

DOI <https://doi.org/10.30525/2592-8813-2024-spec-6>

CENTRAL BANK DIGITAL CURRENCY (CBDC) AS A THIRD FORM OF MONEY: KEY RISKS AND DEVELOPMENT DIRECTIONS

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Abstract. Digital innovation in finance (FinTech) is driving the cryptoasset and cryptocurrencies industry creation, which in turn leads to faster and cheaper payments. Following private digital finance, a regulated currency is emerging – the Central Bank Digital Currency. The development of CBDC has the potential to transform the entire global economy in the long term, reducing existing costs and stimulating its growth through market access to a wide range of participants (IMF, states central banks, ECB). However, such benefits can only be realized if there is a properly designed and regulated CBDC implementation procedure, developed technological and legal protocols and rules. Critical issues will be cybersecurity, compliance with accepted AML & KYC controls, education and training of clients and society in general. There is a need for a strategy of transition to the active use of the third form of money while taking into account the interests of all players involved (at least the client, banking institutions, the state represented by the central bank) and preserving micro and macroeconomic stability.

Key words: digital money; cryptocurrency; central banks; risks; banking system; payment system; Digital economy; Legal regulation; National cryptocurrency; Blockchain; Independent payment system; CBDC crypto assets; Blockchain technology; AML (“anti-money laundering”); KYC (“know your customer”).

Introduction. Globalization processes combined with the rapid development of digital technologies are changing the paradigm of the money market and its infrastructure in the most significant way. Without even noticing this, each of us is a citizen of a digital state: we have our ID Cards, which include biometric data. We are not talking about classical countries, of which we become citizens at birth, but about “countries” with billions of “residents – citizens”, who are far from being poor: Facebook, Instagram, LinkedIn, etc.

According to statistics, each of us spends a significant part of our time in the virtual space of these states, comparable to life in the real world. Virtual states have been actively progressing in terms of new technologies and this development has resulted in an ambition to create financial structures. The most ambitious attempt was made in 2019 by the leader of Facebook: the digital currency project “Libra”, which attracted 27 world-class professional financial players (Visa, MasterCard, eBay, Uber, Spotify, Booking.com and others). The project itself, in addition to the obvious ambition and professionalism of the “union of twenty-eight” contained several other revolutionary ideas: linking the rate of digital currency Libra to a currency basket (US dollar, euro, yen, British pound sterling); the possibility of buying digital currency for any currency and the possibility of using Libra for settlements both online and offline. Libra was expected to become the primary means of payment for the 2 billion

people living on our planet. A few years earlier, the company gained experience in the Facebook Coin project, which was successfully implemented in India (about a million participants).

Of course, this couldn't help but worry governments and their central banks: it literally raised the question of loss of control on their part, in fact the question of their very existence. That is why a couple of months after the official presentation of his project, Mark Zuckerberg testified for six hours in the U.S. House of Representatives. The result was the closure of the project. But later, the "union of twenty-eight" united under the new name Diem, the logic of the project has not changed much, except for one important thing: the currency basket disappeared, and there was one reserve currency – the U.S. dollar. This, in turn, displeased EU regulators, who accused the project of threatening financial sovereignty and antitrust laws [1].

It should be noted that, in general, the reaction of political elites and government professionals was unanimous: authorization of the project and creation of a digital currency similar to Libra will lead to the creation of the largest, universal and no one (of existing states) under the control of the Central Bank.

The Gram project by Telegram leader Pavel Durov failed also.

Did that stopped those who are commonly referred to as the FinTech industry? Obviously not. The most powerful player Amazon continues its operations with cryptocurrencies and developments, for example, and it should be assumed that the "Union of Twenty-Eight" continues to work in the direction of digital currency and just waits for the right time – the process is irreversible [2].

The risks for the states and their monetary policy, and first of all for such centres as the USA and the EU are obvious. The right reaction was an attempt not to oppose, but to lead the movement of development and implementation of a new model of finance. A third form of money – digital finance, CBDC (Central Bank Digital Currency) – is emerging on the world stage.

Basic theoretical and practical provision. Money is a familiar everyday attribute of any economic system. We are used to paying with banknotes, so-called fiat money (from the Latin words flat – will and fiducia – trust, confidence). This form of money is a thing of the past. For example, while in 2008 in the UK, 60% of payments (by volume) were made using banknotes, in 2018 this has fallen to 28% and is predicted to fall to 9% by 2028. Countries such as Sweden and Norway are further ahead in this trend: in Sweden, more than half of retailers expect to stop accepting cash payments by 2025. See. [3, p. 14]. The reason is the so-called electronic money: since the mid-90s of the last century they have been replaced by payment cards, wire transfers, and on-line wallets of various banks.

The XXI century has brought digital money: digital currencies, cryptocurrencies. The cryptocurrency market is actively developing. There are already more than 2 thousand types of privately issued digital currencies. Thus, the most popular of them are: Bitcoin, Ethereum, XRP, Bitcoin Cash, Litecoin. The capitalization of cryptocurrencies and cryptoassets is growing exponentially [4].

In fact, digital finance has opened up almost limitless opportunities in terms of development, it is already actively transforming not only financial institutions and instruments, but also leading to a qualitative revision of existing technologies and relationships in the financial sphere. At the same time, cryptocurrencies have emerged as private money and the prospect of their widespread use, as already emphasized, poses the threat of a "digital medieval" with its uncontrolled issuance of various private virtual currencies and forms of crypto-assets. Therefore, central bank authorities are careful not to encourage the growth of uncontrolled development of digital finance. In order to counteract possible negative consequences, one of the most pressing issues at present is the feasibility of creating and putting into circulation central bank digital currencies (CBDC).

The reaction of some countries was predictable: a complete official ban on cryptocurrency transactions. Others, on the contrary, have intensified their developments in the field of CBDC creation and implementation. At the same time, the irreversibility of the processes has already been accepted by

central banks: even despite the generally negative tone of the Financial Stability Board (FSB) report for the G7, which notes that global stablecoins pose a threat to the global financial system, it is stated that the main obstacle and challenge is the lack of elaborated and resolved regulatory and supervisory risks. In fact, a list of immediate tasks for regulators has been defined, the fulfilment of which will lead to the widespread use of cryptocurrencies [5].

In the meantime, states are actively working on ways to maintain control over their financial systems. Since 2014, the People's Bank of China has been actively exploring and implementing Digital Currency / Electronic Payment (DCEP). In 2020, only 35 countries have launched or are considering the implementation of CBDC. In 2022, there were already 114 such countries. There are a number of CBDCs launched by the Bahamas (sand dollar), China (e-CNY) and Nigeria (e-naira). They are often intermediated by commercial banks and cooperate with private suppliers of wallets, which limits the controllability of their management. The effectiveness of these projects not quite high. And they are very slow in accepting by clients, regardless of the resonant launches [6, 7].

In China, many stores accept e-CNY payments. A total of 13.6 billion yuan (\$2 billion) was in circulation in January. Although 261 million wallets were created before the beginning of 2022, only 100 billion yuan (\$14 billion) were made in the period beginning with October 2020 up to August of 2022. The reason, by words of some Chinese clients, is that Alipay and WeChat Pay are working well, so many retailers do not work on implementation of the electronic yuan [8].

Ukraine also has its own project “e-Grivnya” [9]. Central Banks of 114 countries, which provide 95% of the world's GDP, are currently investigating the implementation of their own cryptocurrency (CBDC). Since 2020, their quantity has tripled (at that time only 35 countries were considered)

CBDCs are digital financial assets issued by central banks. The main difference between CBDCs and traditional fiat money is that CBDCs stand for central bank obligations expressed in existing units of payment that can serve as means of exchange (settlement), store of value and method of payment, i.e. perform all the functions of fiat money, but operate on the basis of blockchain technology.

Currently, 60 countries (more than 55%) are at the stage of implementation (development, pilot or launch). Status as of September 2023:

- 11 countries have already launched their CBDC (Bahamas, Jamaica, Nigeria, and the Eastern Caribbean States).

- All G7 countries have moved to the CBDC development stage.

- 18 G20 countries are in the final stages of CBDC development.

In 2023, more than 20 countries are planning to launch the CBDC pilot project. In particular, Australia, Thailand, India, and South Korea. Rather even the ECB.

The motivation to implement CBDCs differs and depends on the level of their economic development. In the more developed countries, the aim is to reduce transaction costs, increase the speed of monetary flows and reduce monetary and fiscal policy.

What is the difference between CBDC and cryptocurrencies? CBDCs are centralized state finances, while cryptocurrencies are decentralized private finances. They are not the same, but they can use the same infrastructure for their own purposes. The more developed the infrastructure is, the more efficient will be the functioning of all three forms of hryvnia. Many people ask why the digital hryvnia and not the Bitcoin? After all, since 2009, Bitcoin has a sufficient credibility and it stands firmly on its technology in the world? Today, it is very risky to use Bitcoin in the country due to the voluntariness of this cryptocurrency. The centre of the capacity of cryptocurrency is the issue of consensus, by which all decisions are made. This does not allow the regulator to guarantee the safety and security of cryptoinvestors' assets [10].

In fact, digital currencies are the third form of money, which will be added to cash and non-cash fiat money. It should be noted that the money that currently exist in the banking system is in such an “operational unpaid lease” with the central bank, in the process of which the NBU as regulator, con-

trols and maintains the liquidity of commercial banks through financial institutions, and they in turn serve the customers – in cash or non-cash. Today, the digital economy is being serviced outside the bank system through decentralized payment instruments – cryptocurrencies which are outside the law in the in the most of the countries. Payment of taxes remains the dream of the tax authorities. The time has come for the central bank to have its own digital currency, which will remain on its own balance, and allow the digital economy to be returned to the legal field, provide additional guarantees to the cryptoinvestors and citizens for the protection of their rights and obligations at the level of the state.

The Central Bank will conduct settlements in digital hryvnia, as by the System of electronic payments (SEP), which currently already introduced in the National Bank and conducts settlements between banks and their customers. However, the CBDC will have its own signifier, the characteristic of which is not retail transactions, but digital wallets. In order to become a client of the National Bank of Ukraine and have your own wallets, you will have to download the NBU app in your smartphone. Today about 90% of bank clients are in ID-bank, so it will be easy and quick to get a wallets for digital hryvnia. Your own money will be permanently located in the National Bank. A clear method of cooperation we find between the Digital Wallet and the Diya, where you can place your digital wallets from the NBU and make your digital fully functional profile of a citizen [11].

The advantages we get in comparison to the cash and non-cash money, when we use CBDC [12]:

1. As all digital wallets are held on the National Bank's balance sheet, the cost of servicing will always be much lower than that of financial intermediaries or commercial banks that transfer payments to each other.
2. High transaction speed for fund transfers.
3. CBDC will reduce costs for currency conversion, maintaining bank accounts, servicing bank-client systems, and so on.
4. 100% guarantee of state protection for the funds held in your digital wallets (unlike conventional cryptocurrencies created by private individuals, the circulation of CBDC is carried out on the basis of a state decision).

However, central banks' digital currencies have negative aspects as well:

1. Lack of anonymity. This characteristic is one of the main features that has led to the popularity of private cryptocurrencies, its absence carries the risk that CBDCs will not be so popular among the population.
2. Cybersecurity.
3. Insufficient user training. The introduction of digital currencies requires skills and abilities to use technical means that provide access to relevant settlement instruments, as well as financial literacy.
4. Expansion of the range of customers (transition from the model of interaction with commercial banks to a multi-user audience) is a reason of a significant increase in operational risks for central banks.
5. Difficulties in complying with the AML/KYC principles.
6. Replacing commercial bank (RCO) functionality with blockchain, and the resulting complete collapse of bank revenues.
7. Difficulties in p2p (peer-to-peer) credit system and determination of interest rates.
8. Deterring competition and threatening financial stability if users suddenly lose confidence in digital currency.

The banking system is always conservative in its essence, and therefore, it restrains the growth of high-tech business in our country. While 20 years ago the profession of a banker was considered prestigious by itself, and to be a banker was enough, but today a banker is not just a banker, he is 80% financial technologist, who is doing his best to keep the bank on the market and to ensure the profit level on which its shareholders insist. In addition, the opposition to the launch of the digital

Ukraine may be the bank system itself, expecting the loss of part of their customers and their profit. The majority of citizens rather want to keep their money in the digital wallet of the National Bank. This is important because the Ukrainian society shows low trust in banks, taking into account the fact that in the period of 2014–2017 a great number of banks went bankrupt and a lot of people lost their savings.

Neither commercial banks nor the state is ready for digital currency implementation. Banks are not in a hurry to develop infrastructural projects related to digital currencies for the following reasons:

- the need to finance the projects development, the results of which can be used by the banks-competitors;

- problems of cooperation with other banks, with the single purpose of dividing the costs of innovative development;

- the absence of highly qualified specialists in the own staff;

As for the state itself, it should be noted that in connection with the implementation of CBDC, there are discrepancies with the NBU regarding the following issues:

- authorization of digital money emission and choosing bank-participants;

- organization of regulation and circulation of digital currencies and CBDC;

- solving the problem of risks in the NBU's electronic payment systems.

One of these risks that should be considered precisely is cyber security. There is a problem of ensuring a high level of safety and security of digital money, that is the problem of digital currencies and CBDC fraud. There is a stable perception that the infrastructural digital currency systems can be introduced into the sphere of retail payments only for illegal purposes: the money laundering, tax evasion, the unauthorized organization of gambling (electronic lottery, e-gaming, etc.). It can be assumed that the criminals may try to find ways and possibilities to use digital money for anonymous transfers of cash acquired illegally. In addition, there may be attempts to falsify digital money (unauthorized emission), various types of fraud or system failure of the digital currency infrastructure and CBDC. Thus, despite the existing potential, the widespread implementation of CBDC should be based on a balanced monetary policy that ensures the sustainability of the country's monetary system and the stability of the national currency.

There are no single CBDC standards and models in the world. The basic criteria that can be used to classify CBDC into separate types are [13]:

1. Architecture or functional purpose:

- wholesale CBDCs (wholesale, commercial or direct);

- retail CBDCs (retail/general purpose).

2. Type of access or degree of anonymity:

- token-based;

- account-based.

3. Profitable or non-profitable:

- non-interest-bearing or basic CBDCs;

- Interest-bearing CBDC (I-CBDC).

CBDC is also a technology. And while it may be convenient for one country, it doesn't mean that it will be useful for another. As a matter of fact, the Bahamas were the first to switch to CBDC in 2019 through a catastrophic problem with the banking system. The current banking system did not solve the problem of collecting taxes, control over budget revenues and expenditures and all the problematic issues of monetary policy. The country has more than 400,000 citizens living on more than 100 islands, and it is physically impossible to provide banking services quickly. As a solution, in 2019 a pilot project with digital currency was introduced, and in April of 2020 this platform was put into operation. Nowadays, many countries are working on the technology of electronic money and report on the results. For example, China has been successfully introducing the digital yuan for 2 years

already, giving its citizens digital tokens to use for paying utility bills, subway rides, and purchases. The digital money is also functioning in a test mode.

It is expected that as soon as the first five technologically powerful countries declare their readiness to join forces to implement digital currencies and make payments through CBDC, digital technology will prove its economic efficiency (increasing the speed and reducing the cost), and its implementation will be faster.

The United States was ready for the introduction of the digital dollar even before the previous president. The Federal Reserve planned to issue the first digital currency in 2020 and start testing the digital dollar. The U.S. Congress held hearings on the advantages and disadvantages of digital money. However, the problem has become that a lot of cash in USD is outside the United States, which complicates its regulation and control. Besides, today the US Congress does not share one universal idea of the digital USD. The problem of the lack of legal regulation of the stablecoins, which today are often used as a means of stabilization of the volatility of cryptocurrencies and the loss of fiat money for businesses and citizens, has been added to this problem. First of all, it is necessary to introduce stablecoins into the legal framework in order to prevent the loss of money by citizens, financial losses of enterprises and defaults in the banking sector. Today there is an illusion that anyone can have and use Stablecoins, and their security can be conditional or not secured with fiat money for 100 hundred percent.

In the future, this problem may destroy the entire banking system on the shovel, so today the U.S. gives priority to the correct regulation of Stablecoins, and then renew interest in the digital dollar.

Conclusions. It is obvious that technological development cannot be stopped, that is why central banks are actively working on the implementation of CBDC. It can be assumed that despite all the existing difficulties, the leaders of “digital states” have not given up their own ambitions. For example, despite the forced abandonment of the Libra and Diem projects, Mark Zuckerberg recently announced the creation of a new metaverse. His intentions to return to crypto wallets in his social network became obvious. As a result, we got another new challenge to the banking system, which most likely will be forced to promptly react.

In addition, global uncoordinated scaling of CBDCs, and even more so of private cryptocurrencies, will create (in fact, is already creating) problems and risks related to financial stability, monetary policy, safeguards to prevent money laundering and terrorist financing, and risk protection for consumers and investors.

The reason lies in the essence of both solutions. The difference between CBDC and cryptocurrencies is that the latter are forms of decentralized or private money. There is nothing new in private money. The money of the commercial banks is created and widely used to in our life. All the money of the banks is tied to the central bank and is strictly regulated and controlled. Today, the growth of cryptocurrency requires full regulation, compared to the risks they are already creating or may create in the future.

Central Bank Digital Currencies (CBDCs) are a proprietary payment instrument supported by the central bank, they are transparent and stable, which allows to remove all kinds of risks from cryptocurrencies. CBDCs can facilitate our economical growth by making payments efficient and cheap. The middling nature of the CBDC payments will reduce the cost of production and trading on the stock and commodities markets, and also help to achieve the objectives of the fiscal and monetary policy by providing the consumers with the money for direct transfers to stimulate consumption.

In this case, it is necessary to solve a whole set of problems already outlined in the article, namely:

- 1) propose a solution for the commercial banking system, as it would obviously be in a very hard situation losing of a whole range of operations and consequent profitability;
- 2) development of technological standards and legal norms that allow gradual and controlled implementation of new technologies without creating crisis.

3) cybersecurity issues

4) issues of preparing clients, bank specialists to use technological innovations and accept them.

One of the significant problems is the differences in financial regulation of different countries, attitude to cryptocurrencies and CBDC. It seems logical if the work on a global project, which will take into account the basic standards of legal, cybersecurity, technological will be carried out by the united countries – financial and technological leaders.

This will hardly stop countries from implementing their own projects, just as it will not stop the development of private cryptocurrencies. Moreover, we should expect a large blockchain-controlled system of decentralized finance in the future. But this is a question of customer trust, the efficiency of the CBDC system, its regulation and control, its convenience and financial attractiveness for the customer.

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