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Characteristics and Development Trends of the Digital Assets Segment in Modern Practice in Russia and Abroad

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Abstract

The paper aims to identify the key trends and risks associated with the introduction and spread of digital assets, including the digital ruble, in the Russian financial market. This study is timely due to the rapid growth of market capitalization for digital financial assets based on blockchain technology in both international and Russian financial markets, as more and more countries prepare to launch their own national digital currencies. However, there is a dearth of information in scientific and practical literature regarding the prospects, challenges, and risks associated with introducing digital financial assets, including the digital ruble, into Russia. The data for the analysis included official statistics and analytics from the Bank of Russia and central banks of countries considering introducing digital national currencies. It also included the content of key Russian legislative acts related to digital currencies, as well as examples of the implementation of digital financial assets from Russian and international practices. The main research methods employed were a systematic approach, analysis of fundamental theoretical propositions in the literature, and case analysis. The paper discusses the existing types of digital financial assets, both internationally and in Russia, and assesses the demand for these assets in the Russian capital market, as well as their potential for lending to small and medium-sized businesses. It also considers the most common problems associated with the development of this segment and possible solutions, including regulatory measures. The second part of the paper explores the prospects and challenges of introducing a digital ruble into the Russian financial system. It assesses the potential impact of this new currency on the stability of domestic banks and monetary conditions in Russia, including inflation. Future research could focus on quantifying a wide range of risks associated with the introduction of digital financial assets, as well as modelling supply and demand for these assets.

Keywords: digital assets, digital financial assets, digital finance, blockchain technology, cryptocurrency, cryptocurrency market, digital currencies, digital ruble, national cryptocurrencies

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Introduction

The academic research of the chosen topic is relevant because of the currently ongoing transformation of the global economic and financial system prompted by technological development, with the latest information and communications technologies advancing the improvement of the financial instruments segment. The emergence of blockchain technology, which provides an opportunity to create digital tokens and cryptocurrencies by means of “smart contracts,” stands out from the main areas of the transformation process aimed at shaping a new financial asset market. Cryptocurrencies, in their turn, lay the groundwork for the development of the digital assets segment in modern practice in Russia and abroad.

This is the reason why the purpose of this scientific paper is to define the development potential of digital financial assets (DFA) and central bank digital currencies (CBDC) taking into consideration interests of all participants of financial relationships: government, commercial banks, business and population. It is vital to note that this transformation process is not as simple as it seems and involves solving demanding tasks, including the creation of a regulatory environment for government regulation of digital assets in international and Russian practice, as well as development of digital assets segment in the modern era.

Based on the aims of this academic paper, the following hypotheses are set forth:

- 1) The Russian digital currency segment is at a stage of rapid development and significantly outperforms the majority of its international counterparts.
- 2) The demand for and supply of the digital ruble on the financial market may be insignificant unless the Central Bank implements provisional regulatory measures.
- 3) The supply of and demand for digital financial assets will be ensured mainly by means of short-term (under a year) financing and cost savings in the small and medium-sized entrepreneurship segment.

In order to achieve the purpose in view, the following tasks should be solved:

- consider the economic essence and types of digital assets;
- analyze the characteristics of blockchain technology and the significance of the cryptocurrency market as determinants of digital assets' development in modern practice;
- define the level of digital asset regulation in Russia, which allowed to form the foundation for the emergence of digital financial assets and implementation of the digital ruble concept;
- analyze the institutional framework and fundamental factors in the need in government regulation of digital assets in international practice;
- define the current issues of development of the digital assets segment in modern practice of Russia and foreign countries.

Digital assets are the object of academic research, while the trends and development potential of the digital assets segment, including digital financial assets and digital currencies of central banks, are the subject of the research.

Literature Review

The study of the range of issues related to development of the digital assets segment in modern practice in Russia and abroad is a practical novelty because it has been understudied. Numerous papers by Russian and foreign scholars study the impact of digital technologies on finance and banking, and this is the research object of economic science. However, there are still problem areas that require an answer to the question of how implementation of the national cryptocurrency concept can influence the state of the economy and financial system and that of their subjects. The reason for this is that the digital assets segment started developing just a short while ago and became especially popular in the 2020s.

The best-known papers by such authors as I. Hutton, T. Mosset, T. Shurr, P. Andersen, Y. Guseva, E.V. Rozhkov, A.V. Shchavlev, V.V. Polyakova, L.V. Tokun etc. studied the special features of formation and development of the digital financial asset market from the viewpoint of performance of money functions by these assets and of the need for currency regulation. Numerous experts assume that the emergence of digital financial assets and cryptocurrencies is a new stage in the development of the currency system where conventional monetary units will be replaced with digital tokens and cryptocurrencies. However, the problem with such substitution of the functions performed by money and currencies while the digital assets segment is developing lies in their inability to become a full-fledged payment instrument today. The efficiency of the Bitcoin cryptocurrency network, where it takes over an hour on average to transfer funds confirms this problem. Usually, when there are no targeted regulation attempts to regulate securities or DFA, commodities fail unless there is a government regulator's forced centralized intervention.

Studies by W. Fokri, N. Kshetri, C. Watters, T. Ankenbrand, V.I. Abramov, K.Y. Semenov, A.V. Turbanov etc. are dedicated to development of the digital assets segment in contemporary Russia and across the globe by implementing the digital currency concept. Since 2019 the Bank of Russia had far-reaching plans because their implementation would have taken the country's currency and financial systems to a new level. Besides, the People's Bank of China had been aggressively developing the national cryptocurrency concept and the case of its use during the Winter Olympic Games should have spurred the development of the digital ruble. However, in actual practice the situation is different, and up to this day experts continue serious polemics about the potential effect of the launch of digital currencies. Many people assume that threats and risks outweigh the prospective benefits. Due to legislative restrictions for a series of investor groups the demand for such assets may be below anticipated, and different jurisdictions will impede the instrument's efficient scaling up.

Other researchers such as M. Henderson, E. Trotz, C. Wronka, A.S. Obukhova, N.P. Kazarenkova, V.V. Akinfiyev, Yu.K. Tsaregradskaya etc. consider the development of the digital assets segment from the viewpoint of banking. In their opinion, the emergence of digital financial instruments and cryptocurrencies is necessary to improve the operations of banks, which thereby integrate with the fintech sector. This characteristic is correct because commercial banks are the first economic actors that demonstrate interest in the development of digital assets. However, apart from the organizational and financial difficulties related to the need to integrate such instruments and invest in and implement projects, the issues of statutory regulation of digital financial assets are still undeveloped, taking into account the special situation related to money laundering and DFA's potential in terms of minimizing such risks.

Van Adrichem, M. Alshater, Di Matteo, A.V. Dolmatov, E.A. Dolmatov, A.O. Buryakova etc. studied the theoretical and methodological aspects of organizing the system of statutory regulation of the digital financial asset market, where the key role is assigned to the government and activity of such authorities as central banks. They believe that the central bank is the authority that should be responsible for the implementation of legislative projects intended to create the instruments of government regulation of this financial system segment. Some researchers first and foremost consider the turnover of such assets a factor that threatens the sovereignty and information security of countries without proper regulation by the Central Bank.

In spite of the results obtained in the above studies we may conclude that this problem is understudied, thus, it is relevant in modern practice. First of all, they are relevant is due to its novelty. Although the practical relevance of study of the digital assets segment's aspects is high in contemporary Russia, a lot of issues are still undeveloped.

Economic Essence and Types of Digital Assets

In Russian and international practice, various types of digital assets emerge with increasing frequency. They enhance the practical relevance of government regulation of alternative finance. It is an anticipated transformation process characterized by the need to adapt financial relations, instruments, technologies and markets to the digital economy concept [1].

The main form of digital assets in the modern financial markets is cryptocurrency which presents the lion's share of market capitalization and the architecture of global and Russian finance. Digital securities are the most important form of digital assets in financial markets. The following features are related to defining the objects of digital rights are characteristic of such securities [2]:

- monetary claims;
- the right to participate in equity of a private joint-stock company;
- the option to exercise the right of emissive securities.

Digital securities may be divided into several types on the basis of defining their digital rights. There is a range of digital rights that cannot be attributed to digital financial assets. They comprise [3]:

- the right to participate in the equity of a public joint-stock company;
- the right to participate in a limited liability company;
- the right to participate in other business entities.

In classifying digital assets it is necessary to mention the following criteria that distinguish them from each other [4]:

- 1) issuer criterion (government, collective and private digital assets);
- 2) centralization status (centralized and decentralized digital assets);
- 3) backing by tangible assets (secured and unsecured assets);
- 4) embeddedness in blockchain (embedded and non-embedded digital assets).

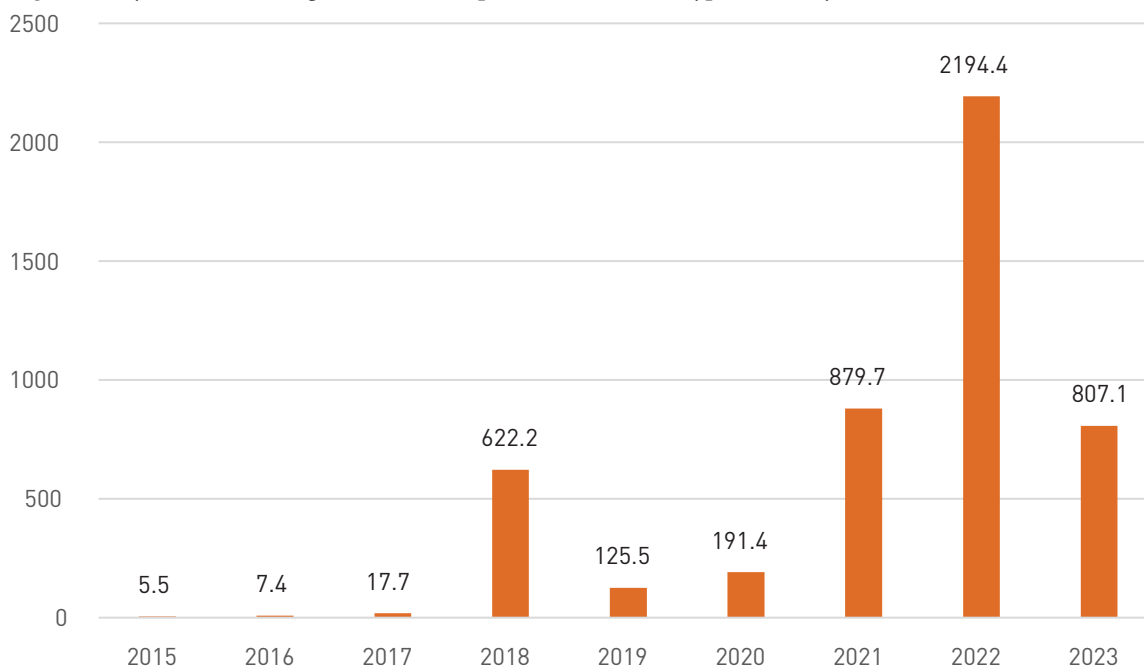
By their nature, digital assets can occupy an important place in the real sector of economy, providing opportunities to attract external financing when projects are implemented, to develop innovative solutions or improve infrastructural facilities. It is feasible that digital financial assets will become an important payment instrument optimizing organizations' and individuals' costs for payment transactions [5].

Blockchain Technology and the Cryptocurrency Market as Determinants of Digital Asset Development

Such key factors as changes in the direction of the Central Bank monetary policy and changes in the macroeconomic environment influence the prospects of development of the Russian financial market in present-day conditions. However, we should emphasize the influence of DFA on efficiency of the Russian market and technological development where the emergence of alternative finance, e.g., cryptocurrencies and digital financial instruments provides new prospects for the development of the securities market. Apart from that, new products for private investment and trading are created. They make investment in securities more popular among Russian citizens [6].

Cryptocurrencies are innovative instruments of the digital economy era. They emerged due to modern technologies and the needs of economic entities and parties to financial relations. They have grown enormously in popularity because new industries are evolving, businesses are switching over to platform ecosystems and a new segment of financial markets is being created [7].

The general trend for market capitalization change under conditions of digital asset development confirms the increasing importance of the cryptocurrency market (Figure 1).

Figure 1. Dynamics of changes in market capitalization of the cryptocurrency market, in USD

Source: [8].

Figure 2. Technical analysis of the Bitcoin cryptocurrency

Source: [9].

Thus, from 2015 to 2023 the cryptocurrency market capitalization increased from USD 5.5 billion to USD 807.1 billion. Besides, the maximum market capitalization at the beginning of the year was achieved in 2022. It amounted to the record USD 2.194 trillion. In 2023, a downtrend was observed in the cryptocurrency market, which resulted in return to the values of 2021. This notwithstanding, the forecasts of financial analysts and investment bankers point to the fact that in 2024 the growth of market capitalization of the cryptocurrency market may be revived, and an approval of ETF (exchange-traded funds) holding Bitcoin and Ethereum as their assets would be the main catalyst.

The price for the world's main cryptocurrency – Bitcoin – is the key trigger in navigating changes in the capitalization of the cryptocurrency market. Figure 2 presents a technical analysis of the cryptocurrency taking into consideration its actual price as at September 2023.

The current market price of the Bitcoin cryptocurrency is USD 26 500, while the maximum price by the end of 2021 exceeded USD 69 000. The downtrend of Bitcoin quotes in 2022 was replaced with a sideways trend in 2023 between two horizontal support (USD 15 600) and resistance (USD 31 000) lines.

Cryptocurrency is the most important financial asset of the future, however, an expansion of its role in the development of the digital assets segment in modern Russian and foreign practice requires a time-consuming transformation process, which may be divided into the following stages [10]:

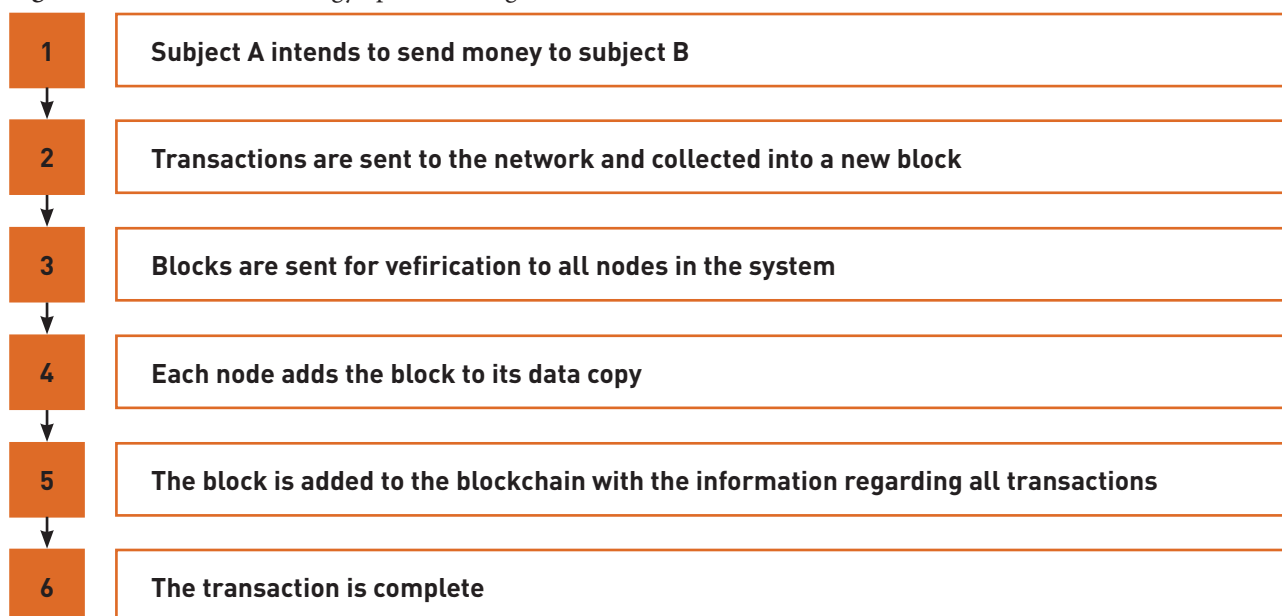
- establishing a regulatory framework to regulate and legalize financial and payment transactions using cryptocurrency;
- implementation of the national cryptocurrency concept and introducing digital national monetary units by central banks;
- establishing taxation to make cryptocurrency an object of tax relationships.

In our opinion, the development of alternative financial instruments will exert a positive impact on the efficiency of the Russian financial market because Russia has a

competitive edge in the development of digital financial technologies that enhance the investment attractiveness of its markets and financial system, including the securities market. The uptrend of the Russian stock market capitalization and an increase in market quotations for securities in 2023, including the largest issuers' shares, take place because the market is becoming autonomous from global financial markets. First of all, it is possible due to a successful implementation of the import substitution policy in the country's economy.

However, the development of digital assets would have been impossible without emergence, distribution, implementation and development of a financial technology like blockchain. Blockchain is a multifunctional and multilevel information technology generally designed for the reliable accounting of various assets and transactions [11]. The operation diagram of blockchain technology is represented in Figure 3.

Figure 3. Blockchain technology operation diagram



Business entities gain the following advantages from the practical implementation and use of blockchain technology [12]:

- no backend system, thus, costs are optimized and the server operations are decentralized;
- transparency of financial transactions and business operations not subject to change;
- unlimited number of records which may be added to blocks;
- high data reliability – in order to add data one has to get approval of all nodes;
- flexibility of application (from financial transactions and payments to data registration, setting up real estate transactions, etc.).

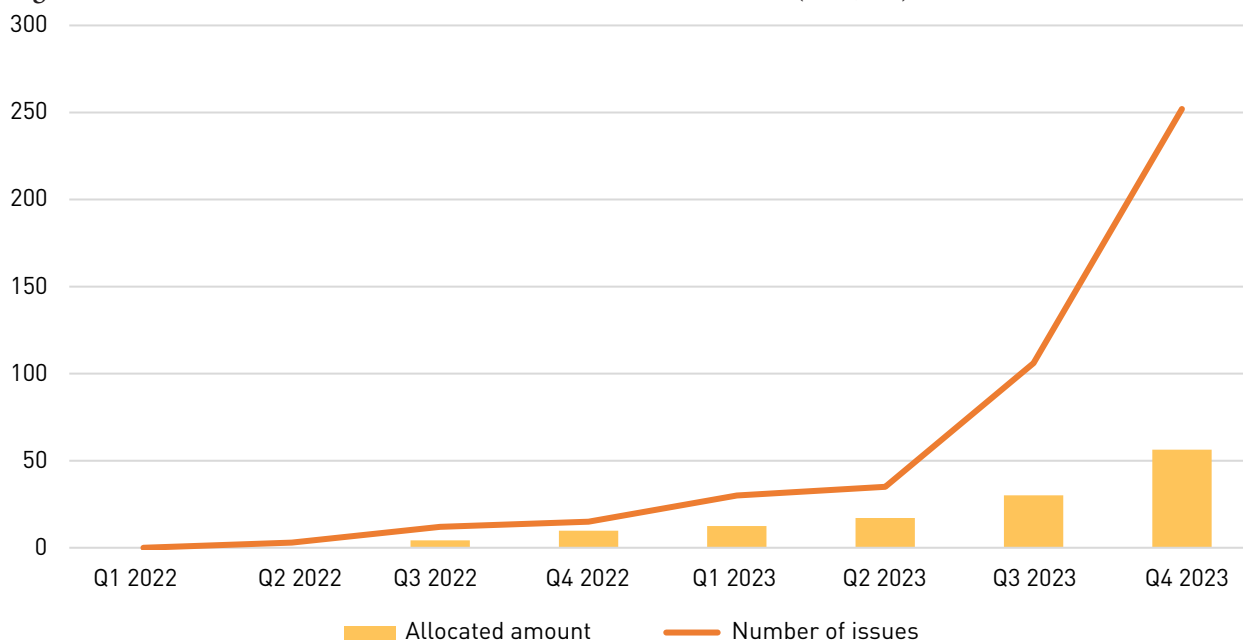
Besides, based on the literature review, the following trends are observed in the cryptocurrency market [13]:

- ongoing transition from monopolization of sectors to competitive development;
- growing predictability of the earning power of cryptocurrency transactions due to a reduction in market liquidity;
- confirmation of the hypothesis that digital currencies are a replacement for fiat money grows less likely;
- increasing role of cryptocurrency as wealth storage instead of just an instrument of financial speculation;
- rapid development of decentralized finance platforms (DeFi);
- growing share of institutional investors in the cryptocurrency market.

A lot of factors confirm that the digital financial asset segment is developing rapidly in Russian and foreign practice. New payment systems are introduced, cryptocurrencies are integrated into financial transactions of large corporations and banks, new services and cryptocurrency storage facilities are offered, the geography of digital assets use is expanding, thus attracting increasing amounts of cash and capital to this industry. Such trends lead us to the conclusion that digital assets play an essential role in the modern system of financial relations [14].

Assessment of offer and demand for DFA provides an additional confirmation of this conclusion. In general, the DFA market, notwithstanding the active growth phase, is at its initial stage of development. The total amount of issued DFA in Russia in 2022–2023 was approximately the equivalent of RUB 3 billion. They mostly represent test transactions involving selected investors (Figure 4).

Figure 4. Number of cumulative DFA issues and the amount of liabilities (RUB, bn.)



The potential for DFA development, as noted above, will depend on the demand for a new type of asset. Based on the present situation in the financing market, opportunities and limitations of the new instrument, one may assume that the prospective medium-term demand will

range from RUB 1 trillion to RUB 3 trillion. The lack of interoperability between the platforms and absence of the secondary DFA market will likely impede the increase of this threshold. Table 1 presents the prospective demand of each investor category.

Table 1. Forecasting the DFA demand

Type	Prerequisites	Prospective demand
Banks	It is assumed that the composition of DFA holders will be similar to the existing structure of funding providers. With a deep involvement of platform operators in the financing process (at the moment only five largest banks show such demand), a conservative flow of funds from bonds and loans up to a year may occur	Up to 5% of investments in bonds and credits up to a year
Financial institutions	Insurance companies, non-governmental pension funds and other institutional investors account for approximately one-fourth of the market. However, in accordance with the legislation in force, their DFA investments are restricted, consequently, we do not assess their contribution to the demand. Nevertheless, if the access to the market becomes available, a conservative flow of funds from investments to corporate bonds may occur	Up to 5% of investments in corporate bonds
Retail investors	It is assumed that retail investors will be able to invest in DFA, but with a shift towards short-term instruments. According to surveys a flow of funds from their brokerage accounts is possible	Up to 5% of the brokerage deposits

Source: compiled by the author.

It is thought that the cost of issue of a conventional exchange-traded bond ranges from RUB 11 million to RUB 23 million and is comprised of:

- underwriter's commission and arrangements for placement – 75–90%;
- stock exchange fee – 1–3%;
- depository commission – 1–3%;
- cost of rating – 2–20%;
- cost of marketing and information disclosure – 20%.

In spite of an average 5–7% commission of the DFA platform operator, the cost of raising debt financing will be significantly lower in aggregate, and one may presume that due to high costs of exchange-traded bonds issue, especially up to RUB 1 billion, market participants will respond to the offer of a new instrument with a limited access to the funding market.

Along with the further development of the market, the overall amount of offer may reach RUB 5 trillion. It is important to emphasize that SME will most probably make such an offer to attract this type of financing (Table 2).

Table 2. Projected supply for DFA

Type	Prerequisites	Prospective demand
SME	The DFA market affords entities access to new investors due to the simplicity and rapidness of the issue placement. This access has been previously unavailable, unlike conventional forms of financing. At the same time, the sale of this amount will depend on the level of infrastructure development and regulator's requirement	Based on expert estimates, SME may account for over 80% of the offer
Large companies	In case of the companies with access to the debt financing market, DFA may be a convenient alternative to the conventional short-term financing due to rapid placement and lower expenses for the issue, but only in case of availability of competitive funding costs	Over a long-term horizon up to 5% in the financing structure or approximately 20% of the prospective market

Source: compiled by the author.

As the market develops further, one may assume that DFA will grow primarily due to simple existing types of instruments, but in the future a new complex strategy, securitization products and products for trading in the securities market may emerge.

Defining the Level of Digital Asset Regulation in Russia: Emergence of Digital Financial Assets and Implementation of the Digital Ruble Concept

Russia is one of the countries involved in formation of the statutory and regulatory infrastructure of the digital financial asset market. Thus, new article 141.1 was introduced in the Civil Code of the Russian Federation which entrenches the category of “digital rights” as an object of civil law. They are understood as liability and other rights, the content and terms of execution of which are determined in accordance with the rules of the information system that corresponds to the attributes established by law [15; 16].

Federal Law No. 259-FZ of 31.07.2020 “On Digital Financial Assets, Digital Currency and on Amendments to Certain Legislative Acts of the Russian Federation” entrenched the transactions related to digital financial assets and digital currency at the legislative level. The well-known mining (cryptocurrency mining) and digital transactions may serve as examples of such transactions. This was the

exact date when a rapid development of alternative finance and digital financial assets started not just in international practice, but in Russia as well [17].

The law lays down general rules governing the circulation of digital financial assets, including their emission and exchange. A lot of attention is heeded to the issues of organizing the work of operators of information systems where digital financial assets are issued and that of DFA exchange operators [18].

The legislative drafting activities of the Government of the Russian Federation aimed at preparation of the regulatory environment for the regulation of digital financial assets in Russia began on March 20, 2018 when State Duma deputies submitted for consideration a draft legislation that introduced the definition of the concepts related to digital assets, digital finance and rights. In 2020 it was especially necessary because digitalization of the national and international economic and financial systems accelerated, inasmuch as the COVID-19 pandemic caused an increase in the share of financial transactions carried out by means of non-cash payments and digital cash [19].

As of March 2024, only 13 countries, including Russia, are at the stage of piloting and implementation of digital assets, 14 countries are at the stage of discussing the concept, and the rest are only investigating the opportunities. We can make a conclusion that Russia and some other emerging countries are the global leaders in the development of financial sector digitalization.

The level of DFA awareness is growing in society. In 2023 the number of mentions of digital assets increased by 37%,

although in most cases such growth is caused by newsworthy events and is accidental [20].

The main stage in the development of the digital financial asset segment in modern Russian practice is the creation of a national cryptocurrency as a part of implementation of the digital ruble concept.

The digital ruble is money issued by the Bank of Russia in digital form available to a wide range of users. From the economic point of view, the key innovation in the emission of the digital ruble is the expansion of the direct access of economic agents to the liabilities of the Central Bank of the Russian Federation instead of issuing a new form of money [20].

On August 2023, Federal Law of 24.07.2023 No. 340-FZ “On Amendments to Certain Legislative Enactments of the Russian Federation” entered into force. It is the basic law that entrenches the legal rules for introduction of the digital ruble in Russia, which is the third form of national currency. The law outlines the basic concepts of digital currency and related transactions, the relationship between the platform operator, participants and users.

It is important to emphasize that the awareness of the ruble’s new form has increased significantly lately. Overall,

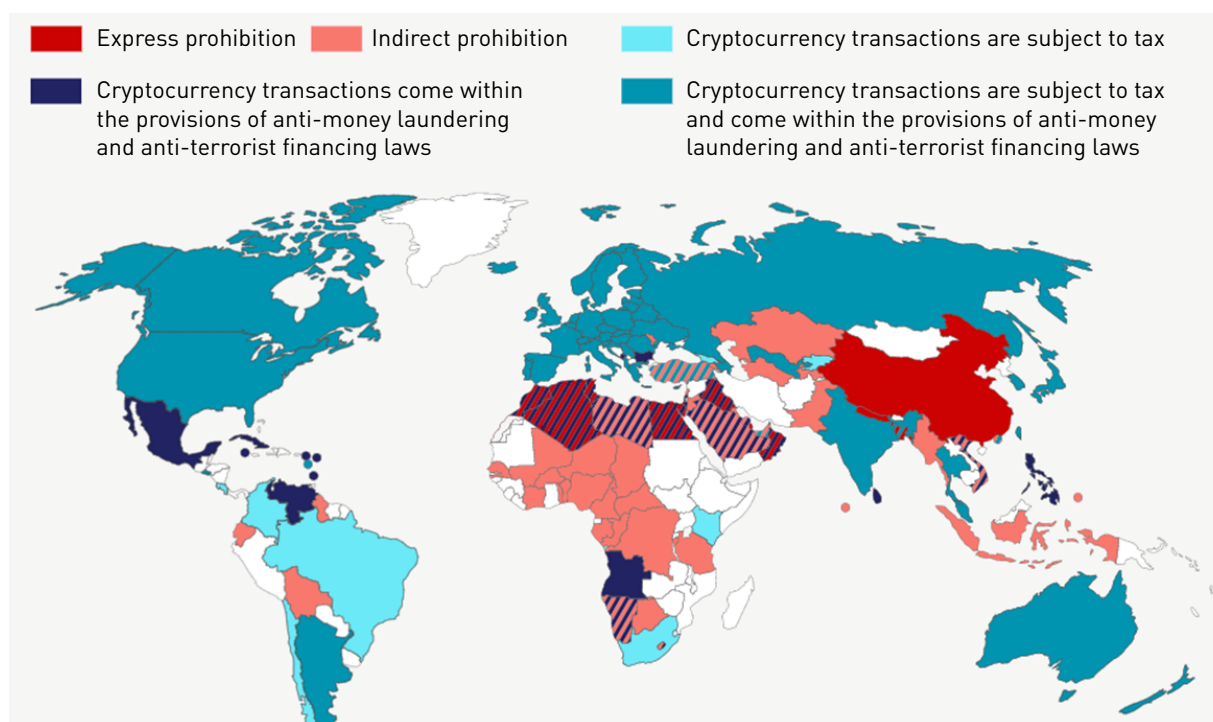
70% of Russian citizens are informed in one way or another about the introduction of the digital ruble, but just one in two people understands the purpose of its implementation [20].

From the point of view of attractiveness of digital ruble use, a poor grasp of its purposes is aggravated by the reluctance to attempt to use a cash equivalent. Just 30% of Russian citizens are interested in the new payment instrument and the amount of assets they are ready to transfer to the third form of money on average does not exceed RUB 20 thousand.

Institutional Foundations and Fundamental Factors of the Necessity in Government Regulation of Digital Assets in International Practice

In analyzing the development of government regulation of digital financial assets in contemporary international practice, we should study Figure 5, which presents a map of government regulation of cryptocurrencies.

Figure 5. Map of state regulation of the cryptocurrency market



Source: [21].

Financial and economic relationships between entities in the field of digital financial assets should be regulated.

The following factors facilitate it [1; 22; 23]:

- 1) Rapid development of the cryptocurrency market, which makes digital tokens and currencies taxable because their turnover causes budget revenue loss. This risk is often noted and emphasized both due to
- 2) internal competition between various institutions and due to different approaches to regulation in various countries [12; 15; 22].
- 2) Use of digital tokens and currencies as a collection tool in case of bankruptcy of an individual person or a legal entity which is a debtor. As of now in Russia there is no judicial practice and no approaches to bankruptcy.

- 3) Use of digital tokens and currencies as a payment instrument of legal entities when they pay for the services of suppliers, contractors, as well as wages to employees, and as a payment method for the population when they pay for goods and services in retail and the hospitality industry. Nevertheless, there is an unresolved issue related to integrating cross-country systems. Some researchers think that digital assets in the world practice should be considered equivalent to conventional forms of money [19; 22; 24].

Prospects for the development of digital financial assets depend on the degree of cryptocurrency market regulation by state authorities. There are several factors explaining the need for government regulation of digital assets and finance [25–27]:

- 1) The cryptocurrency market holds an ever-growing share in the structure of the global financial market. but some of the above-mentioned advantages may also act as disadvantages. For example, the technological risk is currently mitigated by means of dual accounting both on the operator platform and in blockchain.
- 2) Private and institutional investors operate in the cryptocurrency market. Nevertheless, at present a restricted number of market participants have access to the digital asset market, while the secondary market is prohibited, thus significantly decreasing the attractiveness and accessibility of the instrument for investors.
- 3) Regulation of cryptocurrencies will ensure the information and financial security of assets and funds, as well as assist in avoiding mispricing. Due to high information fragmentation and low market liquidity, asset prices may demonstrate more volatility, making it impossible to pledge them.
- 4) It is necessary to create a foundation for cryptocurrency taxation. The novelty of the instrument and different approaches of regulators to classification lead to additional costs for investors, such as those related to accounting and tax treatment of instruments. Additional legal risks may arise between jurisdictions. For example, the European Central Bank warns investors against conflicts related to digital assets in different jurisdictions.

Current Issues of Development of the Digital Assets Segment in Contemporary Practice in Russia and Abroad

In regulators' opinion, the uncontrolled development of digital financial assets and currencies may cause the following risks and threats:

- 1) Financial fraud resulting in stealing funds from cryptocurrency market participants. Due to the imperfection of statutory regulation of digital

finance by governments, financial swindlers have the opportunity to establish pyramid schemes attracting people's funds, deceiving them and never returning the invested capital. This problem is also complex because these criminals found offshore shell companies, thus complicating domestic investigation by law enforcement authorities and regulators aimed at pursuit of such criminals.

- 2) Terrorism and extremist activity funding. Taking into consideration that in the 2020s geopolitical and global instability caused an intensification of extremism and terrorist activities, the law enforcement authorities are mainly focused on prevention of financing of illegal organizations by means of transferring funds in the form of cryptocurrency.
- 3) Illegal tax evasion and evasion of tax liabilities. Digital financial assets may be used for tax evasion by means of performing financial transactions, transfer of funds or payments using cryptocurrency networks instead of conventional banking market instruments. It is difficult to trace the initial and incoming subjects of such transactions because tax administration system bodies have not yet focused on verifying all such transactions.
- 4) Damage to traditional financial relationships between economic entities. This is the least serious threat posed by the development of digital assets, however, there is a risk that a lot of traditional relationships between financial counterparties will be broken. This may result in a series of liquidations of financial institutions, including commercial banks. The banks that fail to implement these innovations may be potential bankrupts.

Apart from that, there is a range of negative characteristics that emerge when digital financial assets are used in a real case scenario [28]:

- a threat of cyberattacks on crypto wallets, which result in loss of funds by users;
- risk of informal economy growth;
- risk of creating decentralized currency systems not subject to centralized control;
- loss of jobs by the population due to digitalization of financial business processes.

In order to eliminate and offset such risks, it is necessary to introduce systemic preventive measures that are based on strict financial discipline and high qualification of all participants of transactions with digital financial assets. This is possible in case of complete government regulation of the digital financial asset segment [29].

Prospects for Development of Digital Currencies of Central Banks Taking into Consideration the Interests of All Participants of Financial Relations: Government, Commercial Banks, Business and the Population

The present development stage of financial and economic relations is so unique in terms of the characteristics of its transformations that a relevant question arises: what is the future form of money? In our opinion, this enables us to define the prospects for the development of digital currencies by central banks with regard to the interests of all parties to financial relations [30].

There are two most likely development scenarios [31]:

- 1) The first scenario entails the preservation of the classical form of money. In this case, non-cash funds will dominate over cash (which is due to the rapid development of the e-commerce sector in the global economy).
- 2) The second scenario implies a transition of numerous forms of money into cryptocurrency. This will be due to people's as well as central banks' desire to use digital tokens, and central banks will issue national monetary units in the form of digital currencies. In Russia, for example, the concept of the digital ruble already exists. Its implementation may lead to dramatic changes in the country's monetary market.

In our opinion, the future of cryptocurrencies depends on the tasks that the countries aim to solve. If they are interested in a system of statutory regulation of the industry, their strategy will ensure a continued integration of digital currencies and cryptocurrencies into economic life of the

population, businesses and financial companies; this will be a positive trend in the stimulation of digital transformation of the economy and finance. So, it means that money will progressively shift from the traditional form to cryptocurrency. However, people as well as businesses will have the freedom to choose the most convenient form of money (cash, non-cash, cryptocurrencies, etc.).

The digital ruble has the potential to influence economic transactions and financial payments of such entities as the government, commercial banks, businesses and citizens.

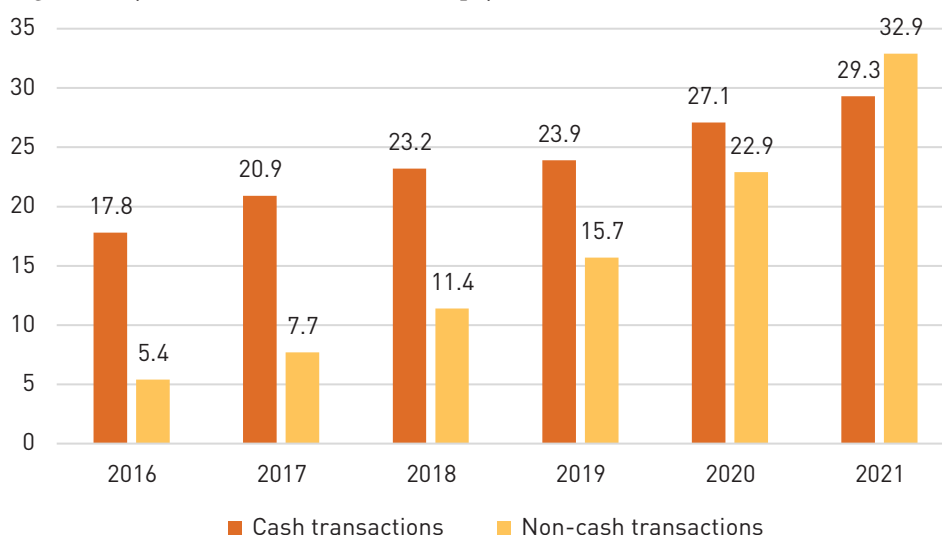
The digital ruble creates opportunities for the population to improve the infrastructure of remote channels and payment service providers, which ensure high speed of financial transactions, low transaction commissions and costs as well as convenient conversion into traditional fiat money for the people [32].

The digital ruble may offer a cheaper and faster way of funds transfer to the population. Unnecessary intermediaries such as banking institutions are excluded from the chain of the payment infrastructure. However, this advantage may raise doubts because conventional financial institutions now provide alternative methods of funds transfer. They are more reliable and cost-effective than the cryptocurrencies we know [33].

For businesses, the emergence of the digital ruble and digital financial assets implies an increase in the share of non-cash payments in the economy, which makes financial transactions and payments cheaper and quicker. Besides, the emission of the digital ruble may result in an increase in liquidity of the Russian monetary market. This is the reason why interest rates will decrease, thus expanding enterprises' access to commercial lending products [6; 34].

Moreover, there is currently a steep increase in the share of non-cash payments in Russia. Thus, according to the data for 2021, it is the first time when non-cash transactions exceeded cash transactions – RUB 32.9 trillion against RUB 29.3 trillion, respectively (Figure 6).

Figure 6. Dynamics of cash and non-cash payment transactions, in trillion rubles



Source: [35].

The digital ruble may make all the difference in the development of innovative forms of entrepreneurship, i.e., startups. In particular, the availability of the digital ruble provides additional opportunities for raising investment capital. This is due to the fact that the digital ruble may be integrated into crowdfunding platforms [36].

The efficiency of the digital ruble technology application in the system of financial transactions for financial corporations of the Russian economy resides in the following [24; 37]:

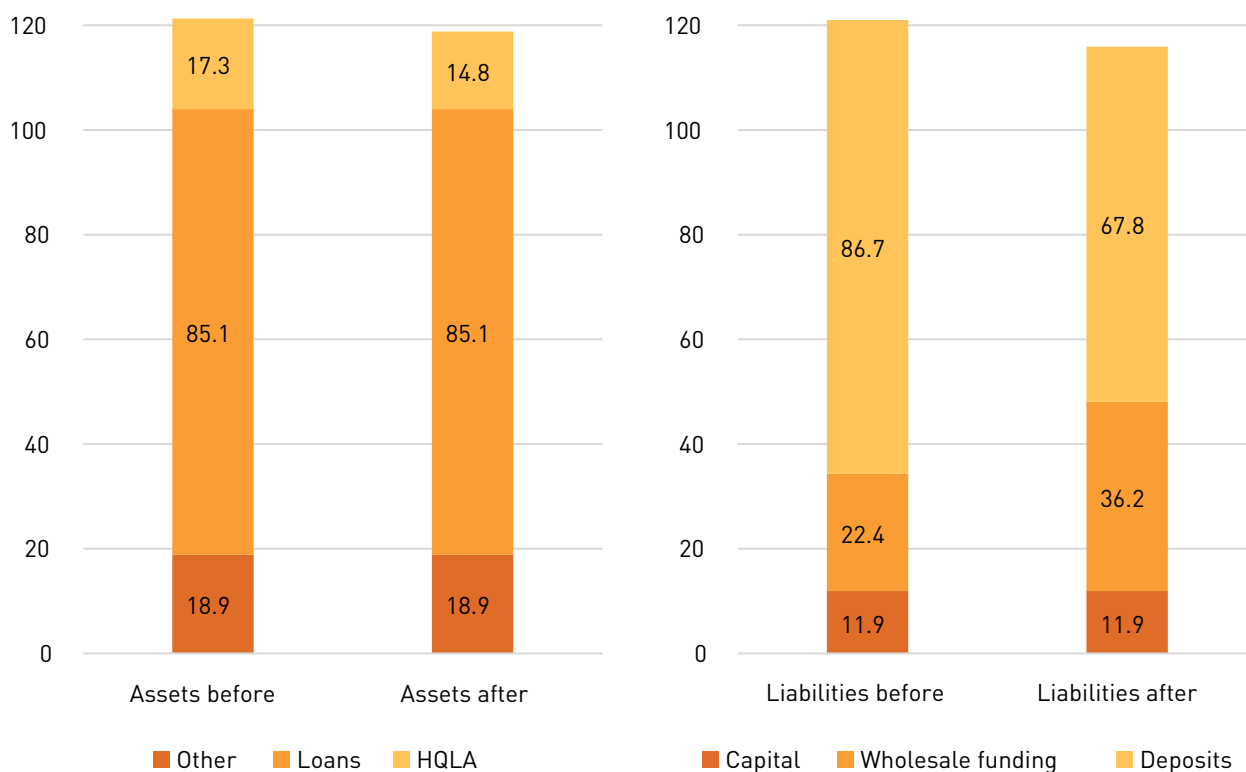
- an increase in the share of non-cash payments;
- ensuring usability, high transaction speed, and settlements without surrogates for the users;
- an increase in cash liquidity of the credit market, thus, a decrease in interest rates

We may also note the following aspects of the digital ruble's influence on digitalization of commercial banks in Russia [38]:

- impact on the procedure of customer service improvement in banks;
- influence on creation of new competitive advantages of a bank;
- facilitating the creation of new banking products, expanding and diversifying the banking business risks, reducing the share of lending, as well as clearing and settlement when earning revenues and profit for organizations.

Analyzing threats posed to business by the development of the digital ruble and financial assets we may note that there aren't any. This is due to the still insufficient use of national cryptocurrencies throughout the world. The highest risks of the digital ruble exist for financial companies – commercial banks, which may face additional competition from the banking regulator when providing funds to economic entities and the population, as well as a liquidity shortage estimated by some researchers as the most significant risk [39]. We made an attempt to assess how exactly the digital ruble will impact the balance sheet of a commercial bank. The transfer of a part of assets to a new form of money causes changes in the funding structure. The share of deposits will decrease, while the share of funding by the government, banks and institutional investors will grow. This type of funding has a higher rate and is more expensive, but a smaller amount of high-quality liquid assets will be necessary to meet the LCR requirements than in case of deposits [36]. Due to an increase in the cost of funding, under otherwise equal conditions, the net interest margin and return on equity decrease, hence, banks raise loan interest rates (Figure 7). In case of the scenario of Russian commercial banks, the deposits outflow may be up to 15%.

Figure 7. Dynamics of commercial banks' balance sheet in the Russian Federation, RUB trillion



Source: [20].

With introduction of digital currency, the rate of return on deposits is believed to grow and the cost of the gains is transferred to the credit market because banks are already unable to draw profit from the deposit market; instead, they hold a monopoly in the credit market, i.e., an exogenous change in the value – profitability of deposits – is also reflected in the price.

On the other hand, we believe that the digital ruble concept may afford golden opportunities to the government due to improvement of financial and tax policy since:

- a legal national cryptocurrency is created, which will be secured by solid assets;
- revenues from digital ruble transactions will replenish the budget;
- it will be easy to impose taxes on transactions with digital financial assets.

At the same time, the emergence of the digital ruble may be considered a significant factor that will influence the terms of the government financial policy. In particular, this is due to the fact that the introduction of the digital ruble will trigger dramatic changes in calculating the money stock in the country's economy.

A growth in money stock in the country's economy will result in an increase in inflation risks. As a result, the Bank of Russia will be forced to make decisions aimed to tighten the monetary policy. As a consequence, a reverse increase in interest rates and deceleration of economic growth will take place (GDP).

Thus, the digital ruble and other digital financial assets provide opportunities and at the same time pose threats for various actors (government, business and citizens) when they pursue their interests. However, positive prospects mainly outweigh risks. Thus, it is necessary to develop a new financial system where Russia occupies an important place in the overall global architecture of digital financial assets and cryptocurrencies. The main threat that the Russian economy may face is the destabilization of the monetary market where an increase in liquidity and money stock will take place.

Conclusion

Thus, in summarizing our academic research, we may speak of the following results: the segment of digital financial assets in contemporary practice in Russia and abroad is at the stage of rapid development caused by the adoption of statutory and regulatory rules that govern the operation of this market. This is an anticipated stage of evolutionary development, which opens the prospects for rapid scaling up and geographic expansion. The emergence of digital financial assets revealed a range of problems and threats related to applying modern technologies in finance. However, due to an active involvement of government authorities and management, they are mitigated, sometimes by way of preventive measures, which contributes to the creation of comfortable conditions for all the participants of the digital financial asset market.

Verification of the hypotheses set forth in the introduction section revealed the following: Russia is one of the leading countries in the development of digital assets; the share of non-cash transactions is increasing; analysis of the prospective market and expressed interest are indicative of the stage of rapid growth in the development of this segment. The demand for and offer of the digital ruble will probably not arouse market interest because there are value-added alternatives. Ultimately, the success of the launch of digital currency by the Central Bank will depend on users' attitude to it. This attitude, in turn, will depend on adoption of digital assets as a payment method with added value which improves the existing alternatives (bank cards and cash). If it turns out that such benefits are smaller than the risks or do not exist, the efforts of implementing the CBDC may not lead to the achievement of the set goals. However, if the initiative expands beyond the pilot stage, the Central Bank will most likely apply all available instruments to attain success. In particular, government transfers under the influence of the government or the Central Bank will be used to provide widespread acceptance, partially phasing out other payment instruments and tools of valuables' safekeeping. Besides, the demand and offer for digital financial assets will be mainly insignificant and secured to a great extent by means of short-term lending within the SME segment. Such assets will not be in demand with the companies that have no need for debt funding. It should be noted that at the present stage of DFA development it is reasonable to issue short-term liabilities by means of cost reduction as compared to conventional instruments. It is assumed that development of the DFA market will additionally reduce the cost of financing by providing access to the market for retail investors and establishing a connection between the end investor and beneficiary, and, ultimately, this will influence the corporate balance sheet.

From this point of view, key avenues for future research may be the risks and influence of digital assets on commercial banks and households, as well as modeling of the demand for these assets on the basis of probable scenarios that may be offered by the Central Bank and calculations of reducing the cost of companies' short-term financing.

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