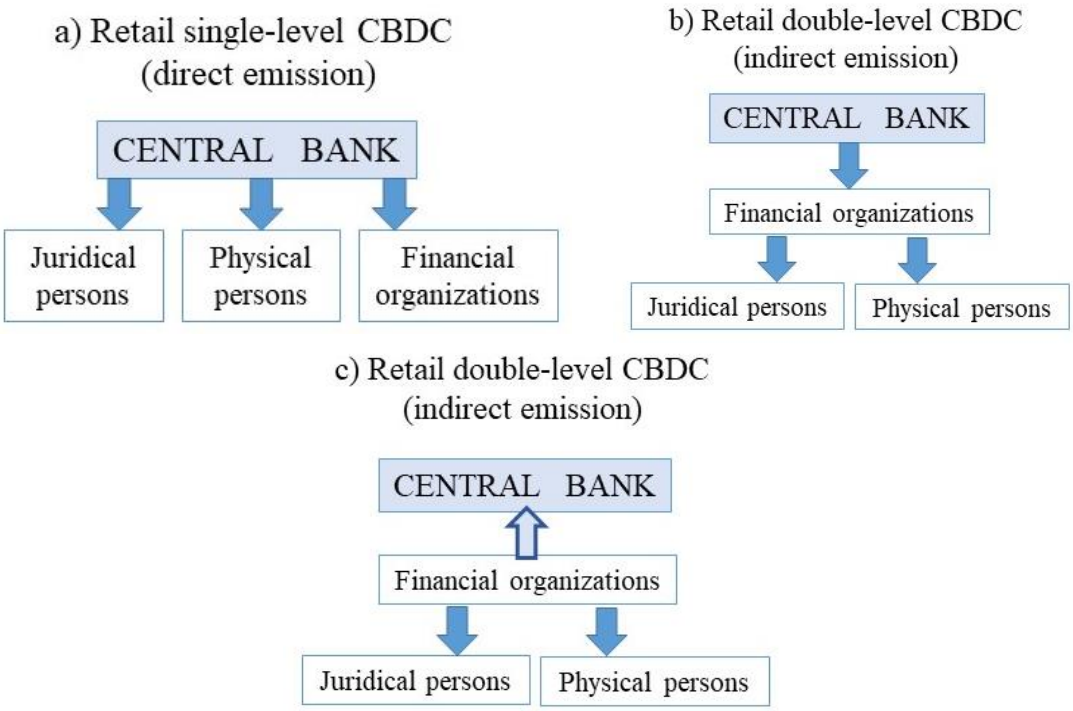

Figure 2: *Types of architectures of retail CBDCs (created by the authors)*

E-CNY has two-level structure, according to PBOC. But from the users' point of view, the model has more than the levels (Figure 3).

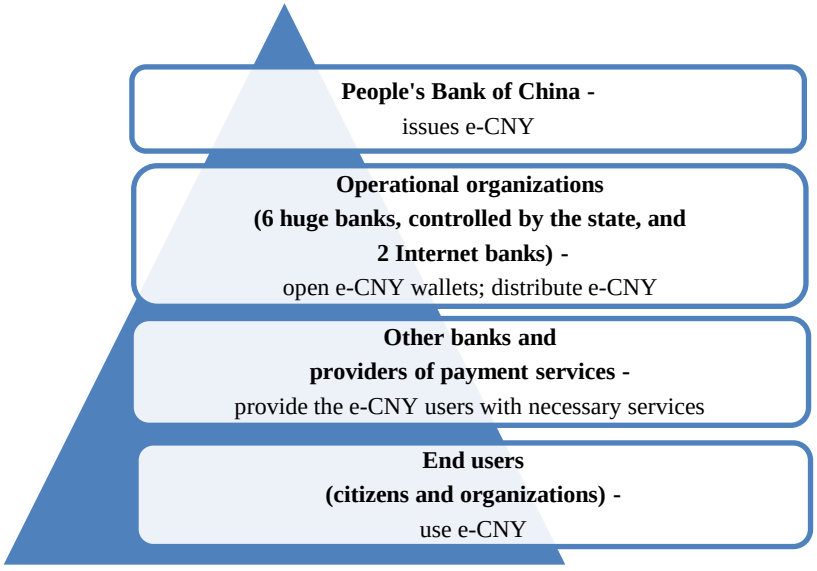

Figure 3: *Structure of the e-CNY model*
Source: created by the authors according to (Deutsche Bank, 2021)

The regulator of China considered the possible negative effect for "usual" national currency

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As for Russia, the two-level model, in which there are elements of the centralized system and the decentralized registers on the basis of blockchain technology was accepted. The first one provide large-scale data handling, and the second one allow to increase the efficiency, reliability and speed of transactions. The system of tracking and calculations among the participants (clearing) which maintains the register of the stream of means and their ownership is an important part of all process (Yakunina et al., 2022). Such model is most available to citizens and

organizations and can be integrated into the bank infrastructure for customer service. The Central Bank allows to open virtual wallets for the users and allows financial institutions, Federal Treasury and other authoritiesto perform operations.

There is no universal option of the digital currency design. According to the authors of the article, the features of the digital currency design are determined by the consumers' needs. The authors' recommendations on the matter are provided in Figure 4.

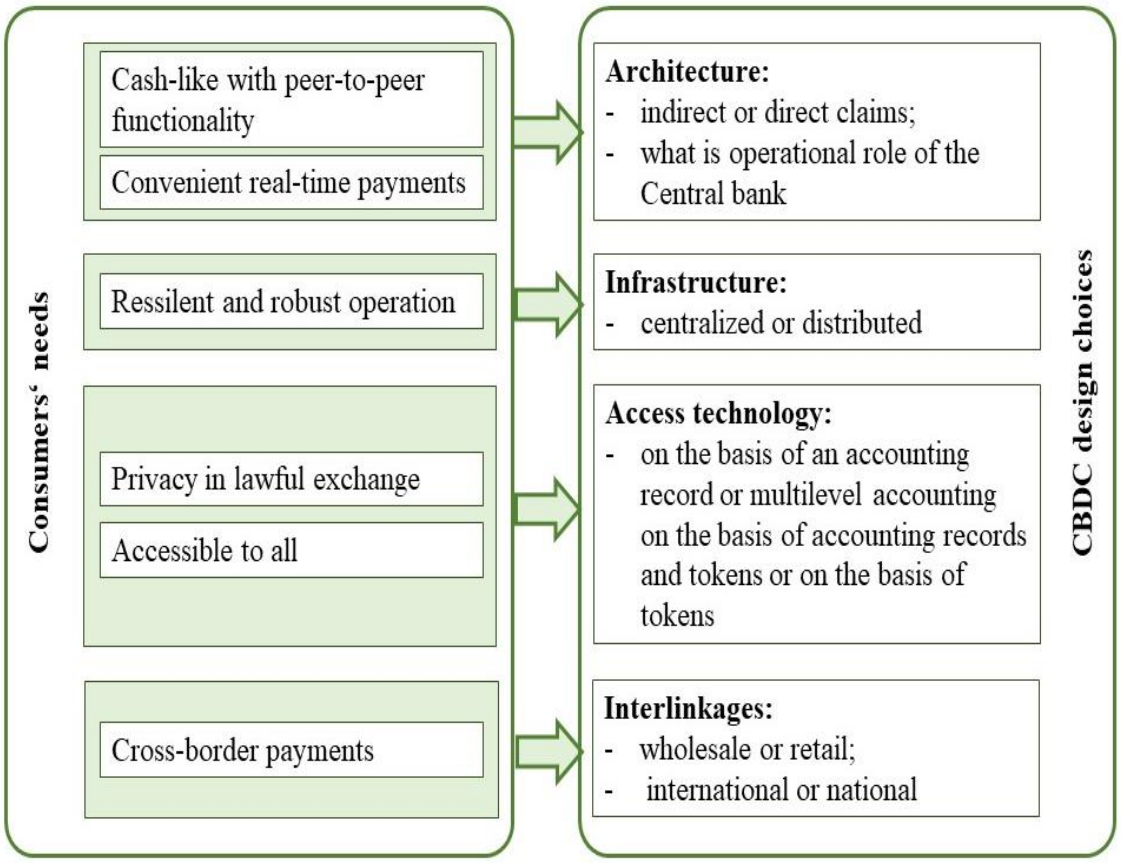

Figure 4: *Choice of Central bank digital currency according to the consumers' needs (drawn by the authors according to BIS Working Papers, 2020 and Kumhof & Noone, 2018)*

IV. Discussion

The accelerated digitalization was also strongly influenced by the coronavirus pandemic, which stimulated people to choose contactless and cashless payment.

Nevertheless, there is no consensus about the matter, how digital currencies are capable to perform the main and commonly accepted functions of money, among scientists and practicians.

Respectively, all three forms of Russian rouble will be absolutely equivalent (Bank of Russia, 2020). But this statement is debatable. According to other economists, digital money cannot be the store of value or to perform functions of means of accounting and payment (these two functions continue to be performed by official money) (Bouveret, Haksar, 2018).

However, digital currencies have to overcome some obstacles: their cost has to be stabler; they have to become convenient both to sellers, and consumers; their transition to the legitimate legal framework, legal regulation improvement are required; integration of digital currencies by leading companies in the field of payments (mobile applications, providers of bank cards) as well as large retail sellers.

At the same time payment and investment services are the kind of financial services. With respect thereto digital currencies can be considered not as money, but as a special financial instrument. According to other economists, digital money cannot be the store of value (Banque de France, 2018) or to perform functions of means of accounting and payment (these two functions continue to be performed by official money)

Studying of analytical reports and scientific works on CBDC proves that nobody among accounting or practicians knows definitely, what such innovation will lead to.

At the same time, reduction of dependence of users on certain providers will increase stability of a financial system of the country (Bank of Russia, 2020).

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Thus, this innovation is very perspective and capable to bring great benefit to modern economy. Soon we can expect transition from cash and traditional forms of non-cash payments to completely digital forms of money which will significantly change the payment market, bank and monetary-and-credit systems.

Besides, external restrictions and "freezing" of assets are not dangerous for such a form of calculation as digital currency. That is one of the reasons, why the sanctions of 2022 will even accelerate the introduction of digital rouble for the calculations in the Russian economy. There are all the reasons to expect, that digital currencies have great prospects.

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