



Blokchain and Cryptocurrencies: Trends and Prospects

Vladimir Sokolov, Kristina Ivanova,
Polina Uvarova

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42 Bolshaya Tatarskaya st., Moscow, 115184, Russia

About the Authors

Vladimir Sokolov

PhD in Economics, Associate Professor at the International College of Economics and Finance, National Research University Higher School of Economics

Kristina Ivanova

PhD student at the Financial University under the Government of the Russian Federation

Polina Uvarova

Expert at the Department for supervision of professional securities market participants, Central Bank of the Russian Federation

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The rapid expansion of blockchain technology and the market of cryptocurrencies has caused debates over their future prospects. For example, the Financial Stability Board, an international organization that coordinates financial regulators from across the globe, said that cryptocurrencies do not pose any threat to global financial stability. However, US Treasury Secretary Steven Mnuchin is concerned about the use of cryptocurrencies in money laundering and terrorism financing.

The issue of the cryptocurrency market was put on the agenda of the G20 meeting of finance ministers and central bank representatives at a recent summit in Buenos Aires, where methods of regulating private cryptocurrency markets were discussed. The meeting showed that the majority of countries are generally positive about promoting blockchain technology and supportive of the balanced regulation of cryptocurrency circulation. The discussion results are reflected in the official G20 communiqué.¹

While representatives of government bodies and supranational financial entities are considering and working on making private cryptocurrencies part of the legal framework, more and more entrepreneurs and private individuals are interested in using blockchain technology in business and personal finance management. This report highlights the key features of blockchain technology and the private cryptocurrency market, as well as trends and prospects for their development.

¹ 'Communiqué: Finance Ministers & Central Bank Governors', 2018, Buenos Aires, Argentina, March 19-20. Available from: https://back-g20.argentina.gob.ar/sites/default/files/media/communique_g20.pdf

Overview of Blockchain Technology and Cryptocurrency Market

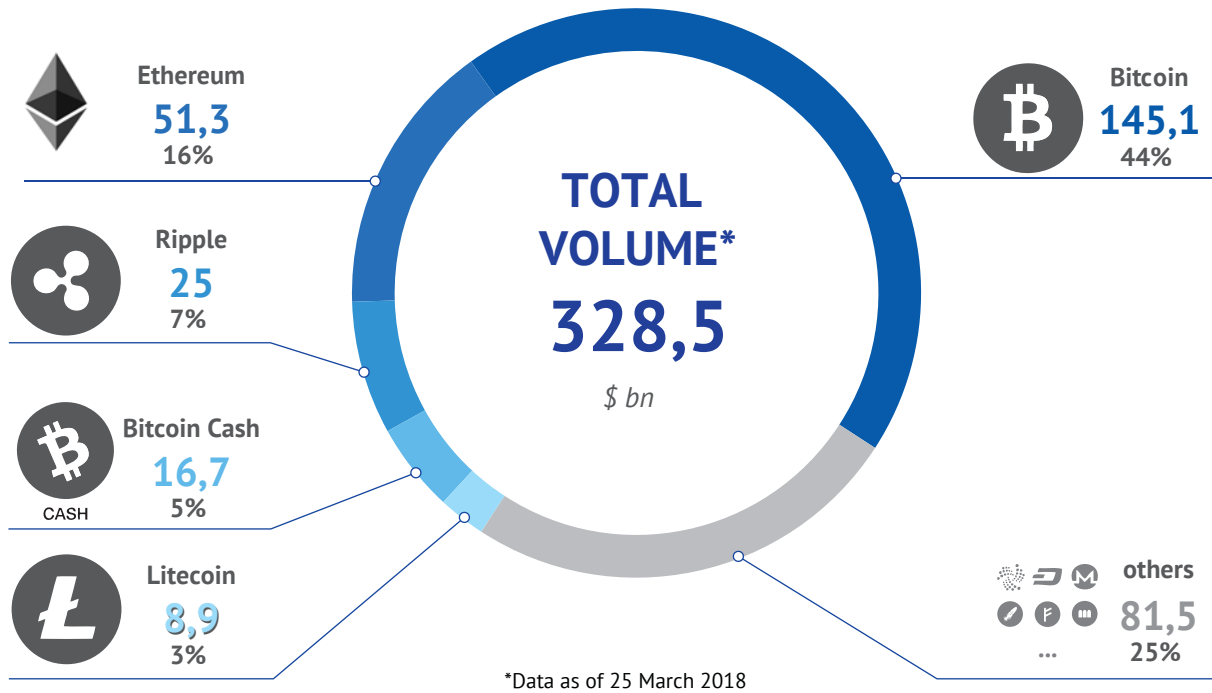
Blockchain technology was first described by a group of researchers in 1991. The technology's main purpose is to store data digitally in a way that makes it impossible to forge any information. It is based on a decentralized chain of equivalent blocks, each of which contains three elements: block data, block hash and previous block hash. A block hash is a unique code assigned to a block for later identification. Should someone change the block data, its hash follows. Data substitution can be identified using the previous block hash that is written in the following block. A code mismatch indicates that data was altered in the previous block. Changing one block renders all the following blocks invalid.

Depending on the purpose for which blockchain technology is being used, blocks can contain a wide variety of data. For example, blockchain can be used to store medical records, create a digital notary, collect taxes – anything where interactions of the large groups of people have to be recorded. Blockchain technology resolves the issue of users' confidence in the system and in transactions involving other unknown system users. For a cryptocurrency, the blocks contain information about financial transactions: the amount and date of a wire transfer and the publicly available portion of the parties' identifiers.

The cryptocurrency market currently includes over 1,500 currencies and, as of March 2018, boasts a market capitalization of almost \$329bn. The largest of them are Bitcoin, Ethereum, Ripple, Bitcoin Cash, and Litecoin. As of March 2018, Bitcoin accounted for 44% of the market with a capitalization of approximately \$145bn. Trade in cryptocurrencies takes place on private crypto exchange platforms, each of which has its own rules for investors. Most exchanges make money from commissions on transactions.

The year 2017 witnessed an increased interest in cryptocurrencies that manifested itself in a surge in search queries on this subject around the world and in media coverage of this issue by reporters and experts. The phenomenal

CRYPTOCURRENCIES MARKET STRUCTURE AND CAPITALIZATION

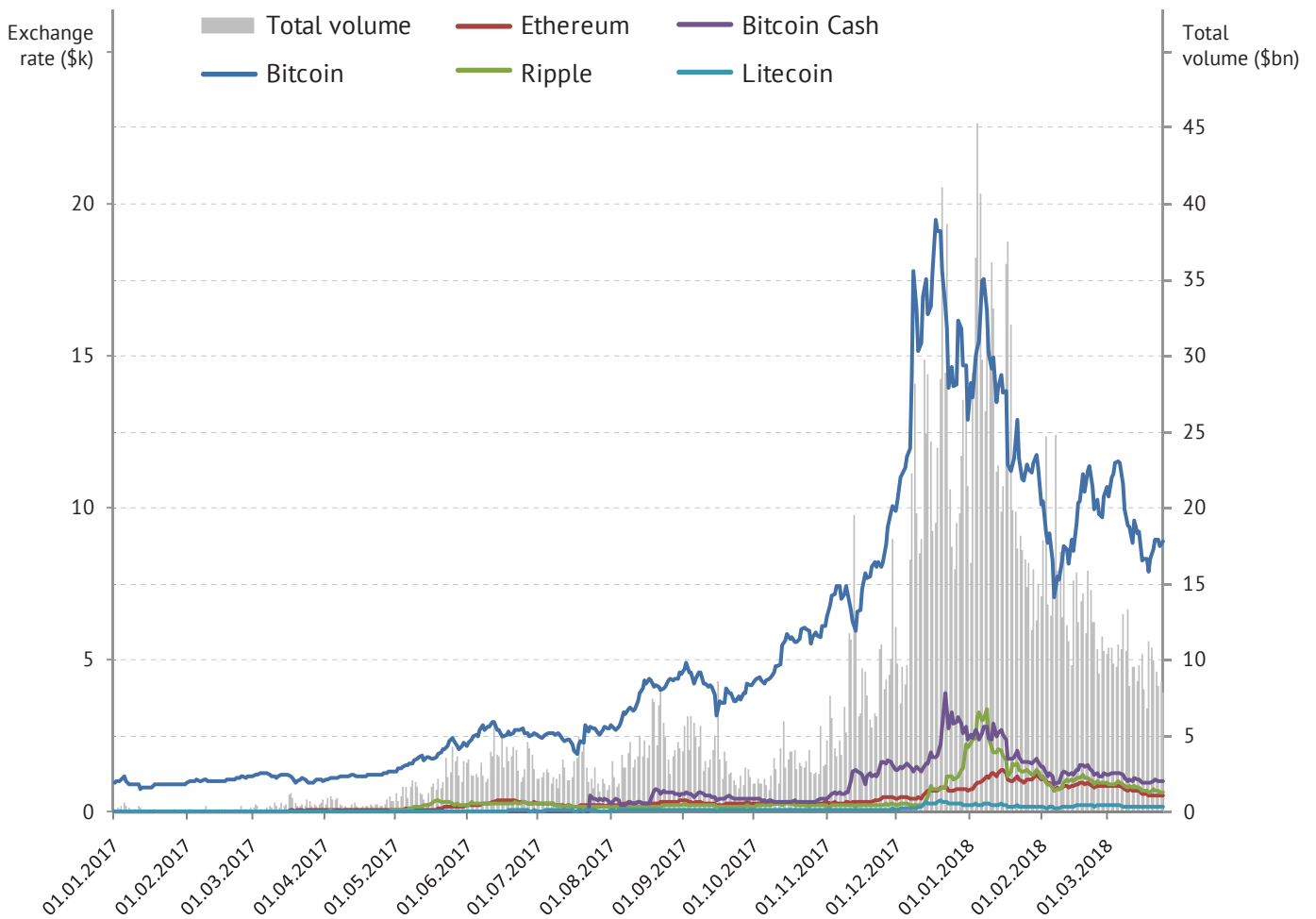


Source: CoinMarketCap (coinmarketcap.com).

rise in prices and capitalization of the oldest cryptocurrency, Bitcoin, for which the return on investment in 2017 accounted for 1,300%, came as the most striking example of the widespread interest in cryptocurrencies. Investing in cryptocurrencies is becoming increasingly popular due to active marketing and easy access to buying and selling cryptocurrencies, as well as removing barriers and restrictions on the number of transactions. For example, Coinal trading platform allows beginning investors from around the world to buy a variety of cryptocurrencies without commissions, security deposits or withdrawal limits.

New cryptocurrency ICOs (initial coin offering) are another important marker of the cryptocurrency market’s maturation. According to EY (Ernst & Young), the United States ranks first in terms of ICOs with projects totaling over \$1bn, followed by China (\$452m) and Russia (\$310m).

THE DYNAMICS OF THE KEY CRYPTOCURRENCIES' EXCHANGE RATES TO USD



Source: CoinMarketCap (coinmarketcap.com).

Notably, having reached its peak in December 2017, the skyrocketing prices for major cryptocurrencies gave way to a precipitous decline in January 2018, with an attempt to rally in February. The trend going forward remains unclear, but the frenzied demand has died out and trading volume is down to November 2017 levels.

Experts do not see eye to eye on the future price dynamics of cryptocurrencies. For example, analysts from Fundstrat Global Advisors said that the market had stabilized, and the period of price decline would

not outlast the previous period of growth. Prices were rising for 62 days while, as of this analysis, the decline has lasted for more than 66 days. Analysts believe a period of price consolidation lasting anywhere from 70 to 230 days will follow.

An alternative opinion is voiced by Nouriel Roubini, a prominent economist who predicted the subprime mortgage crisis. He calls cryptocurrencies 'the greatest bubble since tulip mania'. One of the world's major public investors, Berkshire Hathaway CEO, Warren Buffett, shares this view, predicting that the crypto currency market will 'come to a bad end'.

Trends in blockchain and cryptocurrencies

Technology never stops evolving, and cryptocurrencies are no exception. The recent appearance of stablecoins represents an innovation on this market. They are designed to keep in check the high volatility of existing cryptocurrencies that hold their value poorly and, accordingly, are not ideal for payments and settlements. Stablecoins peg the value of a token to other assets, such as traditional fiat money. Tether, which is pegged to the US dollar, is one type of stablecoins. Pegging certain cryptocurrencies to others is an example of alternative pegging. The emergence of such currencies increases the likelihood of using digital currencies as payment instruments in international trade, for one.

Precedents or, at least, statements of intent to use cryptocurrencies in cross-border settlements were announced in 2017 by Ripple, which issues a virtual currency of the same name. For instance, American Express and Santander plan to use the Ripple protocol for cross-border payments between the United States and Britain, as well as some South Korean and Japanese banks.

In addition to speculative trading in cryptocurrencies, blockchain technology is used in the business-to-business (B2B) segment, such as telecommunications, healthcare, transport, sports, real estate, etc. One

example is the Russian Steem-based social media platform Golos («Голос»), which uses blockchain technology and provides a forum for the Russian-speaking community. Golos users earn rewards for using the platform for reading, discussing and posting, as well as supporting the network in the form of ‘voice’ and ‘voice power’ tokens, one unit of which costs approximately as much as one milligram of gold. As noted in the project’s whitepaper, the ‘purposeful realignment of economic incentives has the potential to produce results for everyone involved that are more fair and inclusive than the social media and cryptocurrency platforms that have preceded it.’² Blockchain technology, which underlies Golos, makes it possible to process thousands of transactions per second. This power is enough to fully support networks that are several times larger than VK, a Russian online social media and social networking service, in terms of the number of users and their activity.

Online movie theatres are another case of using block technology in business. The Russian MoviesChain by TVzavr has been successfully using this technology to combat piracy for six months now: if someone tries to steal a film, his actions are immediately seen by the rest of the network members. In addition, using blockchain in this project shortens the path from the filmmaker to the audience: filmmakers receive viewing statistics without middlemen, such as distributors.

Problems and prospects of developing blockchain technology and cryptocurrencies

Financial regulators in many countries are concerned with the two major problems which will aggravate as the cryptocurrency market continues to grow: legislative regulation of their sales and taxation of transactions; the safety of exchanging private cryptocurrencies for traditional currencies on unregulated exchanges and trading platforms engaged in cryptocurrency trading.

² ‘Steem. An incentivized, blockchain-based, public content platform’, June 2018. Available from: <https://steem.io/steem-whitepaper.pdf>

The Regulation of Cryptocurrency

Following the G20 meeting of finance ministers and central bank governors that took place on March 19–20, Governor of the Central Bank of Argentina Federico Sturzenegger had the following to say:

The issue of crypto-assets was raised during the meeting, and two positions stood out: one in favour of regulation and work on cybersecurity, and the other suggesting that given [...] these calls for regulation and greater cybersecurity, the international payment system must be improved.³

Most countries have not banned cryptocurrencies, instead trying to find a legal framework for them. In particular, the following options for substantiating the essence of cryptocurrencies are under consideration: *a commodity* (as an exchange instrument, for example, in the United States), *a financial instrument*, *currency transactions* (as defined by Russia's Federal Antimonopoly Service), or *a payment instrument*. Artem Tolkachev, Director of legal services for technology projects in Deloitte, points out that,

Defining cryptocurrencies as a means of payment in combination with their functions of storing and accumulating value effectively puts cryptocurrencies and money on the same plane, and recognizing it as a monetary surrogate, which is the next step, is something that nobody wants to see happen.⁴

We know from practice that cryptocurrencies are used both as a commodity to make investments and derive 'speculative' income, while also serving as a means of online payment for goods and services.

Meanwhile, the corollary of the inflow of investment into cryptocurrencies is a potential outflow from jurisdictions with an unfavourable environment for trading in digital currencies. According to the Russian Association of Cryptocurrency and Blockchain, 'in 2018, the Russian economy could lose \$1–1.5bn that will encourage projects with Russian roots to float their ICOs' in other countries.

³ 'Argentine Treasury Minister and the President of the Central Bank highlight constructive dialogue at the G20 finance ministerial', 2018, G20 News, 20 March. Available from: <https://www.g20.org/en/news/argentine-treasury-minister-and-president-central-bank-highlight-constructive-dialogue-g20>

⁴ Pertsova, V, 2017, 'Regulirovanie kriptovalyut: vozglavit li gosudarstvo protsess, kotoryi nel'zia ostanovit' [Cryptocurrency Regulation: Will the State Head the Process that May Not Be Stopped], Forbes, February 8. Available from: <http://www.forbes.ru/biznes/338503-regulirovanie-kriptovalyut-vozglavit-li-gosudarstvo-process-kotoryy-nelzya-ostanovit>

The legal basis for cryptocurrencies is being reviewed in Russia at the highest level. Olga Skorobogatova noted that the Bank of Russia does not plan to prohibit the use of bitcoin and is considering creating a national virtual currency. In 2016, the Central Bank of Russia introduced a 'masterchain' platform created on the basis of Ethereum cryptocurrency, which makes it possible to make online payments, quickly confirm data relevance and create financial services. In 2017, there was some rhetoric coming from the Russian federal government about the high risks posed by cryptocurrencies. Anton Siluanov clarified that 'a decision was made on state regulation of mining, circulating, buying and selling cryptocurrencies.'

A draft law on digital financial assets was published in early 2018 and provides the following definition of a digital financial asset: 'Property in electronic form created using encryption (cryptographic) means. Ownership of this property is certified by making digital entries to the digital transaction register. Digital financial assets include cryptocurrency and tokens.' It emphasizes that digital financial assets do not represent a legal means of payment in Russia. The draft law proposes assigning the functions of an operator for exchanging digital assets to other digital assets or currencies to legal entities registered in accordance with the Federal Law on the Securities Market and the Federal Law on Organized Biddings, thus assigning currency transaction properties to cryptocurrencies. Non-qualified investors can buy tokens only from operators with a limit on the amount of investment as part of one issue. As in the case of the US financial regulator, measures are being taken to protect investors by way of issuers providing an official offer, an investment memorandum and information disclosure.

The proposal to create the institution of operatorship was criticized by experts. In particular, according to Alexei Girin, co-founder and general partner of Starta Ventures, 'investors and representatives of the crypto community will continue to search for jurisdictions with the most convenient terms and conditions, which will lead to another wave of high-tech specialist drain.' A number of countries have already introduced easy terms for such activities for foreigners (Singapore, Cyprus, Estonia, and Belarus).

China is also wary of the idea of using cryptocurrencies for settlement. Cryptocurrency ICOs were banned in September 2017. Nevertheless,

according to Jehan Chu, Managing Partner at Kenetic Capital, 'China will most likely eventually legalize the sale of cryptocurrency tokens, but only on approved platforms and with strict individual verification of each project.'

The International Monetary Fund (IMF) believes that cryptocurrencies do not pose a challenge to global banks and fiat money. Managing Director of the IMF Christine Lagarde said that although the majority of virtual currencies 'are now too volatile, too risky, too energy intensive', in certain remote regions preference may be given to virtual currencies at some point, since it 'may one day be easier and safer than obtaining paper bills', especially 'because virtual currencies could actually become more stable'. The IMF may also act as a global cryptocurrency regulator, although determining such regulation methodology may still be a challenge.

In September 2017, Chief Executive Officer of the Russian Direct Investment Fund Kirill Dmitriev said that BRICS countries discussed the possibility of creating their own cryptocurrency: 'Cryptocurrencies inside BRICS may replace the dollar and other currencies that are involved in settlements between the countries.' Finally, Minister of Communications and Mass Media Nikolay Nikiforov spoke at the State Duma, October 2017, about the need for promptly adopting legislation and legalizing cryptocurrency. He said it was necessary to create a 'cryptorouble' (the same rouble, but most likely using blocking technology and properly encrypted). 'If we do not act on it, other states will. Our Eurasian Economic Union (EAEU) neighbours are on it.'

Minister for Economic and Financial Policy of the Eurasian Economic Commission Timur Zhaksylykov noted that today EAEU countries, both at the state level and through the efforts of business associations and with participation of financial market regulators are working to create national cryptocurrencies. Kazakhstan has already started forming its cryptocurrency based on the Stasis platform. Kazakhstan's leader, Nursultan Nazarbayev went even further in his plans to float cryptocurrencies and suggested establishing a global digital currency 'by way of creating a pool of central banks, for example, at an *ad hoc* UN Committee. [...] Global cryptocurrency would reduce volatility on the financial markets and save the world from skews and conflicts in trade relations.'

Yaroslav Lissovolik, Chief Economist at the Eurasian Development Bank, believes that the use of cryptocurrencies in settlements between the EAEU member states and China is possible, but not in the short term, as it is primarily necessary to work on strengthening national currencies. According to Olga Skorobogatova, Russia's Central Bank continues 'to study this issue', adding:

The matter we believe is worth discussing with our colleagues is the possibility of introducing a supranational cryptocurrency in the EAEU area or within BRICS. There are lots of technicalities and macroeconomic issues to deal with, so [...] we will use the next year to develop approaches to issuing such a supranational cryptocurrency.

The first EAEU cryptocurrency exchange is slated to open in Belarus in 2018. According to the project's initiators, it will provide an opportunity for legal deposit and withdrawal of fiat funds. In addition to standard exchange and trade operations, the exchange will have an option to operate in Belarusian roubles.

The Safety of Cryptocurrency Circulation

Safe use of blockchain technology is a top priority. Blockchain provides high levels of network protection and makes transactions anonymous, which, however, creates risks for cryptos being used for criminal purposes. In addition, just like any other IT system, the technologies underlying cryptocurrencies are subject to various kinds of vulnerabilities.

The moment where cryptocurrencies are exchanged for traditional money is the weakest link in the chain of cryptocurrency circulation. Since this takes place on newly created unregulated exchanges, they often become the target of hackers. The Coincheck exchange in Japan, which was hacked and stripped of 520 million NEM tokens resulting in exchange losses of approximately \$440m is a case in point. The hackers exploited an IT vulnerability and used a virus to steal encrypted keys to clients' wallets, then leaking the keys to the DarkNet.

There are other cryptocurrency market pitfalls as well. For example, in the wake of the rapid increase in the number of new crypto exchanges, it has

become difficult to identify their historical indicators to gauge their reliability. There are also 'dark' exchanges, which can siphon off assets and suspend their business at any moment, as was the case with the Japanese Mt. Gox stock exchange in February 2014. A similar problem may arise with regard to ICO. The US Securities and Exchange Commission has already identified measures to protect investors by prohibiting ICOs from companies that provide scant information about their activities, etc. High volatility represents a risk that many traders use to make a profit. However, it is used by scammers to crash prices of cryptocurrencies with small capitalization, leaving investors with nothing. According to EY, over 10% of funds raised in ICOs are stolen by hackers (mostly relying on phishing, i.e. fraudulent attempts to obtain sensitive information such as usernames, passwords, and credit card details).

The use of cryptos to launder money and finance terrorism represents the most important security problem for the governments of many countries. The Japanese government, as well as finance ministers and heads of central banks of France and Germany propose introducing international regulation of cryptocurrencies to prevent money laundering through virtual currencies. The IMF also believes that the digital currency market should be regulated.

Cybersecurity and the need to prevent capital drain charge legislators with the important task of formulating and consolidating regulations that address the cryptocurrency phenomenon. Cryptocurrencies are international by nature, which leaves us with two options: either every country will stick to its own regulations, or these regulations will be harmonized in a natural way.

Conclusion

Cryptocurrencies are not only a speculative instrument, but a promising means of payment and settlement as well. As an alternative to clearing transactions, they can be used to mediate commodity and money flows both within one jurisdiction and internationally. The uses of cryptocurrency are expanding due to improvements in blockchain technology which underlies most current cryptocurrencies. In addition, blockchain is rapidly becoming a part of other economic sectors, cutting transaction costs and addressing security issues.

The room for innovation in the sphere of blockchain and cryptocurrency is vast, but there are limitations. First, significant energy resources are required for issuing cryptocurrencies (the power consumption for Bitcoin mining increased by 43% from October to November 2017, from 10 to 25 terawatts per hour). Second, it requires reliable information security systems to combat fraud. Finally, it is necessary to work out a flexible cryptocurrency regulatory system for the sake of countries' national security and the increased tax revenue flow.

Resolving the above mentioned technical difficulties associated with how cryptocurrencies function is only a matter of time, whereas obtaining a significant market share and assuming leading positions on the cryptocurrency market is at the top of today's agenda. In this regard, there is a need to develop not only measures to protect investors and financial systems, but also to create a supportive environment for legal trading in cryptocurrencies and to work on other blockchain technology-based projects.

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valdai@valdaiclub.com



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