

# Mining is a Legal Category

Zatsepin A.M.<sup>1,2,\*</sup> Filippova O.V.<sup>1</sup> Permyakov M.V.<sup>2,3</sup>

<sup>1</sup>*Ural Institute (branch) of All-Russian State University of Justice (RLA of the Ministry of Justice of the Russian), Ekaterinburg, Russia*

<sup>2</sup>*Ural State Law University, Ekaterinburg, Russia*

<sup>3</sup>*Ural State University of Economics, Ekaterinburg, Russia*

\**Corresponding author. Email: tp0507@ya.ru*

## ABSTRACT

Mining is a new complex economic and legal technology and at the same time a new type of human activity in the economic sphere, which is not a business activity. In this regard, it seems that mining should not be subject to taxation, does not involve specialized state legal regulation (licensing, control, etc.), can not be considered in the absence of registration as an illegal business and does not entail other negative consequences from the implementation of such actions. For the first time in the scientific literature, the definition of “mining” is considered, taking into account its two main components: information and legal. In contrast to the definition of “mining”, formulated in the draft Federal law “on digital financial assets”, the mention of electricity consumption was excluded, because in reality there are other types of mining, which are problematic to detect on a consistently high level of energy consumption per system.

**Keywords:** *mining, digital financial assets, economy and management of national economy, cryptocurrency, blockchain, bitcoin, currency, detection*

## 1. INTRODUCTION

Generic cryptocurrency mining evolved in 2009-2010 with the introduction of bitcoin. Later there were new cryptocurrencies and more powerful processors, graphics cards, which became faster thanks to the video game industry, and specialized mining systems. Anyone can mine these days. The industry surged in such a way that one person, with rare exceptions, can no longer provide excess profits the first miners had. So, we can say that the era of “garage” mining is coming to an end.

Entering the market now, you will have to compete with industrial miners who are constantly retrofitting and using the cheapest electricity rates. The instability of currencies makes this activity highly risky, the probability of default is high due to the low possibility of payments. Nevertheless, we know for a fact that with a stable exchange rate or growth thereof, there is a possibility of a smooth return on your investment, which happened in 2016 and 2017. This quickly becomes apparent in the market and attracts major players, thus lowering production profitability.

There are quite a few cryptocurrencies today. Let’s note only a few of them that have been long known to the general public on the Internet (see table 1).

### *1.1. Mining is a multidimensional concept*

It should be noted that since there are many types of mining nowadays and mining can be viewed in the context of many systems (information, social, economic, etc.), the concept itself can be rightfully considered multidimensional, and it can be defined in terms of information technology and in terms of economics.

The paper will consider mining as it was meant for a decentralized bitcoin system [2].

For individuals, members of the information system [4, p. 1319], the mining process is described as a process in which “peer-to-peer network members build a collective consensus on transaction validity, adding it to the public history of previously agreed transactions, the process includes a recalculation of cryptographic hash function, so the assembly of transactions together with other pending transactions takes a special form.” The concept of mining can be singled out for a computer system [5, p. 131, 132], which implies a chain of procedures: tracking transactions on the network and verifying digital signatures validity, maintaining a chain of blocks and tracking new blocks, creating a block for a candidate to add, searching for the crypto key that makes your block valid (direct mining), announcing the block to other members and receiving rewards in the form of cryptocurrency if your block is accepted.

**Table 1 Some popular cryptocurrency**

<b>Cryptocurrency Name</b>	<b>Description</b>
Ether (ETH)	The second (after bitcoin) most popular and capitalized cryptocurrency in the world. In the three years since its creation, the ether managed to go up in price above USD 600. Ether contributes a lot to the development of cryptocurrency infrastructure, and many popular tokens are created on its basis.
Litecoin (LTC)	This is the first altcoin, called digital silver. The advantage of litecoin is that direct cross-chain transfer system has been recently developed and it has become directly convertible with bitcoin. In theory, if the technology is implemented, litecoin can be exchanged for any coins, bypassing exchanges and exchange offices charging wild transfer fees.
Monero (XMR)	The cryptocurrency with the highest level of privacy and security thanks to the ring signatures technology. Monero is supported in system investment projects. In particular, it can be used to pay for purchases in AppStore and AlphaBay, the top online market. The currency's further growth will depend on its continued global expansion into other services. The coin price is volatile, but it is much weaker than that of competitors
DASH	One of the top ten cryptocurrencies. The highest spike in the dash rate was in early 2017, when its creators updated the software. The main advantage of the technology lies in a two-level encryption system, which increases transaction rate and makes them more secure at the same time. Fairly recently, TenX issued dash debit cards, which will greatly simplify the cryptocurrency payments and its integration into the real economy.

Given that cryptocurrency architecture is still being improved, its components and subjects, as well as the algorithms that shape and implement them, may change. Mining algorithms may change (calculation programs directly, as well as actions bringing rewards), cryptocurrency reward principles for network actions (for example, creating and maintaining blockchain storages in nodes and wallets or wallets only) change. This creates a wide range of cryptocurrencies and, against the backdrop of significant competition, gives rise to many scenarios for their further development. Creation of a universal cryptocurrency under severe competition in an isolated ecosystem builds real “killers” of fiat currencies. This is the primary threat posed by cryptocurrency to public finance. It is believed that as soon as payment systems become as simple as VISA and MasterCard cards, cryptocurrencies can quickly take the lead in the modern financial world.

In legislators' opinion, obtaining rewards for using equipment for the operation of a decentralized network, should be legally arranged. Let's consider the concept in more detail.

### ***1.2. Types of mining and its legal understanding***

The draft federal law “On Digital Financial Assets” describes mining as a “business focusing on creation of cryptocurrency and/or validation in order to receive

remuneration in the form of cryptocurrency. Mining is recognized as business if the person engaged in it exceeds the energy consumption limits established by the Government of the Russian Federation for three consecutive months”, including the energy consumption limits regulation. This definition should be analyzed to clarify its legal meaning.

First, legislators clearly define what state of the mining will be monitored, and this is solely cryptocurrency mining using Proof-of-Work algorithms. Indeed, this algorithm includes a fairly wide range of cryptocurrencies, and it is potentially clear that cryptocurrencies of this type have the highest dollar-denominated capitalization on the global market, mainly due to bitcoins. Part of the government's desire to track such mining is understandable because of its significant energy consumption, as in the next 5-10 years (unless the algorithms change as a result of the consensus of the community of miners) global energy consumption for PoW mining may reach significant percentage of global electricity consumption. Growth in energy consumption is another problem of the Russian government, but nevertheless one needs to ask the question: is the diversity of cryptocurrencies limited by this type of mining? Absolutely not, as other types of Proof mining, where people can get compensation for the operation of their equipment, were mentioned above. In particular, there is a Proof-of-Capacity mining on hard drives (Storj, Sia, MaidSafe, Burst - cryptocurrencies), where the power consumption is tens or hundreds of times less than the mining on graphics cards and processors,

simply because hard drives use less power. Mining on wallets based on Proof-of-Stake scheme and its modifications, where consumption is even lower (Qtum, Lisk, Lightning BTC, etc.). The paradox is in the difference from power-consuming bitcoin mining, which requires hundreds of computers. And it's not clear how the government is going to control such type of mining. Both the improvement of cryptocurrencies algorithms and reward principles, and the shift of the community to less energy-intensive cryptocurrencies will become apparent over time. In this sense, the proposed bill already contains loopholes for mining otherwise than based on the PoW scheme. Although we do not offer schemes for tracking other types of mining, the concept of mining should be discussed in more detail.

Secondly, the bill currently does not regulate "the cloud mining" concept. It should be noted that cloud mining in general is the lease of equipment in special data centers for the mining of cryptocurrencies. Therefore, an ordinary miner does not need to keep the equipment at home and upgrade it. At the same time, the server and cloud mining company may be located in another country.

Third, the "compensation-based mining" concept, where an individual would lease out his or her equipment to another mining company, as a compensation for the use of its software products that are not directly related to mining. This organizational scheme allows software developers to generate revenue from the use of their software products by the end user almost instantly. However, such schemes can lead to a situation with software products dropping off the radar, while remaining a profitable business. The paradox is that a software user from Russia will spend energy using the software product, as well as mining will take place, but the ultimate beneficiary will not be the user, but a commercial company, perhaps in another jurisdiction. Therefore, this scheme further complicates identification of miners by the government, since an individual does not benefit from the cryptocurrency. Such schemes also allow attackers to integrate mining software into website codes. When opening a page content (watching video, listening to music, reading news, etc.), a miner's software (which starts to exploit the user's computer for cryptocurrency mining) is activated, while the user does not notice that his or her computer is used for mining (in particular, Coinhive and Cryptoloot software [15-17]). On some websites, the user is invited to take part in the mining, which eliminates the need to install special software.

Mining can be compared to electronic notarial services, which differ from regular notarial services by such process automation that the system operator (or the miner in our case) cannot intentionally/unintentionally make changes thereto, thus violating individual blocks and integrity (registers of the blockchain system).

According to article 2 of the draft federal law "On Digital Financial Assets", "mining is a business focusing on creation of cryptocurrency and/or validation in order to receive remuneration in the form of cryptocurrency."

The government wants to tax mining and make such business regulated, accountable and subject to state

regulation (and even licensing!). But is mining really a business?

According to M.V. Demianets et al., "activities related to handover of goods, provision of services and performance of works originate from trade operations, which, in turn, led to the emergence of diverse and complex relations within the state between different actors in connection with trade. Business rules have been developed for conducting business operations, some of which have transformed into laws. Later on, such activities were regulated not only by domestic laws of each country, but also by foreign laws, jointly developed by various countries" [18, p. 212].

In addition, at present, "most relations connected with communications between individuals and legal entities for the purposes of transactions, proposals for sale or purchase of goods or sale of services, business relations are based on the use of the Internet and mobile communication services. Therefore, various technological solutions are becoming not only a means of global search for partners, but also a platform for doing business, and technology also is a tool of conflict and dispute resolution. For example, technological solutions allow to pay for goods, services and work using electronic devices, create new types of payments (cryptocurrency (bitcoin), electronic money), new types of relations (electronic payments, online media, cyber-fraud, "marriage" and divorce of avatars [19, p. 28], new legal entities (information intermediary, internet service provider, hosting provider, registrar) and many other things.

At the same time, the actors' activities on the Internet are related not only to business-related, but also to economic activities. In this regard, one needs to consider the problems of trade activities of individuals, doing business over the Internet, as well as to consider the term defining these relationships.

Clause 1 of article 34 of the Constitution of the Russian Federation provides for the freedom of each person to freely use his or her abilities and assets for business and other non-prohibited economic activities. Business is a complex category "which can be considered in various aspects: organizational, economic, legal, etc." [18, p. 220]; in this regard, business law regulates heterogeneous relations in the field of economics: horizontal and vertical, as well as intra-company" [20, p. 110]. Derivative legal concepts are also used: business of an individual without creating a legal entity, insolvency (bankruptcy) of a sole proprietor, illegal business, business risks, etc. Civil laws of the Russian Federation define business as an independent activity, carried out at own risk, aimed at the systematic generation of profits from the use of assets, sale of goods, performance of work or provision of services by persons registered in this capacity in accordance with the established procedure (clause 1, article 2 of the Civil Code of the Russian Federation), naming relevant individual actors as sole proprietors (article 23 of the Civil Code of the Russian Federation) and commercial organizations (clause 1, article 50 of the Civil Code of the Russian Federation). At the same time, other terms such as "activities of commercial organizations", "economic

activities” are used in civil laws, although these concepts are not disclosed. The Supreme Arbitration Court of the Russian Federation clarifies the concept of an ordinary business as a transaction “including acquisition of inputs required for production and economic activity, sale of finished products, obtaining loans to finance current operations.” As can be seen from the explanation, the profit criteria are not taken into account, i.e. both commercial and non-commercial organizations can engage in economic activities.

They also distinguish between trade, commercial and other types of activities, which, along with business activities, belong to different types of economic activities.

Some authors point to the existence of such a thing as “e-business”, which “is associated with various complex and multifaceted economic relations, but the technologies used to organize these relations largely determine the specifics of their regulation. Therefore, the use of the tor protocol ensures anonymity in the network, peer-to-peer networks make it difficult to find and identify participants, offenders, authentication technologies, etc.” [18, p. 231].

In view of the above, the criteria and reasons for the Russian legislator's future treating mining as a business are completely unclear.

Let's consider in more detail the definition of business specified in part 1, article 50 of the Civil Code of the Russian Federation for the mining of cryptocurrencies.

The first feature of treating an activity as a business (based on the requirements of the Civil Code of the Russian Federation) is the activity's independence. One may argue that independence is inherent in such activities as mining of cryptocurrencies, performed in some kind of electronic data system (blockchain technology).

The second feature is that activities are taken at own risk. Since in the case of mining with specific actions and costs (time and electricity) achievement of the miner's result is guaranteed, it is rather a cost that risk. Consequently, according to the above feature, mining can not be considered a business based on the structure of business activities set out in the Civil Code of the Russian Federation.

The next feature: activity should be aimed at generation of regular profit from the use of assets, sale of goods, performance of work or provision of services. Obviously, there is no regular profit in the mining of cryptocurrency: cryptocurrency (and not the paper money) is bought. In addition, cryptocurrency is not acquired as a result of using assets, selling goods, performing work or providing services. Based on this, we can consider the business activities of the Central Bank of Russia as a client, and Goznak (National Mint) as the contractor of the Bank of Russia in banknote printing.

Finally, there is another formal feature: business is carried out by persons registered in this capacity in accordance with the established procedure (clause 1, article 2 of the Civil Code of the Russian Federation). It applies to sole proprietors (article 50 of the Civil Code of the Russian Federation) and commercial organizations (clause 1 of Article 50 of the Civil Code of the Russian Federation). Currently, the mining of cryptocurrencies is mostly carried

out by (unregistered) individuals, and involvement in such activities can be considered as an illegal business in the sense of criminal law if specific conditions are met.

What is mining? The answer depends on the cryptocurrency. Therefore, if we view the cryptocurrency as the future global currency, its main product is the economic activity related to currency issuing. If the cryptocurrency is a property, then the activities performed (using the Internet) to create such property are of creative, information and technological nature. We can say that mining is not only an economic and legal activity, but also a technological activity (the technology itself), which allows to keep accounts and make payments (there is some remote similarity with notarial actions, although it is only a superficial resemblance in terms of existing Russian notary laws).

Therefore, mining is a kind of human activity in the Internet environment, which results in the acquisition and possession of cryptocurrencies by such person.

I believe that treating mining as a business, regardless of the approach to defining the essence of the cryptocurrency, is completely wrong and does not correspond to either the meaning of this concept or the applicable laws of the Russian Federation. From these positions, mining is another economic activity (other than business). At present, taxation of mining (an activity that does not create the added value) is most likely impossible and does not comply with fundamental law. As part of the monitoring and control of miners, the Ministry of Communications plans to create a special system for detecting miners (those who “mine” cryptocurrency). In particular, not only regulation and taxation is noted, but also the issuance of specialized quotas and electricity rates, the “Vedomosti” newspaper reports. However, it is assumed that aspiring miners will receive 2-year tax break with mandatory accounting. They will be required to pay the income tax, but will not pay the VAT. The Ministry of Communications failed to define the tax collection parameters. The versatility of cryptocurrency and its use in many businesses can make mining an extremely profitable occupation for some and lead to considerable losses for the country's budget. With that in mind, some ministries are wary of opening up cryptocurrency exchange opportunities in the country, while others push for it (“The Ministry of Finance of Russia is considering the possibility of allowing cryptocurrency trading in Russia in certain territories”). Evidently, the lack of agreement between different departments does not contribute to the decision for cryptocurrency transactions in Russia: there should be a unified and clear mining taxation system or a ban on such activity. Therefore, on the one hand, the introduction of “crypto-offshore companies” de facto recognizes the cryptocurrency market, but de jure limits it to certain territories, which is impossible with free Internet.

## **2. CONCLUSION**

The rapid entry of mining into human life requires a more detailed study of this phenomenon. The article provides

various definitions depending on the analyzed plan of this comprehensive concept. Mining is a new complex economic and legal technology while also a new type of human activity in economics, not a business operation. This is a type of economic human activity that cannot be equated with business, although the legislator is currently trying to approve this particular approach. Accordingly, I believe that this kind of attitude towards mining makes it impossible to tax it as a regular business operation, does not imply standard state legal regulation of special businesses (in terms of licensing, control, etc.), mining cannot be deemed to be illegal unless it is not a registered business and does not entail other adverse consequences of such actions.

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