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Trends in the development of central bank digital currencies

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Abstract. This study examines issues related to the active creation and gradual implementation of digital national currencies in various countries. The core strengths and limitations of Central Bank Digital Currencies, which are a legally secured digital form of fiat currency, are identified. Instrumental, systemic and institutional properties of the centralized digital currency of the state are highlighted. Our researched comprises a quantitative analysis of nations at different phases of CBDC implementation, with the aim of developing a national digital currency. It was found that the spread of such national currencies around the world would create and support a more diverse payment ecosystem at the national and international levels and, if properly developed, provide a new form of global public financial interaction.

Keywords: digital economy, Central Bank Digital Currency, digital payments, financial stability, national digital currency

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Основные тренды в развитии цифровых валют центральных банков

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Аннотация. Рассмотрены вопросы, которые непосредственно связаны с цифровизацией технологий в области финансов, позволяющие разрабатывать национальные валюты в различных формах и внедрять их в экономику государств. Представлены результаты анализа сильных и слабых сторон определенной формы виртуальных денег, которые являются юридически обеспеченной цифровой формой фиатной валюты. Выделены инструментальные, системные и институциональные свойства централизованной цифровой валюты государства. Проведен количественный анализ стран, которые находятся на различных стадиях реализации проектов по созданию национальных цифровых валют. Установлено, что распространение таких национальных валют по всему миру позволило бы создать и поддерживать более разнообразную платежную экосистему на национальных и международном уровнях и при грамотном развитии обеспечить новую форму глобального общественного финансового взаимодействия.

Ключевые слова: цифровая экономика, цифровые платежи, финансовая стабильность, национальная цифровая валюта

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Introduction

In recent years, due to active transformations in the field of digitalization of finance, many states have been busy creating their own digital versions of national currencies. Experts believe that this is driven, in part, by accelerating global digitization generally, the need to enhance cashless payment technologies and increased digital payment usage (Ozili, 2023). Several experts have argued that demand for national digital currencies has surged since the COVID-19 pandemic and subsequent escalating global economic and political instability (Chen, Nesterov, 2023; Mikhaylishin, 2021).

A centralized form of digital money or CBD (Central Bank Digital Currency), comprises a currency issued by state central banks, acting as legal tender in digital form (Andryushin, 2021).

The rapid spread of decentralized cryptocurrencies has prompted the need for retaliatory measures and reactions from state financial structures. Therefore, foreign and domestic financial experts creating their own digital currencies is one of the ways to more easily settle digital transactions at this stage, rather than adopting cryptocurrencies, which central banks consider rather as a threat requiring management (Karavaeva, 2023; Vaganova, Sidibe, Pryadko, 2022).

Since the advent of Bitcoin, which is now the most common type of digital currency. Governments around the world have been wary of cryptocurrencies because of their ability to circumvent capital controls and use for illegal purposes, such as money laundering. With the growing popularity of bitcoin and other cryptocurrencies, governments around the world have realized the importance of protecting against these threats to the existing banking and traditional financial industry[1].

Central banks, including those of the Russian Federation, the EAEU countries, etc., worry that cryptocurrencies are a threat to their control and authority. Therefore, we must appreciate that difficulties can arise when regulating such anonymous and decentralized systems [Cryptocurrencies: trends, risks, measures. 2022. Report of the Bank of Russia for public consultations. M. Bank of Russia, 37 p.].

Therefore, in order to strengthen control over the production and supply of money in the financial market and prepare in advance for the seemingly inevitable transition to a cashless society, countries are now launching experiments to verify the operation of their own CBDCs.

With the technological improvement of financial business processes and the emergence of innovative digital technologies, national governments and financial specialists are showing not only interest, but also readiness for the gradual introduction of an electronic form of centralized currency to stimulate the growth and development of the digital economy. In essence, virtual fiat currencies issued and maintained by the central bank of the state are subject to total control by the state and are inextricably linked to its national currency. The basis for the implementation of programs to create a digital national currency are databases managed by the central bank, the government or an organization approved by the government. The main characteristics that a CBDC should have are shown in Figure 1.

In a rapidly developing world that is undergoing an active phase of digital transformation of various processes, the modern theory of money is changing significantly and central bank digital currencies are becoming a possible means of conducting transactions in different countries.

Experts in the field of finance classify centralized currencies of central banks as wholesale and retail. The first type is primarily focused on maintaining the activities of state financial structures. They are used primarily for international settlements or wholesale cross-border payments. In addition, it should be noted that their functions are similar to those of mandatory reserves of state central banks.

[1] Buchholz K. (2021). How widespread is cryptocurrency? *Statista.* Retrieved May 5, 2024 from https://www.statista.com/chart/18345/crypto-currency-adoption/

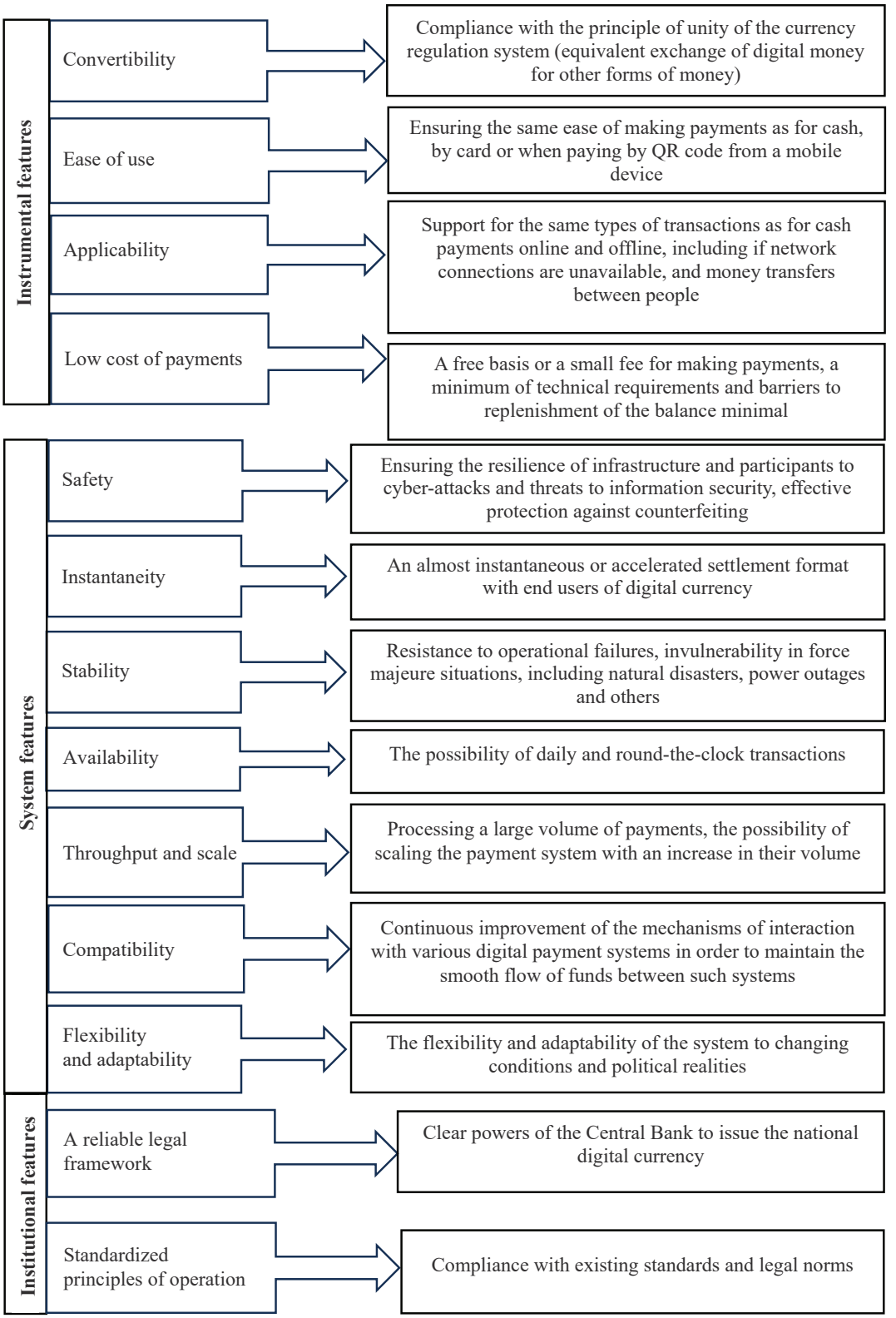

Figure 1. The main instrumental, systemic and institutional characteristics of the centralized digital currency of the state

Source: compiled by D.V. Lebedeva.

Retail CBDC, in turn, is designed to be used by individuals and businesses to make everyday transactions. This type of SIV is issued in order to maintain the monetary policy of the central bank in the country. The use of cash is dwindling in modern society and the ease and accessibility of retail centralized digital currencies make them a major financial instrument for digital economies.

According to information obtained from the reports of the international financial organization BIS, even during the spread of coronavirus infection in the 20s and the global pandemic, more than 80% of the world's central banks began to develop and integrate projects of their own national digital platforms into their payment systems, while confirming that the participating countries were convinced of the expediency of implementing CBDC and began to implementation of pilot projects.

Even though many nations recognize CBDCs and have even incorporated them within the state, other countries are still in the early phases of research. According to the financial portal Finbold, it was found that at the beginning of 2023, more than one hundred nations were exploring centralized national currencies or already attempting to develop such currencies (Fig. 2 and 3).

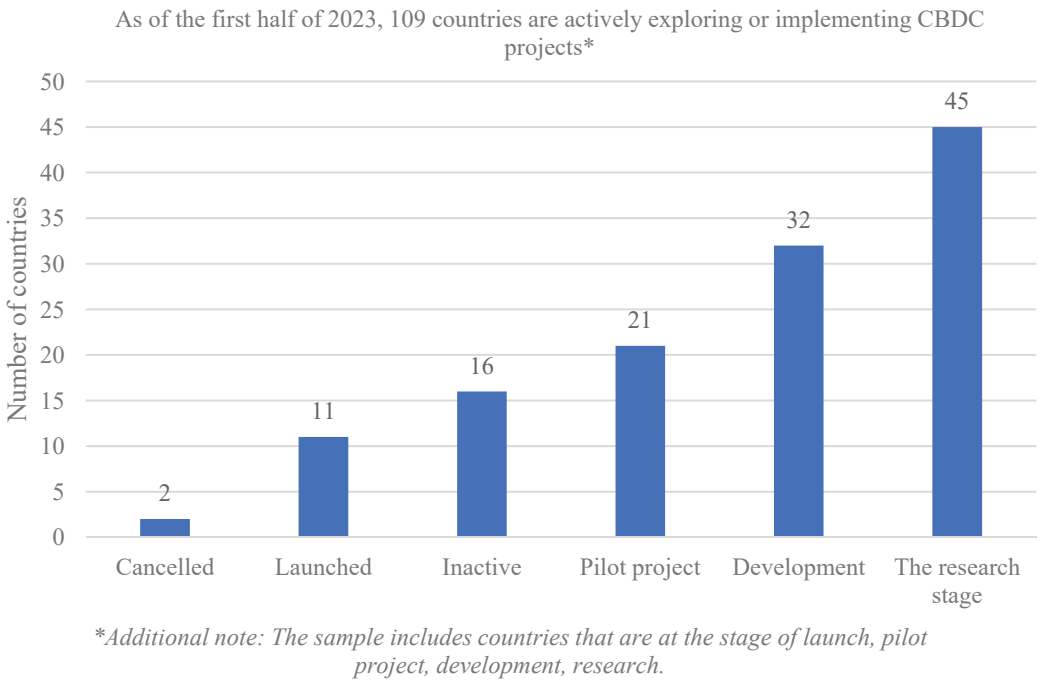

Figure 2. Quantitative analysis of the countries involved in the implementation of projects to create their own digital currencies of central banks (broken down by the status of the implementation stage)

Source: compiled by D.V. Lebedeva according to the data www.finbold.com, www.statista.com.

The data presented in Figure 1 shows that among the States participating in the sample as of 2023, 45 were at the research and testing stage, in 32 countries financial specialists were still only involved in the early phases of developing digital currencies

for central banks, while 21 states launched the pilot stage. Furthermore, sixteen nations were inactive, eleven had officially started their CBDC projects and a further two countries terminated their plans[2].

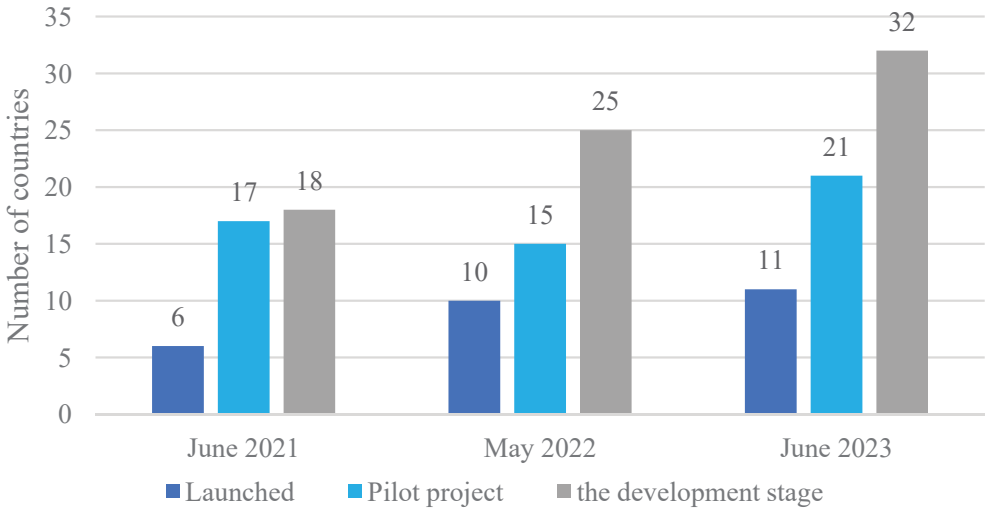

Figure 3. The number of countries in which the digital currencies of central banks are at an advanced stage of the project (by year)

Source: compiled by D.V. Lebedeva based on the materials of the portals finbold.com, statista.com.

Figure 2 outlines that the number of nations in advanced phases of developing CBDCs in mid-2023 (pilot stage or launched project) increased by 28 % and reached 64, compared with the value of indicators in May 2022 (50 countries). Considering that in June 2021, only 41 states were actively engaged in the development and implementation of projects for the creation and implementation of digital national money, in recent years, the growing interest in creating their own CBDC in the global community is obvious.

Thus, one of the first digital national currencies based on blockchain and launched in the fall of 2020 is the Project Bakong currency, which operates within the framework of the national payment system of the National Bank of Cambodia. The Bakong mobile app is supported on smartphones, and payments and money transfers can be made using it. When registering in the Bakong app, you do not need to have a bank account or a mobile operator number in Cambodia. Money transfers are made by scanning QR codes or entering the recipient's phone number. Currently, it is feasible to have transactions conducted in the Bakong application, for example, in the country's currency — the Cambodian riel, or in dollars, depending on the purpose of the transaction. That is, there is a variability in the solution of the problem, which gives certain advantages to the participants of the transactions. And the compatibility of CBDC with various forms of national currencies gives the advantage of improving

[2] Florian Zandt F. (2023) The Central Bank's digital currency: the future number of money? *Statista.* Retrieved May 5, 2024 from https: www.statista.com/chart/30296/number-of-countriescurrency-unions-with-central-bank-digital-currencies-inadvanced-exploration-phases/

and optimizing the interaction between financial service counterparties, and also allows you to receive services from that part of the population that do not have open bank accounts.

Many central bankers around the world believe that digital cash can be a useful addition to a set of banking financial instruments, combining the security of public money with the convenience of using electronic funds. For many users in developed economies, high-quality bank insurance services for various risks are available, so digital money is also becoming a reliable tool. Nevertheless, experts in their writing's express fears that an ultra-safe, convenient novel form of capital could threaten bank deposits and the credit economy, while during the current economic and political instability it can lead to an accelerated transfer of savings into digital cash (Dolgieva, 2023; Egorova, 2020; Sinelnikova-Muryleva, 2021). The advantages and disadvantages of digital national currencies depend on how they are implemented in different countries, the main pros and cons are presented in Table.

Strengths and weaknesses of digital national currencies

Strengths	Weaknesses
An inexpensive, affordable and secure payment system has a beneficial effect on expanding access to financial services for various segments of the population located in different geographical locations.	The growing costs of maintaining the sustainability and accessibility of making payments with national digital currencies will be a burden on the current financial ecosystem.
Creating a simplified mechanism for international transactions will help reduce the reliance on financial intermediaries and, accordingly, reduce the time spent thereon.	Increasing transaction traceability will make it more difficult for customers and businesses to make transactions anonymously.
Reducing the overhead costs of enterprises based on the introduction of national digital money and its use in international settlements in cross-border currency transactions.	The increased likelihood of cyber-attacks is a concern after the introduction of CB DC, threatening the viability of projects and exacerbating information security concerns.
Making payments in real time.	The likelihood of disruption of traditional banking systems, the possibility of a negative impact on the profitability and stability of banks.
Reducing dependence on financial intermediaries, including banks.	Strengthening digital control by government agencies over all payment transactions of organizations and enterprises, as well as obtaining certain access to personalized databases.

Source: compiled by D.V. Lebedeva.

As part of the analysis of the strengths and weaknesses of the introduction of digital money by enterprises, which are presented in Table, the specific sides of the "national digital currencies" are highlighted. This analysis enables us to discern that variability is the primary benefit of digital currencies for nations participating in the international transactions framework, compared to traditional currencies. It is also noted that the issuer of the Central Bank is able to give certain guarantees regarding

the execution of such transactions and maintain the liquidity of money, which gives certain advantages to companies and the state as a whole.

But, at the same time, experts note that the existing advantages also contribute to the growth of risks in promoting digital money in the markets, as well as determine the difficulties in balancing all the possibilities together in terms of practice and technical support for solving the tasks set. For example, the Central Bank in some countries, in their analytical reports, identify certain principles, in particular the Bank for International Settlements, of working with national digital currencies and express the opinion that it is advisable to be guided by these principles in their work.

That is, we believe that the development of such areas as digital forms of currency and their implementation in the practical activities of international payments represents a new way at the state level to conduct transactions using new digital technologies. Furthermore, they represent a significant evolution in national monetary policy with the potential to stimulate new financial digital platforms, contributing to the enhancement, diversity of national banking systems and their technologically innovative expansion.

By introducing digital currencies every state can evolve to accommodate existing monetary policy and adjust course to suit their goals, mindful of preserving national financial stability and security. It is assumed that the introduction of a digital currency will only complement the currency ecosystem of the state, and not completely replace it, in terms of innovative development and ensuring competitiveness in financial markets.

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