Bank of Russia

CRYPTOCURRENCIES: TRENDS, RISKS, AND REGULATION

Consultation paper

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EXECUTIVE SUMMARY

1. This consultation paper addresses cryptocurrencies (unbacked cryptocurrencies and stablecoins), that is, digital currencies as defined by Russian law,[1] as well as digital financial assets (DFAs) that may be used in foreign jurisdictions to make payments (money substitutes).
2. Over the past year, the market of cryptocurrencies surged globally. In December 2021, their overall market capitalisation reached $2.3 trillion, which is approximately 1% of global financial assets. The portion of payment transactions in cryptocurrencies is negligible as compared to the amounts of conventional payment systems. However, owing to anonymity in transactions, money substitutes are extensively used for unlawful settlements. The involvement of traditional financial intermediaries in the cryptocurrency market is currently limited, but the trade in derivatives and the shares of exchange-traded funds (ETFs) related to cryptocurrencies is growing and decentralised finance (DeFi) ecosystems are evolving.
3. According to some estimates, the amount of Russians' transactions with cryptocurrencies reaches $5 billion a year. Russians are active users of online cryptocurrency trading platforms. Moreover, Russia is one of the world's leaders by mining capacity.
4. In the long run, the potential of using cryptocurrencies for settlements seems limited. The rapid growth of their market value is predominantly spurred by speculative demand and expectations of a further rise in their exchange rates, which is creating a bubble in the market. Cryptocurrencies also have signs of a financial pyramid as an increase in their prices is largely driven by demand demonstrated by new market participants.
5. The growth of cryptocurrencies seriously jeopardises Russians' well-being and the stability of the financial system and causes threats associated with the use of cryptocurrencies for illicit settlements.
   - Cryptocurrency exchange rates are highly volatile, and cryptocurrency transactions involve a considerable number of frauds. Hence, people risk to lose a significant portion of their investments and even become a debtor in the case of leveraged trading.
   - Just as dollarisation, cryptoisation affects monetary policy sovereignty, which might force the central bank to maintain a higher key rate in order to limit inflation. This will reduce the affordability of credit to both households and businesses.
   - The spread of cryptocurrencies makes people withdraw their savings outside the Russian financial sector and, subsequently, decreases its capability to finance the real sector and potential economic growth, which reduces the number of jobs and the potential growth of households' incomes.
   - Cryptocurrencies are extensively used in unlawful activities (money laundering, drug trafficking, terrorist financing, etc.). The growth of cryptocurrencies creates a favourable environment for criminal operations, extortions and briberies and is a challenge to the global system of anti-money laundering and combating the financing of terrorism (AML/CFT). It is impossible to ensure a full transparency of cryptocurrency transactions.
6. There is currently no single global approach to cryptocurrency regulation, and cryptocurrency transactions in many countries are in the 'grey' zone, but there is a general trend towards regulation tightening:
   - A number of countries have already prohibited the use of cryptocurrencies (first of all, China) or are planning to do so (e.g., India). Some countries (e.g., China and Iran) also banned cryptocurrency mining.

[1] *Federal Law No. 259-FZ, dated 31 August 2020, 'On Digital Financial Assets, Digital Currency, and on Amending Certain Laws of the Russian Federation'.*

- Some states permit the operation of cryptocurrency exchanges, but are gradually tightening AML/CFT requirements for them, etc.
- The leading regulators are releasing warnings for consumers notifying them of high risks inherent in investment in cryptocurrencies.
- The regulators of the countries where stablecoins are used as an alternative to investment funds are focused on the elimination of regulatory arbitrage in this regard.

7. Potential risks to financial stability provoked by cryptocurrencies are significantly higher in emerging market economies, including Russia. Among other reasons, this is explained by a traditionally higher dollarisation trend and an insufficient level of financial literacy. Advanced economies, especially reserve-currency countries, can afford to be more tolerant to cryptocurrencies at the moment, while gradually expanding the scope of their regulation.
8. They are implementing a tougher approach to regulating unbacked cryptocurrencies than stablecoins. Nonetheless, the coordinated response by the leading countries to prevent the launch of the global stablecoin Diem (Libra) that could become a more serious threat to their financial systems proves that the regulators are extremely cautious about stablecoins as well.
9. In order to mitigate threats associated with the spread of cryptocurrencies, the Bank of Russia proposes the following amendments to Russian legislation:
   - Stipulating liability for violating the statutory ban on using cryptocurrencies as means of payment for goods, works and services sold and bought by Russian residents, whether legal entities or individuals.
   - Prohibiting the organisation of the issue and/or the issue and the organisation of circulation of cryptocurrencies (including by cryptocurrency exchanges, cryptocurrency exchange offices, and P2P platforms) in the Russian Federation and stipulate liability for breaching this ban.
   - Prohibiting financial institutions' investment in cryptocurrencies and related financial instruments, as well as the use of Russian financial intermediaries and Russian financial infrastructure to conduct cryptocurrency transactions, and stipulate liability for violating this ban.
10. For some type of cryptocurrencies, mining is also the issue and/or receipt of cryptocurrency as a reward for transaction validation. Mining should not be ignored when considering the topic of the consultation paper as this activity increases the involvement of people and the economy in general in the cryptocurrency market. The Bank of Russia believes that the current scale and further spread of cryptocurrency mining in the Russian Federation entails significant risks for the economy and financial stability:
    - Cryptocurrency mining requires unproductive consumption of electric power, which threatens the power supply of residential buildings, social infrastructure and enterprises and the implementation of Russia's environmental agenda.
    - Cryptocurrency mining creates the demand for infrastructure needed to conduct cryptocurrency transactions, which exacerbates the negative effects of the spread of cryptocurrencies and creates incentives to circumvent regulation (Clause 9).[2]

    In this regard, the Bank of Russia believes that the best solution for Russia would be to prohibit cryptocurrency mining.
11. The Bank of Russia plans to enhance the system of regular monitoring of cryptocurrency transactions, including to cooperate with the financial regulators of the countries of registration of cryptocurrency exchanges, in order to obtain information about Russian clients' operations in foreign cryptocurrency markets.

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[2] *It is necessary to take into account that cryptocurrency mining carried out in the world in general induces a range of additional negative effects for the global economy. Specifically, mining creates extra demand in the market of hardware causing its shortage. Accordingly, this might fuel prices for not only hardware, but also products/services in all areas actively using hardware, which will accelerate global inflation.*

12. In recent years, the Bank of Russia and many foreign central banks have been extensively deploying faster payments systems meeting individuals' and companies' needs in instantaneous settlements. Moreover, central banks, including the Bank of Russia, are developing central bank digital currencies (CBDC), that is, a new payment infrastructure which will enable people, businesses and the government to conduct instantaneous transactions with minimal fees. Thus, the advantages of cryptocurrencies making them attractive as a payment instrument in operations associated with money laundering and other crimes, that is, speed, convenience, and relatively low fees, can be realised and they are already being realised through the creation and advancement of faster payments systems today and national digital currencies in the future.
13. The potential of cryptocurrencies as an investment instrument can be implemented more efficiently in the future through the use of digital financial assets issued in accordance with Federal Law No. 259-FZ, dated 31 August 2020, 'On Digital Financial Assets, Digital Currency, and on Amending Certain Laws of the Russian Federation' that are an innovative investment instrument and, in contrast to cryptocurrencies, guarantee investor protection.

INTRODUCTION

The combination of unprecedentedly loose monetary policies pursued by the leading central banks amid the pandemic, investors' active search for higher returns, and individuals' and companies' need in instantaneous payments has considerably boosted the development of the cryptocurrency market. Despite the bans imposed by a number of regulators, cryptocurrencies, which are digital money substitutes, are becoming increasingly widespread, which creates new challenges for society and regulators and poses potential threats to the economy and the financial system. According to a number of indirect assessments, Russian investors are among the most active participants in the global cryptocurrency market.

The goal of issuing cryptocurrencies is to provide convenient means of payment which can be potentially attractive for investment purposes and make it possible to anonymise payments and circumvent regulatory restrictions by eliminating intermediaries (banks and payment systems) and transferring the function of verification of conducted transactions to the distributed ledger system. Cryptocurrency prices are highly volatile, depend on users' demand, investors' response to statements made by regulators, large companies, and public persons, and are speculative to a great extent. Cryptocurrencies are not only highly volatile, but also involve serious risks of irreparable loss of funds due to fraud, hacking attacks, and the lack of legal protection. Due to their anonymity, cryptocurrencies are broadly used to make payments within unlawful operations. All this involves potential risk to consumers and, if the coverage expands, might jeopardise financial stability.

This consultation paper elaborates on risks caused by cryptocurrency adoption for people, financial stability and economic security and presents proposals for consultations on possible regulation measures. This paper may be of interest to financial institutions, investors, lawmakers, and society.

The consultation paper has the following structure. The first chapter defines the main terms characterising cryptocurrency circulation and analyses the nature of cryptocurrencies and trends existing in this market. The second chapter estimates the level of Russians' involvement in the cryptocurrency market and presents the results of a survey carried out among large financial institutions. The third chapter analyses the key threats posed by cryptocurrencies. The fourth chapter sums up international experience of cryptocurrency regulation and contains the Bank of Russia's proposals regarding the development of regulation in Russia. At the end of the consultation paper, the Bank of Russia lists the questions to be answered by market participants and other readers.

1. CRYPTOCURRENCY NATURE, TAXONOMY, AND MAIN TRENDS

1.1. Cryptocurrencies: definition and taxonomy

After the issue of the world's first cryptocurrency Bitcoin in 2009, the market has been rapidly evolving and currently offers a broad range of various instruments, including those based on distributed ledger technology (DLT).[1]

The broadest term to refer to such instruments is a cryptoasset, that is, an asset existing in digital form or being a digital representation of another asset and created using DLT (see Box 1). The functions of different cryptoassets vary: some are used to make payments, while others are not, and some are technically similar to securities. Let us explore the taxonomy of cryptoassets in greater detail.

Central bank digital currency (CBDC) is issued by the state which is represented by the central bank. Privately issued assets include **electronic money (eMoney), unbacked cryptocurrencies, stablecoins, and tokenised assets:**[2]

1) Electronic money is a digital alternative to cash and is issued by a private issuer.[3]
2) Unbacked cryptocurrencies (Bitcoin – the most widespread cryptocurrency in the world – and Altcoins[4]) are cryptoassets that are not backed, cannot be redeemed by their issuer, and are intended to be used as a means of payment.
3) Stablecoins are cryptoassets that, in contrast to Altcoins and Bitcoin, are backed by other assets and/or issued using a special system limiting the volatility of their exchange rates. They may be used to make payments or represent a version of a money market fund or another pool of assets. In this case, the mechanism of backing can lack legal grounds, transparency and be incomplete.
4) Tokenised assets are cryptoassets used to grant certain rights to their owners and can be classified as follows: (i) versions of debt securities, (ii) versions of shares (confirming an equity stake in an organisation), and (iii) confirmation of the right to receive a certain product or service.[5]

This consultation paper addresses unbacked cryptocurrencies and stablecoins (hereinafter, cryptocurrencies). Cryptocurrencies include **digital currencies as defined by Federal Law No. 259-FZ, dated 31 August 2020**,[6] (hereinafter, the law on DFAs) and **DFAs that may be used in foreign jurisdictions to make payments**.

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[1] *The terms used herein that are related to cryptoassets, but are not directly defined in effective Russian laws are descriptive, used only for the purposes of this consultation paper, and not aimed at clarifying or interpreting current Russian laws. These terms are defined as in the documents of international organisations, specifically in the IMF Global Financial Stability Report (October 2021).*

[2] *It should be noted that it is impossible to specify a particular issuer of Bitcoins and a number of other cryptoassets as they are issued in a decentralised manner. Nonetheless, as multiple private actors take part in the decentralised register, they still may be characterised as private.*

[3] *According to Article 3 of Federal Law No. 161-FZ, dated 27 June 2011, 'On the National Payment System', electronic means of payment are means of payment preliminarily provided by one person (a person providing means of payment) to another person taking into account the information on the amount of provided means of payment without opening a bank account (to the obligor) to fulfil the financial obligations of the person who provided means of payment to third parties and in relation to whom the person who provided means of payment has the right to transmit instructions using only electronic means of payment.*

[4] *Altcoin refers to any type of cryptocurrency other than Bitcoin.*

[5] *For instance, non-fungible tokens are non-interchangeable tokens that are unique and indivisible (e.g., tokens for artwork, assets used in computer games, etc.).*

[6] *Federal Law No. 259-FZ, dated 31 August 2020, 'On Digital Financial Assets, Digital Currency, and on Amending Certain Laws of the Russian Federation'.*

CLASSIFICATION OF DIGITAL MONEY AND CRYPTOASSETS *Table 1*

	Publicly issued	Privately issued			
	Central bank digital currency (CBDC)[1]	Electronic money (eMoney)	Stablecoins	Unbacked cryptocurrencies	Tokenised assets
			Subject of the paper		
Compliance with Russian practice	Digital ruble	Electronic means of payment pursuant to Federal Law No. 161-FZ, dated 27 June 2011, 'On the National Payment System'	Digital currencies according to Federal Law No. 259-FZ[2] and digital financial assets (DFAs) that may be used in foreign jurisdictions to make payments (herein, cryptocurrencies)		DFAs issued according to Federal Law No. 259-FZ, dated 31 August 2020, and utilitarian digital rights issued pursuant to Federal Law No. 259-FZ[3], dated 2 August 2019
Issuer	Central bank	Private company	Anonymous individuals or a private company	Anonymous individuals or a private company	Private company
Intended for payments	Yes	Yes	Yes/no	Yes	No
Anonymity of transactions/ impossibility of KYC procedures	No[4]	No	Possible, depending on designs and intermediaries' requirements	Possible, depending on designs and intermediaries' requirements	No
Redemption of obligations	Convertible into other forms of central bank money	At face value	At face value or market value of backing, or none	None	At face value or market value of backing, or accrual of rights
Backing	Central bank balance sheet, confidence in the existing national currency	Fully backed by assets and capital; special entities existing to carry out bankruptcy proceedings	Fully or partially backed by a pool of assets, or an algorithm is applied to maintain stability	None	Backed by assets (securities, goods, real estate, and other tangible or financial assets, the right to receive a certain product or service)
Examples	Sand Dollar (the Bahamas)	AliPay, mPesa	Tether, USD Coin, Terra	Bitcoin, Ethereum	Tesla tokenised stock FTX, Amazon tokenised stock FTX[5]

[1] Central bank digital currency (CBDC) is a digital form of money which is issued by the central bank and is its obligation. Being the third form of money (along with cash and cashless money), CBDC is legal tender of the country. CBDC has all the main features of money, that is, CBDC is a means of payment, a unit of account, and a store of value.
[2] Federal Law No. 259-FZ, dated 31 August 2020, «On Digital Financial Assets, Digital Currency, and on Amending Certain Laws of the Russian Federation».
[3] Federal Law No. 259-FZ, dated 2 August 2019, «On Investment Raising Using Investment Platforms and on Amending Certain Laws of the Russian Federation».
[4] A number of regulators consider the possibility of conducting anonymous transactions in CBDC within certain limits.
[5] Beginning from June 2021, the crypto exchange FTX started trading in tokenised shares of the largest companies, including Tesla, Netflix, Google, and others.
Sources: Annex 2.1 to the IMF Global Financial Stability Report, October 2021, and the Bank of Russia.

In accordance with the law on DFAs, digital currency is a complex of electronic data in an information system that are offered and/or can be accepted as a means of payment which is not a monetary unit in the Russian Federation, a monetary unit in a foreign state, and/or an international monetary unit, and/or as investment and in relation to which there is no person obliged to every owner of such electronic data, except the information system operator and/or nodes obliged solely to ensure the compliance of the procedure for issuing these electronic data and performing actions for making (changing) records in such information system with its rules.

Russian laws do not regulate the organisation of the issue or directly the issue and the circulation of digital currency. This means that cryptocurrency exchange offices, crypto exchanges, peer-to-peer (P2P) platforms, and other cryptocurrency market operators are beyond the legal framework. Moreover, **the law on DFAs prohibits the use of digital currencies as a means of payment in the Russian Federation**.

Digital financial assets defined in the law on DFAs, as well as utilitarian digital rights defined by Federal Law No. 259-FZ, dated 2 August 2019,[7] conform to tokenised assets.[8]

The law on DFAs sets a range of mandatory conditions in relation to DFAs. Specifically, the first owner acquires the rights for DFAs since the moment of their recording in the information system where DFAs are issued. Only a Russian legal entity put on the relevant register of the Bank of Russia may be the operator of this information system.

Federal Law No. 259-FZ, dated 2 August 2019, also stipulates a number of conditions in relation to utilitarian digital rights, in particular it states that it is only possible to exercise, use and encumber utilitarian digital rights and limit their use on an investment platform the operation of which is regulated by the said law.

Box 1. Distributed ledger technology and its use, other than for cryptocurrencies

Today, cryptocurrencies are generally based on distributed ledger and decentralised data storage technology. It should be noted that this technology is used not only for cryptocurrencies, but also in various financial market processes already, e.g., to protect transactions and confirm one's title to an asset; in this case, in contrast to Bitcoin, it is not mandatory to create a fully anonymous environment.

A number of the functions of professional securities market participants, banks, and electronic money operators may be assigned to a distributed ledger, namely recording of conducted transactions and validation of transactions.

Blockchain technology has a number of serious drawbacks. In the first place, blockchain platforms lack sufficient capacities as they are generally incapable of processing a large number of transactions simultaneously. Specifically, the Bitcoin network can only verify no more than seven blockchain transactions per second, whereas the international payment system Visa, for instance, is capable of processing up to 24,000 transactions per second. Secondly, anti-money laundering and counter-terrorism financing issues are still unresolved due to mechanisms allowing anonymity of transactions conducted on blockchain platforms (mixers, protocols of evidence with zero disclosure, and other privacy tools).

It should be stressed that many central banks[1] are now developing CBDCs that would ensure the technological advantages of cryptoassets and simultaneously provide guarantees of fiat money. CBDC development will make it possible to eliminate risks caused by the lack of backing and state control over cryptocurrencies, while preserving the benefits provided by DLT.

The Bank of Russia is also developing the national digital currency (digital ruble) which will become the third form of Russia's national currency and will be used along with cash and non-cash rubles. Moreover, different countries are discussing the issue of cross-border interoperability of retail CBDCs,[2] which is needed to organise cross-border payments efficiently.

[1] China, Russia, Ecuador, Ghana, Israel, Jamaica, Japan, the Republic of Korea, Kazakhstan, Sweden, Thailand, Turkey, Ukraine, Uruguay, and Venezuela are developing CBDC pilots. CBDC are already used in the Bahamas (Sand Dollar), the Eastern Caribbean countries (DCash), and Nigeria (eNaira).

[2] The BIS Innovation Hub in Hong Kong jointly with the Hong Kong Monetary Authority (HKMA), the Bank of Thailand, the Digital Currency Institute of the People's Bank of China, and the Central Bank of the UAE is implementing a project for ensuring the functional compatibility of systems for cross-border wholesale payments with CBDC.

[7] Federal Law No. 259-FZ, dated 2 August 2019, 'On Investment Raising Using Investment Platforms and on Amending Certain Laws of the Russian Federation'.

[8] As defined by Russian laws, digital financial assets are digital rights including money claims, the possibility to exercise issue-grade securities rights, the right for an equity stake in a non-public joint-stock company, and the right to claim the transfer of issue-grade securities provided for by the decision on issuing DFAs according to the procedure stipulated by the law on DFAs, the issue, recording and circulation of which are only possible by entering (changing) records in a distributed ledger-based information system and in other information systems.
Utilitarian digital rights provide the right to claim the transfer of a property item (items), the transfer of exclusive rights to intellectual property, and/or the rights to use intellectual property, the right to demand the delivery of works and/or services.

1.2. Global cryptoasset market capitalisation trends and pricing factors

Cryptoasset market capitalisation

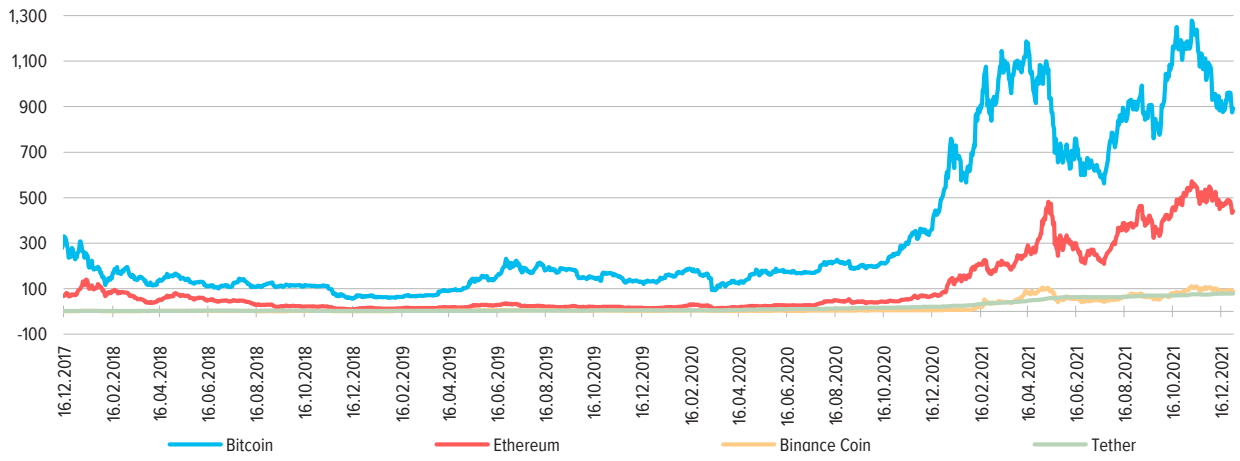
As of the end of December 2021, the market capitalisation of cryptocurrencies and tokenised assets traded on cryptocurrency exchanges totalled nearly $2.3 trillion,[9] which is almost two times more than the value of the global green bond market[10] and comparable with the market capitalisation of Microsoft, one of the largest companies.[11] The overall market capitalisation of cryptocurrencies and tokenised assets traded on cryptocurrency exchanges peaked at the beginning of November 2021, exceeding $3 trillion on 9 November. The total cryptocurrency market capitalisation is approximately 1% of the value of global financial assets.[12] Moreover, as assessed by the Bank of England, nearly 95% of the currently existing cryptoassets are unbacked.

Bitcoin has the largest market capitalisation (nearly $0.9 trillion, 38%), followed by Ethereum (about $450 billion, 19%). The stablecoin market is dominated by Tether, with the market capitalisation of $78 billion. The stablecoin market is small, but is rapidly growing: the market capitalisation of the main stablecoins (Tether, USD Coin, Binance USD, and DAI) soared from $4.9 billion in early 2020 to $143 billion in December 2021).

Chart 1 shows changes in the capitalisation of the three main cryptocurrencies and the stablecoin Tether accounting for nearly 70% of the cryptocurrency market. Overall, the cryptocurrency market capitalisation has been surging in recent years. However, due to considerable fluctuations of cryptocurrency exchange rates, the situation might alter dramatically during a short period. Cryptocurrencies demonstrate sharp declines and rises over the entire period of their existence.

During the period until 2019, there was no significant correlation observed between prices for Bitcoin and traditional assets (gold, securities, and real estate). However, beginning from 2020, this correlation started to increase: this is primarily relation to changes in the Bitcoin price and prices for gold and the largest companies' shares.

DYNAMICS OF MARKET CAPITALIZATION OF TOP-3 CRYPTOCURRENCIES AND STABLECOIN TETHER *Chart 1*



Source: CoinGecko.

[9] *Data as of 31 December 2021.*

[10] *The value of the green bond market reached $1.3 trillion as of the end of 2021 H1.*

[11] *Microsoft's capitalisation amounted to $2.5 trillion as of the end of December 2021.*

[12] *The value of global financial assets approximated $250 trillion by 2021.*

Cryptocurrency pricing factors

The market value of cryptocurrencies depends on two groups of factors. On the one hand, this is how the market estimates the prospects of technologies for processing payments in the economy (in both the legal and illegal sectors) and expectations about their further spread. On the other hand, these are speculative factors associated with a high volatility of cryptocurrencies, the hype around them, and market participants' desire to receive quick returns.

Currently, the portion of transactions in the main cryptocurrencies is negligibly small as compared to the most widespread payment systems. For instance, the number of transactions conducted by Visa in 2020 exceeds the number of on-chain Bitcoin transactions more than 1,500 times.[13] Considering that most countries are developing CBDCs that will provide all the benefits of cryptocurrencies (for legal transactions) and simultaneously have all the features of legal tender, the portion of cryptocurrencies in payment turnover is unlikely to grow considerably. To the contrary, the perimeter of cryptocurrency use will contract as countries limit illicit transactions. Thus, although cryptocurrency use may be expected to increase somewhat in the short run due to the development of the metaverse (e.g., payments in online games) and a broader use of payment platforms enabling cryptocurrency transactions (such as BitPay and PayPal), this trend is likely to reverse in the longer run as restrictions on cryptocurrency use in payments expand.

This gives us grounds to believe that speculative demand is the key driver of cryptocurrency prices provoking a bubble in the market (research proves the existence of bubbles in their exchange rates; See Box 2).

Box 2. Cryptocurrency price research

There has been a lot of research in recent years to explore both factors influencing cryptocurrency prices. Network analysis and dynamic cryptocurrency pricing models focus on the use of cryptocurrencies by customers and network effects: the more users join a system, the larger are its benefits for them and, accordingly, the higher are cryptocurrency prices. Other researchers test whether cryptocurrency exchange rates have any signs of a bubble. The general conclusion is that an increase in cryptocurrency prices is associated with a broader adoption of cryptocurrencies and the dynamics of cryptocurrency exchange rates often evidence the existence of a bubble in this market.

How the adoption of cryptocurrencies impacts their prices

Some papers, e.g., [1] and [2], prove that a broader use of cryptocurrencies causes a rise in their prices. Research [1] builds a dynamic equilibrium model demonstrating that the price of tokens is determined endogenously by platform users and is influenced by network externalities.

The authors of article [2] analyse how new addresses (a new address is a unique string of numbers and letters in a blockchain identifying a payer or a payee and first appearing in transactions within a week) influence cryptocurrency prices and conclude that new addresses in a blockchain explain 8% of the variations in cryptocurrency returns (which is more than for a company's returns in the stock market – 5%). Moreover, analysing price movements before and after new users join a blockchain, the authors find out that this information quickly translates into prices as data in blockchains are publicly available. Accordingly, the authors believe that the price-to-new address ratio negatively predicts future cryptocurrency returns (the higher it is, the lower future returns are).

Identifying bubbles in the cryptocurrency market

Multiple studies explore bubbles that may exist in the cryptocurrency market. In the economic theory, a bubble is a deviation of the market price from the asset's fundamental value. However, as it is impossible to assess the fundamental value of cryptoassets reliably, a bubble is identified using statistical methods. These methods were originally developed to detect explosive price behaviour (research [3]) in the stock market. The following methods are used most often:

- The augmented Dickey–Fuller test (used to check whether a given time series is stationary or not). Research [3] presents a variant of a recursive test where the start point changes. This procedure delivers the most accurate results in detecting explosive behaviour when multiple episodes occur

[13] *Based on the Bank of Russia's calculations using official data of Visa and the website blokchain.com.*

in the data. The authors carry out the test to identify bubbles in the US stock market data in 1871–2010 (S&P 500).

- The Log-Periodic Power Law model [4]. The model assumes that prices show power law growth in the case of a bubble and predicts a critical point reaching which a bubble bursts. The authors use this procedure to identify a bubble and its critical point for the Shanghai Composite index in 2007–2008.

Research [5] uses both methods to analyse the Bitcoin exchange rate in 2016–2018. According to the authors, bubble behaviour is a common and reoccurring characteristic of Bitcoin prices. The authors find out that the limited supply of Bitcoins and the 'fear of missing out' may lead to speculative bubbles.

Research [6] relying on the first method analyses the behaviour of eight cryptocurrencies in 2017–2018. The authors also detect multiple episodes of explosive growth in cryptocurrency prices and conclude that the main predictors of bubbles in cryptocurrencies are trading volume, volatility (a positive relationship with bubble behaviour) and the VIX index (a negative relationship). Research [7] uses the second method to analyse bubbles in the price dynamics of the eight main cryptocurrencies. The results show a correlation in the price dynamics of various cryptocurrencies and a benchmarking effect of Bitcoin, with speculative factors playing an important role in the market. According to article [8], Bitcoin appears to have been in a bubble phase since mid-2015.

In article [9], the authors show a close affinity between the Bitcoin bubble and the Dotcom bubble in 2000.

Thus, multiple studies confirm that cryptocurrency exchange rates are largely affected by speculative factors and often characterised by bubble behaviour. Cryptocurrency price growth is partially driven by a broader use of such technologies by newbies in this market. It is essential to take into account that the burst of a bubble or a reduction in cryptocurrency use, e.g. as a result of legal restrictions, may lead to a slump in cryptocurrency prices.

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Along with the above, cryptocurrencies have characteristics of **financial pyramids** as an increase in their prices is driven by speculative demand demonstrated by new market participants. The owners exiting a pyramid sell their investments with returns at the expense of newcomers who buy the cryptocurrency hoping that its price will grow in the future, and their demand thus spurs this growth. Moreover, the concentration of a large number of certain cryptocurrencies in a limited group of investors creates possibilities for manipulating cryptocurrency prices (these risks are described in greater detail in Section 3.1).

As regards stablecoins in particular, besides the above factors, their price also depends on the value of the underlying assets. However, it is still essential to remember that stress conditions might cause considerable asset value fluctuations that might seriously undermine the stability of the stablecoin exchange rate.

Box 3. Cryptocurrencies and gold

Cryptocurrencies are sometimes compared with gold. This is due to the assumption that, just as gold, cryptocurrencies are safe haven assets protecting savings against inflation. Mining of both gold and cryptocurrencies is a labour- and cost-intensive process. Some identify similarities between gold and cryptocurrencies from the perspective of the theory of money.[1] Furthermore, it is essential to take into account that gold has not been money for a long time already, that is, it is not a means of payment now. To a limited extent, gold has only one feature of money – it is a store of value, specifically it is used by central banks as a reserve asset (see Charts 2 and 3). Gold price volatility (14.4% in 2021) is high and comparable with stock market volatility (14.8% for S&P500 and 16.8% for MOEX), but is many times lower than Bitcoin exchange rate volatility (81%).

Nonetheless, gold and cryptocurrencies have a number of fundamental differences.

1. Gold has lost the status of money, but regulation in the gold market can hardly be expected to change in the future. Cryptocurrencies involve regulatory risk: as countries develop CBDCs, it is probable that cryptoassets will be prohibited everywhere or be subject to tighter regulation. After CBDC adoption, the demand for cryptocurrencies in the legal economy will start to decline, and their use will be advantageous primarily for settlements in illegal activities. In this case, it will become much more urgent for regulators to completely ban cryptocurrencies, which will cause a collapse in their prices. Hence, the quality of cryptocurrencies as assets protecting against inflation is considerably lower than that of gold.
2. Gold is an asset, the quantity of which on Earth is knowingly finite, and has no substitutes similar in physical properties. The maximum possible Bitcoin issue is supposedly limited to 21 million coins, but it has multiple Altcoins – substitutes, the number and the issue of which might grow infinitely.
3. In contrast to cryptocurrencies, gold does not require specialised computing hardware to create turnover and can exist as a financial asset without modern information technologies.

Gold is traded in regulated markets and has a transparent pricing process, whereas the cryptocurrency market is exposed to cyber attacks and fraud, which might entail significant losses for investors.

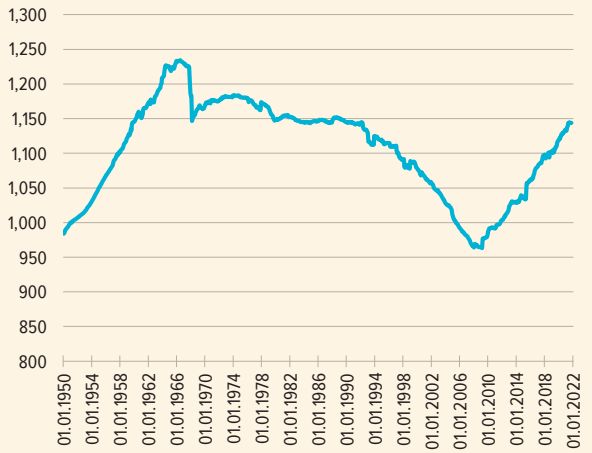
GOLD AND CRYPTOCURRENCY COMPARISON *Table 2*

	Gold	Cryptocurrencies
Money functions		
Unit of account	No. It was common practice in the past, but today fiat currencies are used.	No. Due to high volatility, it would be needed to recalculate product prices denominated in cryptocurrencies too often. Moreover, the Bitcoin denomination is too high.
Store of value	Yes. Central banks' gold and foreign currency reserves, private investments.	No. Too volatile, exposed to fraud and cyber attacks.
Means of payment	No. It was common practice in the past, but today fiat currencies are used.	No. It is used by a limited group of sellers in the countries where such settlements are not prohibited, but is also extensively used in illegal operations.
Other features		
Market price volatility	14.9% (2021 average) 14.4% (5-year average)	Bitcoin: 81.0% (2021 average) 78.5% (5-year average)
Substitutability	Few substitutes (silver, platinum)	Unlimited number of substitutes
Finitude	Is a finite resource	While the maximum possible Bitcoin issue is limited, the development and issue of new cryptocurrencies are not
Divisibility	Can be divided into parts preserving the features of the original asset	Can be divided into parts preserving the features of the original asset
Special requirements for trade	Does not require specialised computing hardware to create turnover	Rely on computing power and miners' involvement
Regulatory risk	Long regulated market	No regulatory framework established globally; comprehensive bans are possible
Alternative use	Used in manufacturing and jewellery	No

Source: Bank of Russia.

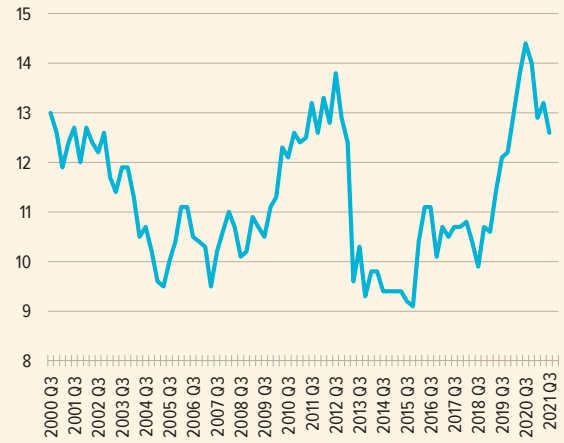
[1] *S. A. Wolla. Bitcoin: Money or Financial Investment? Federal Reserve Bank of St. Louis.*

GLOBAL GOLD RESERVE HOLDINGS (MLN FINE TROY OZ) *Chart 2*



Source: IMF, Bloomberg.

GOLD AS A PERCENTAGE OF GLOBAL CENTRAL BANKS RESERVES (%) *Chart 3*



Source: centralbankgold.org (with reference to the IMF data).

1.3. Main ways and objectives of acquiring cryptocurrencies

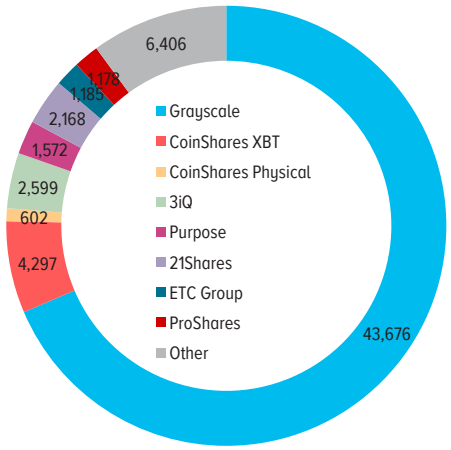
There are multiple ways to acquire cryptocurrencies.

1. **Mining** is the process to issue cryptocurrency or receive cryptocurrency as a reward for transaction validation and involves resource-intensive computations. Mining can be defined as the use by i ndividuals of their own equipment to make computations enabling the functioning of the distributed ledger system of a certain cryptoasset. Users' engagement in cryptocurrency mining is not a mandatory feature of cryptocurrencies, as a distributed ledger system can be supported by a predetermined group of individuals alike.
2. **Acquiring cryptocurrencies on specialised trading platforms** – cryptocurrency exchanges (hereinafter, crypto exchanges).[14] Cryptocurrency transactions on exchanges include the following:
   - cryptocurrency purchase and receipt into a crypto wallet;
   - cryptocurrency sale from various crypto wallets and investor accounts;
   - depositing or withdrawing cryptocurrencies or other cryptoassets from a user's personal wallet into an investor's wallet or account opened by a crypto exchange to carry out trading with them;
   - cryptocurrency exchange for fiat currencies and withdrawing into an investor's account.

Most crypto exchanges are attractive for investors as they allow trading in main cryptocurrencies that may be acquired through both purchase and mining. Exchange fees depend on transaction types: if an account with a crypto exchange is replenished in cryptocurrency, the fee is most often minimum or zero. However, where fiat money is converted into cryptocurrency, both the payment system used by a crypto exchange and the crypto exchange itself charge a fee. When cryptocurrency is withdrawn from a crypto exchange, the situation is similar: when it is withdrawn into a crypto wallet or converted into another cryptocurrency, the fee is lower than when cryptocurrency is withdrawn in fiat money.

[14] *Many crypto exchanges also act as exchange offices.*

TOTAL CRYPTOASSETS UNDER MANAGEMENT AT LARGEST INSTITUTIONAL CRYPTO ASSETS MANAGERS *Chart 4*
($ BILLION)



Source: CoinShares.

3. **Other ways to acquire cryptocurrencies** include the purchase directly from cryptocurrency owners without intermediaries and the purchase in cryptocurrency exchange offices and kiosks[15] and on the websites offering cryptocurrency to fiat currency exchange services (including in anonymous networks, darknet).

Information on cryptocurrencies acquired by a user may be stored in both wallets created by the user (e.g., Bitcoin wallets) and wallets created by a crypto exchange or a third party entity.

4. **Purchasing investment products based on cryptoassets**

An important trend in recent years has been an inflow of institutional investors into the cryptocurrency market and the development of financial instruments linked to cryptocurrencies.

According to the estimates of CoinShares publishing data on investment flows associated with Bitcoin and other cryptoassets, total cryptoassets under management increased to $63 billion as of the end of December 2021 from $37.6 billion in early 2021. Of this amount, $40.1 billion of assets under management are in Bitcoin, and $17.2 billion – in Ethereum. Grayscale Investments, the leading cryptoasset manager, accounted for the largest amount (Chart 4), with assets under management totalling $43.7 billion as of the end of December 2021.

According to a report by PwC, the total assets under management of crypto hedge funds increased to nearly $3.8 billion in 2020 from $2 billion in 2019. As reported, the majority of investors are high-net worth individuals (54%). Most crypto hedge funds trade widespread cryptocurrencies, including Bitcoin, Ethereum, Litecoin, and others. The most common location of crypto hedge fund managers is the United States (43%), followed by the United Kingdom (19%), and Hong Kong (11%). The top domiciles of crypto hedge funds are the Cayman Islands (34%), the United States (33%), and Gibraltar (9%).

Furthermore, there is also an increase in the demand for cryptocurrency derivatives: as of the end of December 2021, open Bitcoin futures and options contracts totalled nearly $18.4 billion and $12.1 billion, respectively.[16] Derivatives are mostly traded on cryptocurrency platforms. However, there has been a recent trend towards launching cryptocurrency derivatives on conventional exchanges as well.

In September 2021, Eurex, one of the world's largest derivatives exchanges, announced the launch of Bitcoin ETN Futures. The futures contract is based on a Bitcoin exchange product (similar by its structure with ETFs) – BTCetc (Bitcoin Exchange Traded Crypto) which is listed on the Frankfurt Stock Exchange.

[15] *The US supermarket chain Walmart has launched a pilot allowing customers to purchase Bitcoin through Coinstar kiosks in partnership with CoinMe.*

[16] *For comparison: in December 2020, open Bitcoin futures and options contracts totalled $7 billion and $5 billion, respectively.*

In October 2021, the New York Stock Exchange started trading the first US exchange-traded fund (ETF) based on Bitcoin futures traded on the Chicago Mercantile Exchange (CME Group).

Overall, large investment funds/asset managers' interest in cryptocurrencies is still quite low due to cryptocurrency risks, specifically high volatility and regulatory uncertainty.

Reasons for cryptocurrency investment and risk awareness

As reported by Binance Research in its global survey, the main reasons why users invest in cryptocurrencies are:

- to own cryptocurrency as part of a long-term investment strategy (55% of respondents; the top reason);
- distrust in the current financial system (38%);
- short-term trading opportunities (31%); and
- fear of missing out (27%).

According to a recent survey among financial consumers in the **United Kingdom**, about 38% of respondents purchased cryptocurrencies as a gamble, while 30% started to buy cryptocurrencies in 2021 in addition to other investments. Furthermore, only one in 10 who have heard of cryptocurrency are aware of the warnings about cryptocurrency investment risks regularly issued on the FCA (UK Financial Conduct Authority) website.

The survey also shows that people's awareness about cryptocurrency rose over the past two years (from 42% in 2019 to 73% in 2020 and 78% in 2021). But awareness does not necessarily equate to understanding, which entails risks for consumers investing in cryptocurrency.

Moreover, according to research carried out in the UK,[17] about 45% of young investors aged 18 to 29 say their first investment was in cryptocurrency. That is more than twice the number who had first invested via funds (23%) and way ahead of investment trusts (13%). Almost one in five (18%) of respondents said their first investment was in listed company shares.

The FCA also confirms that young investors are more ready to accept high risks associated with cryptocurrency investment. According to the FCA, 59% of young investors claim that a significant investment loss would have a fundamental impact on their current or future lifestyle. The research by the FCA found that the key reasons behind young investors' decisions were emotions and feelings such as enjoying the thrill of investing, as well as social factors. Moreover, 38% of those surveyed did not list a single functional reason for investing. Thus, young investors' demand for cryptocurrency is driven by the information environment, the so-called hype. Favourable news coupled with famous persons' statements and distrust in state authorities typical of the youth are the main reasons driving young investors' interest in cryptocurrencies.

According to a survey carried out in Canada, as many as 84% of Canadians heard of cryptocurrencies in 2019. The survey revealed an important correlation between financial literacy and readiness to invest in Bitcoin: awareness of cryptocurrencies increased with financial literacy, but the likelihood of ownership declined as the level of financial literacy increased (8% of Canadians with low financial literacy reported they own cryptocurrencies compared with 4% of Canadians with high financial literacy).

Overall, it is possible to conclude that the major reason behind cryptocurrency investment is **expectations of high returns**. Another quite frequent reason mentioned by respondents is distrust in the **current financial system**. Interest in cryptocurrencies is often demonstrated by people with insufficient financial literacy: investors expect high returns, but are unaware of all inherent risks.

[17] *The poll of 1,000 respondents was conducted by the Opinion company for the online investment platform Interactive Investor.*

2. CRYPTOCURRENCIES IN RUSSIA

To estimate Russians' investment in cryptocurrencies, we analysed publicly available sources and surveyed credit institutions and payment system operators.

2.1. Estimate of Russians' involvement in the cryptocurrency market

Based on the findings of a survey by Chainalysis in September 2020, Russia ranked second in the Global Crypto Adoption Index measuring cryptocurrency adoption across 154 countries (Ukraine – first and Venezuela – third). According to the Chainalysis methodology (see Box 4), this means that the country has a high level of cryptocurrency adoption across all the index components. In 2019–2020, the amount of cryptocurrency transactions in Russia relative to the population and the size of the economy was very high, but in absolute terms, it was considerably below the figures recorded in the USA and China. In 2021, Russia ranked 18th in the index (the top 3 countries were Vietnam, India, and Pakistan).

Box 4. Global Crypto Adoption Index methodology

The value of the Global Crypto Adoption Index is derived by taking the geometric mean of each country's ranking in four metrics:

1. on-chain cryptocurrency value received, weighted by purchasing power parity (PPP) per capita;
2. on-chain retail value transferred, weighted by PPP per capita;
3. the number of on-chain cryptocurrency deposits, weighted by number of internet users;
4. peer-to-peer (P2P) exchange trade volume, weighted by PPP per capita and number of internet users. P2P exchange trade volume is measured based on data supplied by Paxful and LocalBitcoins – two of the largest P2P platforms.

Information on traffic from Russian users on the main crypto exchanges also proves that Russia is a key player in the cryptocurrency market. According to the IMF Global Financial Stability Report (GFSR), over the period from October 2020 to June 2021 (Table 3), Russia along with several other emerging market and developing economies (EMDEs) was among the leaders by number of visits of major crypto exchange websites, such as Binance (2nd), Huobi (5th), Bithumb (2nd), and Bitfinex (1st).

According to data making it possible to assess traffic from the Russian Federation, the portion of Russian users[1] on different crypto exchanges varies from 7% to 14.5%.

It is essential to take into account that the information supplied by internet resources cannot be considered complete and accurate due to the nature of cryptocurrencies and various ways to purchase and sell cryptocurrencies. Given that there are multiple ways to acquire cryptocurrencies, it is impossible to assess overall cryptocurrency trade and ownership volume.

In addition to foreign cryptocurrency exchanges, Russian users often buy cryptocurrencies through internet-connected cryptocurrency exchange offices (including telegram bots and kiosks), including because they do not require identification and are simple to access. In particular, they allow users to purchase cryptocurrencies for fiat money through P2P transfers via bank cards. Cryptocurrency exchange offices often make settlements with Russian citizens from bank cards, electronic wallets and personal accounts of mobile operators' users registered in dummies' names (the so-called drops) to which cryptocurrency buyers transfer an equivalent of fiat money from their

[1] *Statistics include unique connections to websites from Russia.*

TOP 5 EMDES BY NUMBER OF CRYPTO EXCHANGE VISITORS (OCTOBER 2020–JUNE 2021) *Table 3*

Top 5 countries	Binance	Huobi	Coinbase	Kraken Exchange	FTX	Bithumb	Bitfinex
1	Turkey	China	USA	USA	Turkey	Republic of Korea	**Russia**
2	**Russia**	Ukraine	UK	Germany	Republic of Korea	**Russia**	Taiwan
3	UK	Vietnam	Spain	France	China	Turkey	Germany
4	Brazil	USA	Germany	UK	Taiwan	USA	Ukraine
5	Argentina	**Russia**	France	Netherlands	Hong Kong	Poland	Brazil

Source: IMF Global Financial Stability Report, October 2021.

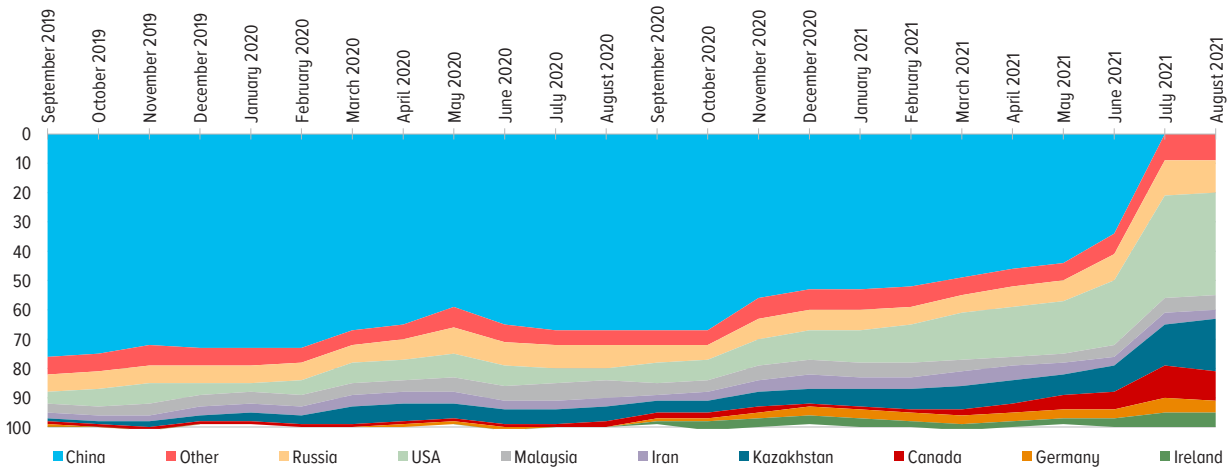
means of payment conducting a P2P transaction. Moreover, they do not specify the true purpose of the transfer in payment details. After that, the equivalent in cryptocurrency is transferred to the crypto wallet specified by the buyer.

As the use of P2P transfers for settlements with Russians in anonymous internet-connected cryptocurrency exchange offices is becoming increasingly more extensive, the Bank of Russia issued the Methodological Recommendations 'On Increasing Credit Institutions' Focus on Certain Customer Transactions' (No. 16-MR, dated 6 September 2021) advising credit institutions to promptly identify suspicious cards and wallets and implement anti-money laundering measures in relation to such instruments, as well as to ensure adequate information security of P2P services to prevent their robotised use.

Besides, Russians buy cryptocurrencies through investment in financial instruments linked to cryptocurrency exchange rates or indicators of foreign organisations dealing with cryptocurrencies. As was mentioned above, some exchanges trade derivatives ETFs, and Russians have already started to invest money in them acting via foreign intermediaries, but using Russian infrastructure (brokers, consultants, etc.).

Overall, Russian investors are demonstrating higher interest in cryptocurrencies. According to the study of beginner investors' behaviour carried out by the Bank of Russia in 2021,[2] cryptocurrency in Russia, just as in other countries (e.g., in the UK – see Section 1.3), ranks second (12%) as the most frequent investment, preceded only by shares (29%).

SHARE OF COMPUTING POWER USED TO MINE BITCOIN BY COUNTRY *Chart 5*
(%)



Source: online service of the Cambridge Centre for Alternative Finance, August 2021.

[2] *For more details about this study and its methodology, refer to the Bank of Russia website.*

In August 2021, Russia ranked third by Bitcoin mining, accounting for 11.23% of computing power used to mine Bitcoin (vs 6.9% in early 2021). According to the online service of the Cambridge Centre for Alternative Finance demonstrating current electricity consumption in connection with Bitcoin transactions, the largest computing resources used to mine Bitcoin as of August 2021 were in the USA (35.4%), Kazakhstan (18.1%), and Russia (11.23%). The situation changed drastically after China imposed a ban on cryptocurrency mining and selling equipment necessary for mining to other countries. Before that, China topped this list, accounting for nearly 53% of computing power (today, China's portion in cryptocurrency mining has dropped to zero), and Russia ranked fourth.

Box 5. Cryptocurrency transaction monitoring

Information on crypto wallets owned by Russians and turnovers on these wallets can be available to the Federal Tax Service of Russia if people disclose these data.

In some cases, information on cryptocurrency transaction amounts can be obtained from the distributed ledger of a particular cryptoasset (data on individual transactions with the cryptoasset and on total cryptoassets in wallets).

Currently, it is possible to monitor transactions with the cryptocurrencies that have access to a distributed ledger. The analysis of blockchain transactions is building connections between certain crypto wallets based on transactions conducted, as well as labelling wallets based on available information (e.g., on using the wallet in fraudulent schemes or to make payments for prohibited products and services). This allows the assessment of conducted transactions by the level of risk of involvement in illicit activities. As many cryptocurrencies are anonymous, the distributed ledger does not contain information on crypto wallet owners. It is only possible to identify the actual owner of a wallet only if the latter was used on platforms providing services to authenticated customers.

The use of anonymous cryptocurrencies and such instruments as mixers and protocols with zero disclosure aimed at ensuring the confidentiality of transactions, data on payers, payees and amounts, for which there are no deanonymisation techniques, makes it impossible to carry out comprehensive monitoring of cryptocurrency transactions.

Crypto exchanges may be one of the information sources for analysis. Specifically, depending on laws effective in particular countries, regulated crypto exchanges disclose information on customers and trading provided that state authorities have legal grounds to request such data.[1] To obtain information on transactions, it is necessary to communicate with the foreign regulators of the financial market supervising crypto exchanges of the countries applying a legal framework to regulate cryptoasset turnover. Nonetheless, information provided by crypto exchanges will not be accurate as it will not include data on P2P sales of cryptocurrencies and crypto wallets between users.

[1] *For instance, the US Internal Revenue Service obtained a court ruling obliging the Coinbase crypto exchange to disclose available information.*

2.2. Results of the Bank of Russia's survey

In summer 2021, the Bank of Russia surveyed credit institutions and the operators of payment systems (including electronic ones). Respondents were asked to provide information about their activity related to cryptocurrencies and the assessment of risks of cryptocurrency use for the functioning of the banking sector, payment systems and the stability of the financial system in general. The answers given in the course of the survey can be summed up as follows:

Cryptocurrency investment/transfer amounts and other charechteristics:

- According to respondents' approximate estimates that take into account publicly available data, Russian individuals' cryptocurrency transactions[3] may total $5 billion a year (about ₽350 billion).[4]

[3] *This amount should not be interpreted as fiat to cryptocurrency conversions of savings, as a part of this amount (probably, it is considerable given Russia's role in the mining market) may be cryptocurrency selling transactions after mining.*

[4] *For comparison: Russians' foreign securities investments increased by ₽474 rubles in 2020.*

- The majority of respondents believe that the amount of Russian legal entities' cryptocurrency investments is minor as they are quite rarely made by companies – most often, they are made by the founders acting as individuals or authorised persons.
- As reported by respondents, Russians equally use all ways to acquire cryptocurrencies, including purchase for cash.
- The main reasons why individuals/legal entities acquired cryptocurrencies were: 1) speculations (individuals are mostly inspired by possible returns in the case of an increase in cryptocurrency prices); 2) investment; 3) circumvention of AML/CFT requirements; and 4) cross-border money transfers.
- Cryptocurrency payments inside the country were not widespread.[5]

Respondents' activity related to cryptocurrencies

- Banks did not identify any cases of use of leverage for purchasing cryptocurrencies, but they admitted that some customers could use general purpose loans to purchase cryptocurrencies. Banks stressed that such practice is inadmissible as it involves serious credit risks.
- Respondent banks reported that they did not invest customers' money in cryptocurrency funds. Nonetheless, a number of banks noted that customers demonstrated insignificant, yet stable interest in cryptocurrency funds and potential opportunities to carry out transactions with them.
- Most respondents admitted that they might open and service the accounts of companies conducting cryptocurrency transactions provided that there is legal regulation in this area.

Potential risks of cryptocurrency use to financial stability

- Respondents noted that cryptocurrency use currently does not pose serious risks to the financial sector (if cryptocurrency is regarded as a financial instrument, and not as a means of payment). Nonetheless, an increase in cryptocurrency transaction volumes could exacerbate risks for the banking sector and the financial system in general, specifically reputational risks for banks, default risks for customers (if investment volume becomes substantial), and money laundering and terrorist financing risks.
- As assessed by respondents, risks to the functioning of payment systems in Russia associated with cryptocurrency adoption are high. Because of their high volatility, cryptocurrencies cannot be used as a means of payment. Risks may also increase if funds of dubious origin get into circulation.
- Some respondents consider that interbank relations might become one of the channels of risk transmission and spread in the financial system in the future as a result of cryptocurrency use. If a credit institution faces liquidity risk as a result of cryptocurrency price changes or asset loss, this might entail a sequence of negative events and contagion in the chain of financial system participants.

Considering the findings of the market data analysis and the survey (given that this information is incomplete and that it is definitely impossible to make an accurate assessment), we may conclude that **Russians account for a substantial portion of transactions in the global cryptocurrency market.** Currently, financial stability risks caused by the above are limited, but they might soar **if people's involvement in the cryptocurrency market increases.**

[5] *The law on DFAs prohibits the use of cryptocurrencies for making payments in the Russian Federation. However, foreign studies show that the amount of such transactions globally is sufficiently high.*

3. RISKS POSED BY CRYPTOCURRENCIES

A wider adoption of cryptocurrencies creates significant risks for the Russian financial market. As there are no restrictions in place, a further increase in Russians' cryptocurrency investments and an extensive involvement of banks and other financial institutions in the cryptocurrency market might exacerbate risks inherent in this activity and pose systemic threats.

There are three main threats associated with the cryptocurrency spread in Russia:

- threat to citizens' well-being;
- threat to financial stability; and
- threat of an expansion of illegal activities.

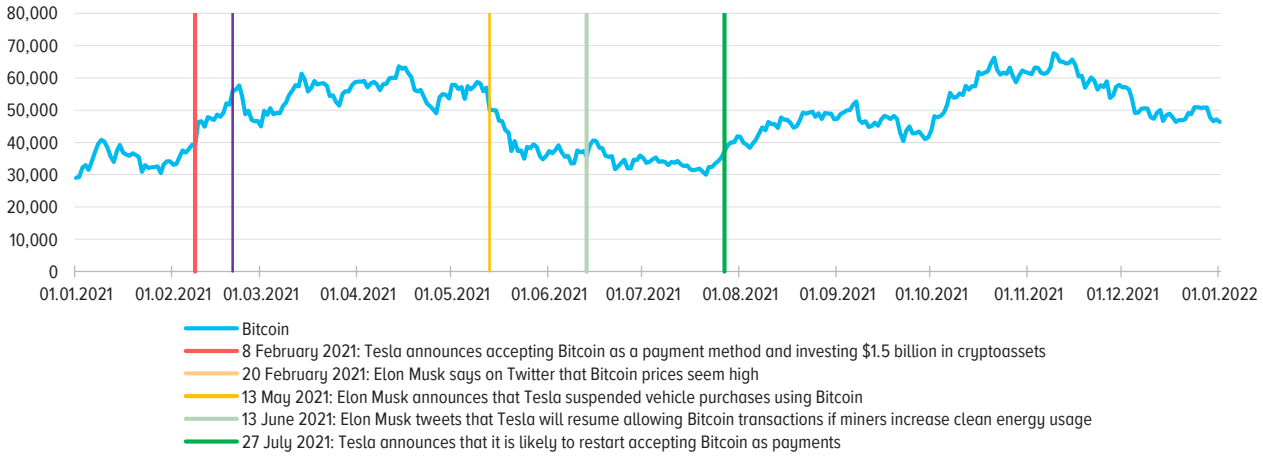
3.1. Threat to citizens' well-being

For private investors, cryptocurrencies involve the risk of **potential loss of all investments in cryptocurrencies**. As shown in Section 1.2, the exchange rates of cryptocurrencies depend on their adoption in society and the possibility to use them to conduct various transactions (including within illicit operations). The expansion of the cryptocurrency market often indicates at the existence of a bubble in this market.

The cryptocurrency market is highly **volatile**. Cryptocurrency prices strongly depend on the information environment (Chart 6). Public persons' statements regarding cryptocurrencies, news in media,[1] and other events might cause both a surge and a collapse in the cryptocurrency market within a short period.

One of the reasons for a high volatility of cryptocurrencies is their **considerable concentration** in a small group of owners, which creates opportunities for market manipulation. Market participants' anonymity makes it easier to manipulate cryptocurrency prices on crypto exchanges where conventional anti-manipulation measures cannot be implemented. Concentration in mining is especially high, with just 0.1% of miners controlling nearly 50% of mining power and 10% of miners accounting for approximately 90% of mining power. The concentration of mining power among a small number of persons might pose risks to the operation of the Bitcoin blockchain and enables such persons to influence the performance of the chain and the Bitcoin price.

RELATIONSHIP BETWEEN THE PRICE OF BITCOIN AND STATEMENTS MADE BY ELON MUSK AND TESLA *Chart 6*



Source: CoinGecko (data on price of Bitcoin).

[1] *What causes the attention of Bitcoin? A. Urquhart. Economics Letters. Vol. 166, May 2018, pp. 40–44.*

Moreover, the functioning of cryptocurrencies have characteristics of **financial pyramids** as an increase in their prices is driven by demand demonstrated by new market participants. Those who became investors a long time ago sell cryptocurrencies at high prices, actually at the expense of newbies. Sooner or later, such a pyramid might collapse, and its members will lose their funds.

If investors lose interest in a certain cryptocurrency or countries introduce restrictions, this may not only seriously impact the price of the cryptocurrency, but also entail a slump in its exchange rate, due to which **all investments will be lost**. This problem might become especially hazardous in the case of use of leverage for purchasing cryptocurrencies. Although investments in other financial assets also involve the risk of money loss, this risk is much higher when funds are invested in cryptocurrencies.

Stablecoins were developed to address high volatility typical of unbacked cryptocurrencies. However, it is still impossible to eliminate volatility for stablecoins as well. The pool of assets underlying a stablecoin is not the property of the holder, and the redemption of stablecoins at the nominal price of the backing assets is not guaranteed, that is, the price of a stablecoin is actually not stable. Market instability might affect the exchange rate of asset-backed stablecoins and the possibility of their redemption. During periods of market stress, such stablecoins may be redeemed with limitations similar to the ones applied in money market funds, that is higher redemption fees, deferred redemption (in full or in part, proportionately to the stake), etc.[2]

Special emphasis should be given to the problem of the actual backing of stablecoins: as there are no auditors of the backing, it is impossible to verify the declared backing. Hence, investors have to rely on the information stated by companies organising stablecoin issues. For instance, in October 2021, the US Commodity Futures Trading Commission (CFTC) filed charges against Tether and required the company to pay a penalty of $41 million because the CFTC found that, during the period from June 2016 to February 2019, Tether had been making untrue or misleading statements about the backing of the USDT stablecoin (misinforming customers and the market in general that the USDT was always and fully backed by fiat currency), as well as had failed to complete professional audits during the relevant time period. According to an assurance opinion released in September 2021, cash and cash equivalents (bank deposits, money market funds) make up over 40% of the reserves. Moreover, a considerable portion of the reserves is represented by commercial papers, backed loans, corporate bonds, and precious metals.

Investors' losses might be caused not only by a decline in cryptocurrency prices, but also by exchanges' failure to properly fulfil their obligations, as well as by **fraud and cyber attacks**.

Crypto exchanges are frequent targets of cyber attacks, as a result of which criminals might steal a part of cryptocurrencies and the exchanges will be unable to pay to their customers. The Japanese crypto exchange Mt. Gox, which accounted for over 70% of global Bitcoin turnover in 2013, had to terminate trading in 2014 and started the liquidation procedure. It was announced that approximately 850,000 Bitcoins (worth $450 million at that moment) had been stolen from the exchange and its customers (after that, the exchange managed to return only 200,000 Bitcoins).

According to a report by the cyber security firm CipherTrace, the amounts of cryptocurrencies stolen through fraud totalled $4.52 billion in 2019, which is 160% more than in 2018 ($1.74 billion), and $1.9 billion in 2020. Relative to the average capitalisation of the cryptocurrency market, the percentage of thefts equalled 0.6% in 2018, 2.1% in 2019, and 0.6% in 2020. As reported by the Bank of Russia, the portion of money transfers carried out without a customer's consent equalled 0.00117% in 2020 (0,00089% in 2019).[3]

There were widely known cases when **cryptocurrencies were stolen by trading platforms themselves**, and many of these thefts were in emerging market economies.

- In April 2021, the Turkish cryptocurrency exchange Thodex suspended trading. As a result of fraudulent operations of the company's executives, investors lost about $2 billion.

[2] *IMF Global Financial Stability Report, October 2021.*

[3] *It would be more correct to compare statistics on thefts in the cryptocurrency market against cryptocurrency transfer transactions, but the Bank of Russia does not have such statistics.*

- In 2020, the South African crypto firm Mirror Trading International terminated its operation, as a result of which investors lost Bitcoins worth $1.2 billion.
- In summer 2021, the South African crypto platform Africrypt stopped its operation, as a result of which investors lost their assets totalling $3.6 billion. Before the Africrypt founders fled the country, they reported that the platform had been attacked by hackers who had allegedly stolen the cryptocurrency from the users' wallets. The investigation was hampered by the use of special technologies (mixers and others), due to which it is impossible to trace the Bitcoins lost.

The possibilities to legally protect investors are very limited. First of all, cryptocurrency transactions are generally cross-border, which is why investors will need to apply to foreign authorities to protect their rights. Second, with regard to unlawful actions committed in Russia, Clause 6 of Article 14 of the law on DFAs stipulates that a person's claims related to holding digital currency may be protected judicially only if this person notified competent authorities of the facts of owing digital currency and conducting civil transactions and/or digital currency transactions according to the procedure established by the Russian laws on taxes and duties.

For authorities to recognise the fact of unlawful actions committed against an individual through raising investment in the form of digital currencies (cryptocurrencies), the individual shall prove that he/she was the owner of the digital currencies and transferred them to third parties. Individuals who did not declare their cryptocurrency holdings cannot confirm the fact of ownership of the cryptocurrency they transferred to illegal financial market participants or fraudsters, due to which such individuals cannot be recognised as victims.

Considerable risks are associated not only with direct ownership of cryptocurrency, but also with **investment in cryptocurrency-based assets** and cryptocurrency derivatives. Cryptocurrency investment funds and complex structured products based on cryptocurrencies also involve high risks for investors. Today, there is no regulation of the said types of financial instruments and their sale to investors. Their spread among a broad range of Russian investors can only be limited based on Bank of Russia information letters that are merely advisable. In the case of losses from cryptocurrency investments, individuals might **lose trust towards the stock market for a long time**.

Therefore, cryptocurrency purchases by individuals involve a direct threat to their well-being as there are no guarantees of repayments. If these types of investment become widespread, this might cause the materialisation of social risks.

3.2. Threat to financial stability

Cryptocurrency adoption poses serious risks to the country's economy and financial stability. The potential use of cryptocurrencies as a means of payment for products and services involves the risk of **undermining the circulation of money and the sovereignty of the country's currency**. This problem (cryptoisation) is similar to dollarisation (an increase in foreign currency cash holdings and deposits or foreign securities investments) which is typical mostly of emerging market economies.[4] A high level of dollarisation or cryptoisation will significantly limit the effect of the central bank's monetary policy, with the inflation rate staying always elevated. To contain inflation, the central bank will have to maintain a higher key rate. This will reduce the affordability of credit to both households and businesses.

Moreover, the outflow of capital from the current financial system into the cryptocurrency market creates the **risk of a reduction in financing to the real sector of the economy**. The outflow of funds from conventional securities (shares, bonds) into cryptocurrencies will decrease the capitalisation of the Russian stock market and limit issuers' capacities to raise investments. This will adversely impact economic development, reduce the potential growth rates of households' incomes, and increase unemployment.

[4] *According to the IMF Global Financial Stability Report (October 2021), cryptocurrency investment risks are higher for emerging market and developing economies (EMDEs).*

In terms of the balance of payments, extensive cryptocurrency purchases by households involves an outflow of capital from the country[5] and a weaker ruble. However, in contrast to fiat currency and securities bought in foreign markets that can be sold by households during volatility periods and play a positive countercyclical role in crisis conditions, funds invested in cryptocurrencies may be lost completely and, to the contrary, aggravate financial system shocks amid crisis conditions.

A broader adoption of cryptocurrencies amplifies **the risk of an outflow of funds from bank deposits** into the cryptocurrency segment as investors may consider the latter more attractive in terms of returns. Funds withdrawal from household deposits to purchase cryptocurrency can create liquidity risks for banks and force them to search for alternative sources of financing, which will make it more expensive and, ultimately, **affect banks' financial stability**.

Leveraged purchases of cryptocurrencies may involve substantial risks to investors' and creditors' financial stability. Cryptocurrencies may be bought using a credit card, various types of bank loans, and margin trading on cryptocurrency exchanges. If customers use general purpose loans to purchase cryptocurrencies and the exchange rates of the latter plummet, customers will be unable to fulfil their obligations, while their creditors' risks will materialise.

In the case of a further expansion of the cryptocurrency market and an extensive involvement of banks and other traditional market participants in this market, financial intermediaries might be exposed to liquidity risk, market risk, and credit risk which are typical of cryptocurrencies. Moreover, interconnectedness among large financial institutions might extend these risks to a wider range of market participants, as well as the real economy.

Hence, a broader adoption of cryptocurrencies might pose serious threats to the economy and the financial sector.

3.3. Threat of illegal activities

Due to their anonymity, cryptocurrencies are extensively used **to make payments within illicit operations** (money laundering, drug trafficking, terrorism financing, illegal arms trafficking, illegal money withdrawals abroad, extortions, corruption, etc.). Moreover, as shown in Box 5, although distributed ledger technology is open-source, there are currently no approaches enabling deanonymisation of all cryptocurrency trading participants. This creates a challenge for the **existing global AML/CFT system** and requires its enhancement.

One of money laundering methods is to purchase old wallets using illegally obtained incomes as it is generally impossible to trace the moment of buying such wallets and the value of assets therein and to identify their owners.

As transactions remain anonymous, especially when conducted on various platforms allowing users to conceal the initial source of cryptocurrency, both fraudsters and sellers of prohibited products and services can seriously hamper the work of law enforcement agencies.

Thus, cryptocurrencies support illicit activities.

Box 6. Cryptocurrency use in illicit activities in the Russian Federation

In recent years, cryptocurrencies (namely, Bitcoin) are used at all stages of illegal operations. Cryptocurrencies are most often used in drug trafficking and to make payments to drug dealers. The most popular way to buy and sell cryptocurrency in the criminal community is to use darknet exchange platforms ensuring anonymity.

A factor hindering financial investigations is the need to check the transactions on suspected criminals' crypto wallets against transactions on bank cards and electronic payment instruments held by such individuals, as well as to analyse time periods between the said transactions.

[5] *It is assumed that residents buy cryptocurrencies from non-residents after exchanging rubles for foreign currency.*

Malefactors frequently use accounts and bank cards opened in dummies' names to conceal the actual payees and to launder and cash out illegal incomes.

Malefactors extensively use Bitcoin to carry out illicit transactions as it is simpler to create crypto wallets than to use bank accounts and cards. In the first place, this is because users can create a Bitcoin crypto wallet themselves without applying to third party organisations, including crypto exchanges. Moreover, to conceal information on conducted transactions, malefactors often transfer Bitcoins among multiple crypto wallets, each time changing transfer amounts, while the actual payee receives the target amount in parts as a result of multiple transfers from different crypto wallets.

3.4. Other cryptocurrency risks

It is essential to take into account risks associated with the negative impact of mining of the most widespread cryptocurrencies on **the related markets and the environment**.

Elevated demand for graphics cards and specialised hardware for mining has become one of the factors of a deficit of semiconductors,[6] which entailed a considerable reduction in chip production for other purposes. The semiconductor crisis affects various segments manufacturing goods that require computing components (e.g. motor vehicles), as well as sectors directly using personal computers for complex computations. These trends intensify inflationary pressure in the global economy.

An increase in mining volumes entails enormous energy consumption and may pose risks to other enterprises. Specifically, electricity tariffs established for households in the Irkutsk Region are the lowest across Russia. According to preliminary estimates, electric power consumption in this region soared 1.6 times over 2021 as compared to the previous year. Moreover, the number of people's bills with abnormally high electric power consumption surged by 62% (more than 13 times above the statistical average) – they account for nearly 25% of overall power consumption in the region. Such trends exacerbate the risk of power grid overload and accidents, which in turn might adversely impact the stability of power supply of residential buildings, social infrastructure, and enterprises.

Excessive power consumption for cryptocurrency mining increases the carbon footprint, which directly contradicts the goals of the global agenda on sustainable development. Chinese scientists earlier confirmed that the carbon footprint of Bitcoin mining in China was comparable with carbon emissions of one of the largest Chinese cities and threatened the achievement of the country's carbon emission reduction targets. This was one of the reasons why China decided to prohibit cryptocurrency mining in the country. As was mentioned in Section 2, Russia accounts for over 11% of global computing resources used for Bitcoin mining. Hence, a further rise in Russia's share in overall mining might increase the country's carbon footprint and hinder the achievement of its sustainable development goals. We believe that it would be reasonable to implement a complex of restrictions in mining as it has considerable negative effects on power supply, the environment, and the industrial sector.

Cryptocurrencies have an increasingly stronger impact on the economy and financial stability. Considering that a further surge in cryptocurrencies can significantly affect people's well-being and the country's economy and financial stability, as well as that there is a risk of a potential contagion effect from the cryptocurrency market to the key financial markets, **the Bank of Russia proposes a range of measures** to be implemented in the Russian Federation in order to prevent future problems associated with the development of the cryptocurrency market.

[6] *The semiconductor crisis was caused by large manufacturers' switch to a new production process, which initially causes a decline in output and increases the defect rate, by the spread of the coronavirus infection that required labour restrictions at enterprises affecting their output, as well as by the expansion of graphics chip production as a result of higher miners' activity.*

4. CRYPTOCURRENCY REGULATION

4.1. Trends in cryptocurrency regulation abroad

Cryptocurrencies are a matter of serious concern among foreign regulators and international organisations. This is evidenced by publications and statements, which became more frequent in the past year, warning customers about high risks associated with cryptocurrency investment.[1] Today, the world has not yet elaborated a final approach to cryptocurrency regulation. Nonetheless, it is possible to make the following conclusions.

As regards cryptocurrency use for payments, increasingly more leading countries are imposing a direct ban on these transactions, whereas they are still in the 'grey' zone in other economies. Nonetheless, governments will most probably further tighten the regulation.

As regards cryptocurrency trading, a number of countries imposed a ban, whereas other states permit the operation of cryptocurrency exchanges, but are gradually tightening AML/CFT requirements and demand detailed reporting.

As regards cryptocurrency investment regulation, the leading countries' regulators either introduce bans, or issue recommendations to citizens insisting that they should not make investment in such instruments.

Regulators are implementing the toughest approach to regulating unbacked cryptocurrencies. Stablecoins backed by financial assets are used as an alternative to investment funds, and regulators are focused on the elimination of regulatory arbitrage in this regard. Nonetheless, it is necessary to note the leading counties' coordinated response **to prevent the launch of the project for developing the global stablecoin Diem (Libra)**. The regulators firmly believe that Diem may seriously jeopardise their financial systems due to the potential scale of its spread among Facebook users worldwide. Currently, this project is prohibited by the regulators.

Considering that **emerging market economies** are more sensitive to cryptocurrency risks, these jurisdictions generally apply tougher approaches than advanced economies. A gradual tightening of cryptocurrency regulation policy was implemented by China that had initially been one of the main cryptocurrency users.

In 2013, the People's Bank of China (PBC) imposed a ban on cryptocurrency use by financial and payment institutions. In 2017, the Chinese government prohibited cryptocurrency exchanges to trade with users inside the country. In September 2021, the PBC, jointly with other regulators, published a statement[2] completely banning all cryptocurrency transactions, according to which:

- cryptocurrencies are not legal tender in China;
- financial operations related to cryptocurrencies (issue, exchange, trading, intermediary services, etc.) are illegal;
- services provided by foreign cryptocurrency exchanges to Chinese residents are illegal; and
- mining is prohibited.

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[1] *In September 2021, European Central Bank president Christine Lagarde warned that 'cryptos are highly speculative assets that claim their fame as currency, possibly, but they're not'. In October 2021, Bank of England deputy governor Jon Cunliffe warned that digital currencies could trigger a global financial meltdown unless governments step forward with tough regulations. In November 2021, the US regulators (the Board of Governors of the Federal Reserve System, the Federal Deposit Insurance Corporation, and the Office of the Comptroller of the Currency) released a joint statement recognising that the emerging cryptoasset sector presents risks for banking institutions, their customers, and the overall financial system.*

[2] *This statement was posted due to the growth of speculative cryptocurrency transactions, frauds, financial pyramids, and money laundering and terrorism financing risks for the economy and the financial market. After the release of this statement, Alibaba (Chinese e-commerce company) prohibited selling hardware and other goods for cryptocurrency mining on its platform.*

Moreover, it should be emphasised that, along with the gradual tightening of the regulation and, ultimately, the prohibition of private cryptocurrencies, the Chinese authorities have considerably advanced in the development of the country's CBDC. In recent years, the central banks of multiple countries declared their intention to develop their own digital currencies which they apparently plan to use in order to avoid private cryptocurrency risks, among other purposes (see Box 1).

Thus, the regulators either impose direct bans on cryptocurrency use, or tighten the regulation and introduce requirements eliminating the advantages of regulatory arbitrage and anonymity which are the factors that initially spurred the spread of cryptocurrencies.

1. Regulation of using cryptocurrencies as a means of payment

The fundamental issue is regulators' attitude to cryptocurrencies as **a means of payment as this is what determines the prospects of cryptocurrencies and their prices**. A number of countries imposed a **direct ban** on cryptocurrency payments, including Bangladesh, Vietnam, Egypt, Indonesia (for financial institutions), China, and Turkey. India is also developing its regulation, and the existing draft law prohibits the use of cryptocurrencies for making payments.

Many countries (including Canada, the Republic of Korea, the UAE, and France) expressed this ban in the statement that the only legal tender in the country is its national currency, which implies that the use of cryptocurrencies for making payments is actually unlawful. According to Canada's legislation, cryptocurrency is a digital representation of value that is not legal tender and exchanging cryptocurrency for goods is treated as a barter transaction.

It should be noted that the legalisation of cryptocurrencies as a means of payment is technically possible in the countries that do not pursue independent monetary policies. In particular, El Salvador where the official currency is the US dollar recognised Bitcoin as legal tender in September 2021. This fact is not a reason for other countries having their own national currencies to recognise this cryptocurrency as legal tender.

As countries develop their CBDCs and enhance payment methods, the need in using cryptocurrencies to make settlements and cross-border transfers within legal operations will decrease considerably, according to estimates. If the situation unfolds in this way, cryptocurrencies will remain attractive only to support prohibited operations, which will most likely urge regulators in all countries to ban or tighten the regulation of cryptocurrency use in settlements.

2. Cryptocurrency investment regulation and cryptocurrency-based investment products

In January 2021, the UK Financial Conduct Authority (FCA) banned the sale, marketing and distribution to all retail consumers of any derivatives and exchange traded notes that reference cryptocurrencies. According to the FCA, retail consumers cannot reliably assess the value and risks of such products.

South Africa plans to prohibit pension funds from investing in cryptoassets, whether directly or indirectly (the draft of relevant amendments to the legislation has been prepared). Brazil's regulator prohibited local investment funds from buying cryptocurrencies back in 2018.

3. Crypto exchange regulation

In countries where cryptocurrency trading is not banned, regulators are developing requirements for cryptocurrency exchanges in order to prevent money laundering and terrorism financing risks and to carry out monitoring that will help understand how to adjust their policies further. Regulators are introducing **requirements for licensing/registration of cryptocurrency service providers' activities**, first of all in relation to cryptocurrency exchanges. As a rule, such intermediaries are subject to certain requirements for licensed service providers, specifically in the AML/CFT area.

The requirement for mandatory registration/licensing of cryptocurrency service providers and their compliance with AML/CFT requirements was introduced by France, the UK, and the USA. The EU and Hong Kong also plan to set similar requirements. The Republic of Korea established the Korean Financial Intelligence Unit (KoFIU) under the Financial Services Commission (FSC) which is responsible for registering and supervising virtual asset service providers. In Japan, services may be provided only by those crypto exchanges that were registered[3] and operate in accordance with the requirements stipulated by the Payment Services Act (PSA).

In the USA, crypto exchanges are obliged to report suspicious transactions and transactions exceeding $10,000 and store information on money transfers. The UK requires exchanges to apply enhanced due diligence when dealing with customers who may present a higher money laundering/terrorism financing risk, as well as to undertake ongoing monitoring of all customers to ensure that transactions are consistent with the business's knowledge of the customer and the customer's business and risk profile. In France, crypto exchanges must verify their customers conducting any cryptocurrency transactions, regardless of their amounts (previously, this requirement was only applicable to transactions exceeding €1,000).

Hong Kong plans to introduce the requirement, pursuant to which crypto exchanges may only offer services to professional investors (whose investment portfolio totals at least $1 million).[4]

In September 2020, the European Commission proposed the framework Regulation on Markets in Crypto-assets (MiCA)[5] stipulating the procedure for the registration of cryptoasset service providers (including exchanges), the requirements for them, as well as the supervision powers of the national regulators, the European Banking Authority (EBA), and the European Securities and Markets Authority (ESMA). These requirements are expected to become effective by 2024.[6] Furthermore, in 2021, the European Commission presented a package of legislative proposals aimed at harmonising AML/CFT rules across the EU. This package includes the proposal to prohibit cryptocurrency service providers from using anonymous crypto wallets.

The existing AML/CFT requirements allow the regulators to impose sanctions against companies violating the effective requirements. Specifically, in summer 2021, the FCA, based on the results of its investigations, prohibited Binance Markets Limited (which is part of the Binance Group) to undertake any regulated activity in the UK. Later on, the company started supervisory dialogue with the FCA regarding the issue of ensuring compliance with the regulator's requirements to be allowed to resume its activities in the UK.

Speaking of compliance with legislative requirements, it is worth mentioning Estonia where crypto exchanges and other cryptocurrency exchange platforms are subject to licensing. Estonia had earlier revoked licences from a vast number of crypto exchanges due to their involvement in money laundering, terrorism financing, and deceit of investors. By December 2020, licences were revoked from nearly 2,000 crypto exchanges and other cryptocurrency exchange operators, which is approximately 70% of all crypto firms. Moreover, in October 2021, Estonia announced that licences should be revoked from the remaining cryptocurrency operators (about 400), the cryptocurrency exchange system should be rebuilt from scratch, and new licences should be issued, but in compliance with tighter requirements needed because of high risks associated with cryptocurrencies.

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[3] *With the Financial Services Agency (FSA) and Local Finance Bureaus* functioning *under Japan's Ministry of Finance. The list of all crypto exchanges registered in Japan is published on the FSA website.*

[4] *Currently, there is no information on approval of the above amendments.*

[5] *In this package of proposals, cryptoassets are defined as digital representations of values or rights, which can be transferred and stored electronically, using distributed ledger technology.*

[6] *The package has not been adopted by the moment.*

4. Regulators' approach to stablecoins: introduction of prudential requirements

As most stablecoins are backed, they are actually similar to investment funds and, in particular, money market funds. For instance, more than 50% of the reserves of the Tether stablecoin are commercial papers, certificates of deposits, backed loans, corporate bonds, precious metals, investments in funds, etc. Hence, stablecoins are actually a way to circumvent the related regulation.

In this regard, in November 2021, the US President's Working Group on Financial Markets, joined by the Federal Deposit Insurance Corporation (FDIC) and the Office of the Comptroller of the Currency (OCC), released a report on stablecoins proposing to introduce regulation to address prudential risks related to stablecoins. Specifically, (i) to address risks to stablecoin users and guard against stablecoin runs, legislation should require stablecoin issuers to be insured depository institutions, which are subject to appropriate supervision and regulation; (ii) to address concerns about payment system risk, legislation should require custodial wallet providers to be subject to appropriate federal oversight and comply with appropriate capital and liquidity requirements; and (iii) to address systemic risk, legislation should require stablecoin issuers to comply with activities restrictions that limit affiliation with commercial entities.

The EU is also developing a similar approach within the MiCA package. This package of proposals categorises backed stablecoins as asset-referenced tokens. Among other things, it is proposed to introduce a requirement for the issuers of such tokens to be licensed, have capital (of at least €350,000), and maintain the Tier I capital adequacy ratio at 2% of the backing formed for stablecoins over the last six months.

Box 7. International organisations' recommendations and standards

International Monetary Fund

In autumn 2021, the IMF and the G20 noted a significant rise in risks associated with cryptocurrencies and announced a review of approaches to cryptocurrency regulation.

In its GFSR, the IMF presented the following recommendations regarding the supervision and monitoring of cryptocurrency risks:

- National regulators should prioritise the implementation of the already existing *global standard*s applicable to cryptocurrency-related activities (e.g., FATF[1] guidelines, reports and reviews, and IOSCO[2] principles).
- As there are no standards on cryptocurrencies, it is necessary to apply the available instruments in order to control and monitor risks, especially those related to electronic wallets and the operation of exchanges, and risks to financial institutions. Temporary measures may include publishing warnings about cryptocurrency investment risks and organising educational programmes for investors.
- It is essential to make sure that the national regulation system is flexible and makes it possible to promptly harmonise national standards with global principles that can be adopted in the future.
- It is crucial to enhance cross-border cooperation with regard to supervision and introducing restrictive measures. As a result of bans imposed in some countries, more cryptocurrency transactions are conducted in other countries. Therefore, it is critical to ensure efficient collaboration with national regulators and international authorities establishing standards in order to increase the effectiveness of the introduced restrictions and mitigate regulatory arbitration risks.
- It is necessary to address the issue of insufficient information and to increase the level of data standardisation, which will improve regulators' knowledge of risks associated with cryptocurrencies.

Financial Stability Board

In September 2020, the Financial Stability Board (FSB) released high-level recommendations on regulation, supervision, and oversight of global stablecoin (GSC) arrangements (that is, stablecoins with a potential reach and adoption across multiple jurisdictions). Among other things, the FSB recommends that authorities should carry out comprehensive supervision of GSC arrangements across borders and

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[1] *For instance,* the *FATF Guidance for a Risk-Based Approach to Virtual Assets and Virtual Asset Service Providers*, *the FATF report Virtual Assets – Red Flag Indicators of Money Laundering and Terrorist Financing (September 2020). Furthermore, the FATF prepares 12-month reviews of the implementation of its Standards on virtual assets.*

[2] *In February 2020, the IOSCO published the report 'Issues, Risks and Regulatory Considerations Relating to Crypto-Asset Trading Platforms' which, among other things, proposes regulation instruments.*

sectors; ensure that GSC arrangements have in place a comprehensive governance framework with a clear allocation of accountability for the functions and activities within the GSC arrangement; ensure that GSC arrangements have effective risk management frameworks in place especially with regard to reserve management, operational resilience, cyber security safeguards and AML/CFT measures, etc.

Financial Action Task Force

The Financial Action Task Force (FATF) developed two approaches: (1) regulation of activities with virtual assets (VAs), which also include cryptocurrencies (according to the FATF classification), or activities of virtual asset service providers (VASPs); and (2) prohibition or limitation of such activities.

If a country decides to regulate VA activities, the country should (a) assess the risks associated with VA or VASP activities; (b) implement the entire complex of regulation measures in the sector according to the FATF Standards, and (c) ensure supervision over VASP activities.

In October 2021, the FATF updated its Guidance for a Risk-Based Approach to Virtual Assets and Virtual Asset Service Providers released in 2019. The revisions focused on the areas where greater guidance from the FATF was sought. These are to: (1) clarify the definitions of virtual assets and virtual asset service providers; (2) provide guidance on how the FATF Standards apply to stablecoins and entities involved in stablecoin arrangements; (3) provide additional guidance on money laundering and terrorism financing risks for peer-to-peer transactions[3] and tools available to countries to address such risks; (4) provide updated guidance on the licensing and registration of virtual asset service providers; (5) provide additional guidance on the implementation of the 'travel rule',[4] and (6) include Principles of Information-Sharing and Co-operation Amongst VASP Supervisors.

If a country decides (considering inherent risks and national regulatory context or to support policy goals, such as consumer protection, market protection, safety and soundness, or monetary policy) to prohibit or limit these activities, the country should: (a) assess the risks associated with VA or VASP activities; (b) have tools and authorities in place to take action for non-compliance with the prohibition or limitation; and (c) have the technical capacity and resources to enforce such a prohibition or limitation.

International Swaps and Derivatives Association

The International Swaps and Derivatives Association (ISDA) established a new working group that will focus on developing specific legal standards for crypto derivatives.

Basel Committee on Banking Supervision

The Basel Committee on Banking Supervision (BCBS) released a consultative paper in June 2021 proposing the regulation of banks' investments in cryptocurrencies. The paper proposes classifying cryptoassets into two groups and apply various risk weights to them to be considered when setting general capital adequacy requirements for them. Group 1 cryptoassets include tokenised assets and stablecoins subject to the existing regulatory rules applicable to loans, shares, and bonds (risk weights for them vary from 0% to 1250%). Group 2 cryptoassets include unbacked cryptocurrencies, with the risk weight of 1250% to be applied (that is, such investments are to be fully backed by capital).

[3] *Transactions are carried out without intermediaries, which means that counterparty identification is not mandatory.*

[4] *Compliance with the procedure for obtaining, storing and exchanging information on the senders and recipients of transfers related to virtual assets.*

Thus, foreign regulators are very careful in addressing the issue of limiting risks that are associated with cryptocurrency transactions, enhancing the existing regulation and introducing new rules. Overall, **regulators are gradually tightening cryptocurrency regulation approaches worldwide.**

4.2. Proposals of the Bank of Russia on limiting cryptocurrency transactions in Russia

There are potential systemic threats related to cryptocurrencies as Russian citizens' interest in them is growing, investment amounts are considerable, and the above described risks associated with cryptocurrency transactions are very high. As the Russian ruble is not a reserve currency, Russia cannot apply a soft approach in this area and ignore rising risks. We believe it reasonable to implement additional measures:

1. Stipulating liability for violating the ban on the use of cryptocurrency as a means of payment for goods, works and services sold and bought by Russian residents, whether legal entities or individuals.

2. Prohibiting the organisation of the issue and/or the issue and the organisation of circulation and exchange of cryptocurrencies (including by cryptocurrency exchanges, cryptocurrency exchange offices, and P2P platforms) in the Russian Federation and stipulate liability for breaching this ban. It is necessary to develop mechanisms for detecting transactions and persons conducting them after the ban is imposed, and mechanisms for blocking transactions carried out to purchase or sell cryptocurrency for fiat money. It is essential to determine the competent agency (agencies) responsible for the implementation of regulation measures.
3. Introducing a statutory ban on financial institutions' investment in cryptocurrencies and cryptocurrency-related financial instruments, prohibiting the use of Russian financial intermediaries and financial market infrastructure for conducting any cryptocurrency transactions (purchase, payments and transfers, and alienation of cryptocurrencies) and facilitating such transactions (including custodial services or facilitating risk acceptance through derivatives).

Due to the global nature of cryptocurrencies and differences in regulation in various countries, there is a risk of regulatory arbitrage, that is, transactions can be carried out in jurisdictions with more favourable regulatory treatment. In this regard, it is also reasonable to continue efforts aimed at improving communication with both national regulators and international organisations in order to harmonise regulation approaches.

A critical task is to develop a coordinated opinion towards cryptocurrency regulation in the EAEU to eliminate regulatory arbitration risks in the region, given that a number of countries (namely, Kazakhstan and the Republic of Belarus) are also active participants in the global cryptocurrency market.

Concurrently, the Bank of Russia will continue to implement measures raising people's awareness of risks inherent in cryptocurrency investment, as well as of differences between cryptocurrencies and central bank digital currencies.

Risk monitoring

The Bank of Russia believes it essential to enhance the monitoring of risks associated with cryptocurrency investment. Many customers in Russia buy/sell cryptocurrencies through online cryptocurrency exchange offices using P2P platforms of Russian credit institutions to transfer the equivalent of fiat money. A part of Russian investors' transactions may be serviced by foreign infrastructure.

To monitor compliance with Methodological Recommendations No. 16-MR, dated 6 September 2021, 'On Increasing Credit Institutions' Focus on Certain Customer Transactions', the Bank of Russia, jointly with banks, organised the process for detecting risk areas related to using P2P payments, including payments made to purchase cryptocurrencies. To further enhance the monitoring system, the following measures should be considered:

- Developing communication with the regulators of foreign cryptocurrency exchanges supervising their operations, as well as amending international treaties on information exchange by including data on Russian customers' transactions on crypto exchanges. Furthermore, it is reasonable to discuss the issues of monitoring of cryptocurrency investment risks within international bodies (e.g., the Financial Stability Board and the International Organization of Securities Commissions).
- Ensuring regular receipt of information from foreign payment systems about Russian residents' payments to buy cryptocurrency, including using payment cards. Currently, foreign payment systems have already implemented the labelling of transactions conducted to buy cryptocurrency.
- Arranging regular information exchange between the Federal Tax Service of Russia, the Bank of Russia, and the Federal Financial Monitoring Service. Information exchange with the Federal Tax Service can include the provision of information on the fact of cryptocurrency ownership by Russian residents.[7]

[7] *Today, there is no established procedure for disclosing such information, but the relevant draft law is being prepared for the second reading at the State Duma. Pursuant to draft law No. 1065710-7 'On Amending Parts I and II of the Tax Code of the Russian Federation' (as regards the taxation of digital currency), individuals and legal entities are obliged to report the receipt of the right to use digital currency, including through third parties, and to submit reports on digital currency transactions and digital currency balances if the amount received over a calendar year exceeds ₽600,000.*

QUESTIONS FOR CONSULTATIONS

1. Do you agree with the presented list of risks and threats associated with cryptocurrencies? Can you identify any other risks and threats?
2. Do you support the conclusion made in this paper that the best regulation strategy is to prohibit the use of Russian infrastructure and intermediaries for cryptocurrency transactions, as well as infrastructure ensuring the issue, circulation and exchange of cryptocurrencies?
3. What reasons may necessitate even tighter regulation (e.g., similar to China's experience).
4. What potential problems may arise in the course of the implementation of the proposed cryptocurrency regulation approach?
5. What measures do you consider appropriate to improve the efficiency of the monitoring of the cryptocurrency market?