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## The Current Legal Regulation of Cryptocurrencies and Blockchain in the World. Sistematisation of Definitions

### 1. Introduction

Blockchain, cryptocurrencies, crypto actives are in trend today. Regardless of whether states recognize or do not recognize these phenomena as legal tender or equivalent liabilities, blockchain and cryptocurrencies have already taken their place in private law.

Different states confess different positions on blockchain and cryptocurrency regulation. This study by the method of comparative jurisprudence is aimed at studying the prospects of a common understanding of the status of virtual assets, blockchain systems and a unified definition of the subjects of these legal relations.

### 2. International position

At the same time, state regulation consists, in each country to a different degree, of the settlement of already existing social relations, with coordination of the international legal institutions of legal regulation, such as:

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- protection of personal data (General Data Protection Regulation (2006) for EU countries)<sup>2</sup>,
- identification and verification of economic entities (FATF recommendations (2012)<sup>3</sup> “Blockchain in Trade Facilitation.” (2018)<sup>4</sup>),
- prevention of money laundering (FATF recommendations (2012), norms and 4th Directive (EU) 2015/849 “On the prevention of the use of the financial system for money laundering and terrorist financing” and Regulation (EU) 2015/847 “On information accompanying remittances”)<sup>5</sup>,
- Prevention of tax evasion (Multilateral Convention on the Implementation of Measures Relating to Tax Agreements (2016)<sup>6</sup>).

### 3. How do different legal systems define a blockchain system

According to German law, cryptocurrencies are financial instruments that are not electronic money, the Law of Germany “Banking Act” (it. Kreditwesengesetz , KWG (1961)<sup>7</sup>) defines cryptocurrency business (Ger. Kryptoverwahrgeschäft ) as storage, accumulation and transfer

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<sup>2</sup> Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) (27.04.16). Retrieved from: <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A32016R0679>.

<sup>3</sup> FATF recommendations. FATF (2012). Retrieved from <http://www.fatf-gafi.org/publications/fatfrecommendations/documents/fatf-recommendations.html>.

<sup>4</sup> White Paper. Blockchain in Trade Facilitation. The United Nations Economic Commission for Europe (UNECE). (Version 2). Retrieved from: <http://www.unece.org/fileadmin/DAM/cefact/GuidanceMaterials/WhitePaperBlockchain.pdf>.

<sup>5</sup> Regulation (EU) 2015/847 of the European Parliament and of the Council of 20 May 2015 on information accompanying transfers of funds and repealing Regulation (EC) No 1781/2006. Retrieved from: <https://eur-lex.europa.eu/legal-content/EN/TX-T/?uri=CELEX%3A32015R0847&qid=1614589415150>.

<sup>6</sup> Multilateral Convention to Implement Tax Treaty Related Measures to Prevent BEPS (n.d.). oecd.org. Retrieved from: <https://www.oecd.org/tax/beps/multilateral-convention-to-implement-tax-treaty-related-measures-to-prevent-beps.htm>.

<sup>7</sup> Gesetz über das Kreditwesen (Kreditwesengesetz – KWG). Ausfertigungsdatum (1961). Retrieved from: <https://www.gesetze-im-internet.de/kredwg/BJNR008810961.html>.

crypto actives (Ger. Kryptowerte), generally treated this to financial services which are not believed to be cryptocurrencies – electronic money but noting that the equivalent of their value is the result of an agreement or sustainable practice.

French legislation<sup>8</sup> in accordance with Directive 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market (PSD2) and Directive (EU) 2009/110 / EC of 16.09.2009 on the initiation, implementation and supervision of prudential supervision on the activities of institutions working with electronic money “, introduces an interpretation of the types of digital assets and transactions with them (Vauplane H., Charpiat V. (2020)). The following stand out: 1) tokens, ie intangible digital assets that include rights that can be issued, registered, stored and transferred electronically, if they do not qualify as financial instruments; 2) any digital representation of value, which is not issued and guaranteed by the central bank or government agency, is not necessarily pegged to a legally established currency and does not have the legal status of currency or money, but is accepted by individuals or legal entities as a mean of exchange that can be transmitted, stored and sold electronically. With regard to services, they recognize : 1) storage of digital assets or cryptographic private keys; 2) purchase or sale of digital assets for fiat currency (currency which is a legal tender) ; 3) purchase or sale of digital assets at the expense of other digital assets (actually exchange of digital assets) ; 4) other services that are related to digital assets, including the receipt and transmission (initiate transactions) on behalf of third parties, portfolio management, digital assets, advising on investments, underwriting and placement of digital assets from certain obligations or without defining them. Thus defining transactions with digital assets as transactions with financial instruments.

The legislation of the Netherlands, apologies an identical position (De Nederlandsche Bank. Roundtable Cryptocurrencies (2018)<sup>9</sup>), determines

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<sup>8</sup> Vauplane, H., & Charpiat, V. (2020). The Virtual Currency Regulation Review. France. (Issue 3). Retrieved from: <https://thelawreviews.co.uk/edition/the-virtual-currency-regulation-review-edition-3/1230177/france>.

<sup>9</sup> De Nederlandsche Bank. Roundtable Cryptocurrencies/ICO's (2018). loc.gov. Retrieved from://TR17025%20Position%20paper%20Cryptocurrencies\_tcm47-371493.pdf.

that cryptocurrencies do not perform the function of money and are not a reliable means of saving.

At that time, according to the Austrian Ministry of Finance (Bundesministerium der Finanzen, BMF), cryptocurrencies are intangible assets (Steuerliche Behandlung von Kryptowährungen (virtuelle Währungen)<sup>10</sup>).

The legislation of the Kingdom of Spain excludes transactions with cryptocurrencies outside the field of legal regulation (Law On Electronic Money (2011)) noting that supervision, licensing or regulation is not carried out by the state.

The most detailed is the legislation of the United Kingdom, which defines three types of cryptocurrencies, in particular, defines three categories of cryptocurrencies: 1) exchange tokens that are not issued and not maintained by the central bank and are intended for use as an instrument of exchange; 2) Securitized tokens that have the characteristics of securities, such as shares, units, etc.; 3) service (auxiliary) tokens, which provide their holders with access to certain opportunities (services, etc.), but do not provide rights similar to those received by the owners of securitized tokens (Financial Conduct Authority)<sup>11</sup>.

From 10 January 2020, all companies operating in the UK with cryptocurrencies must register with the Financial Conduct Authority, the registration authority, before carrying out any activity with cryptocurrencies (Cryptoassets: AML/CTF regime)<sup>12</sup>.

Legal regulation in the United States is carried out separately by each state, and the Federal authorities do not recognize virtual currencies as legal tender (Commodity Futures Trading Comm'n, 'CFTC Issues Final Interpretive Guidance on Actual Delivery for Digital Assets', CFTC Release No. 8139-20 (Mar. 24, 2020)<sup>13</sup>).

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<sup>10</sup> Steuerliche Behandlung von Kryptowährungen (virtuelle Währungen) [Tax Treatment of Cryptocurrencies (Virtual Currencies)], BMF. Retrieved from: <http://perma.cc/BU4Z-3BFY>.

<sup>11</sup> Financial Conduct Authority. Guidance on Cryptoassets. Feedback and Final Guidance to CP 19/3. Retrieved from: <https://www.fca.org.uk/publication/policy/ps19-22.pdf>.

<sup>12</sup> Cryptoassets: AML/CTF regime: Register with the FCA. (n.d.). fca.org.uk. Retrieved from: <https://www.fca.org.uk/cryptoassets-aml-ctf-regime/register>.

<sup>13</sup> Commodity Futures Trading Comm'n. 'CFTC Issues Final Interpretive Guidance on Actual Delivery for Digital Assets', CFTC Release No. 8139-20 (Mar. 24, 2020). cftc.gov. Retrieved from: <https://www.cftc.gov/PressRoom/PressReleases/8139-20>.

The most progressive regulation is regulation in Japan.

Japan has recognized the cryptocurrency – Bitcoin as a legal tender (Guide: Japan Crypto Asset Regulation)<sup>14</sup>. At the same time, Japan's Payment Services Act (Payment Services Act. (2009)<sup>15</sup>) regulates the rules of cryptocurrency circulation, sets requirements for cryptocurrencies and custodians of virtual assets, etc., as well as the Law on Financial Instruments and Exchange (FIEA), which regulates the circulation of cryptocurrencies (tokens), which are similar in properties to securities.

Virtual assets (currencies) are actually identified with electronic money in Singapore (Payment Services Act (2019) where maintenance operations token ("Digital payment token service") attributed to payment services.

Although in practice companies operating under the legal regulation of Singapore<sup>16</sup> have questions about cooperation with EU companies, as activities under Singapore law do not fully meet the requirements of Directive 2015/2366 of the European Parliament and of the Council of 25 November 2015 "On payment services in the internal market » (PSD2), but this requires a separate article and detailed argumentation.

One of the progressive legal regulation is the rules of the Republic of Belarus. According to the Decree of number 8, the President of the Republic of Belarus "On the development of the digital economy" legalized circulation cryptocurrency on the territory of the country, and cryptocurrency defined as bitcoin or other digital sign (token) used in international traffic as a universal medium of exchange (Decree of the President of the Republic of Belarus No. 8 "About the development of the digital economy" (2017)<sup>17</sup>).

Thus, the development of legal regulation occurs in two ways:

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<sup>14</sup> Guide: Japan Crypto Asset Regulation (n.d.). sygna.io. Retrieved from: <https://www.sygna.io/blog/japan-crypto-asset-regulation-guide/>.

<sup>15</sup> Payment Services Act. Law number: Act No. 59 of June 24, 2009 (2009). Retrieved from: <http://www.japaneselawtranslation.go.jp/law/detail/?id=3078&vm=02&re=02>.

<sup>16</sup> Payment Services Act 2019. February 22. (2019). Retrieved from: <https://sso.agc.gov.sg/Acts-Supp/2-2019/Published/20190220?DocDate=20190220>.

<sup>17</sup> Decree of the President of the Republic of Belarus No. 8 "On the Development of the Digital Economy". Retrieved from: [http://president.gov.by/ru/official\\_documents\\_ru/view/dekret-8-ot-21-dekabrja-2017-g-17716/](http://president.gov.by/ru/official_documents_ru/view/dekret-8-ot-21-dekabrja-2017-g-17716/).

- recognition of cryptocurrencies as special assets (including cryptocurrencies) with a wide range of regulation (China, Japan, Great Britain),
- recognition of cryptocurrencies only as intangible assets (Austria, France).

While continuing analysis and development of national legal doctrines on blockchain and cryptocurrency, you can use a neutral definition of this phenomenon, which is used in the final communiqué of the summit G 20, held 19–20 March 2018 – Crypto-assets, it is due to lack of money many signs of crypto currency and virtually uniform properties in all kinds of tokens for their study, as a part of blockchain technology, only a valid name (Communiqué Finance Ministers & Central Bank Governors (2018)<sup>18</sup>).

At the same time, the general analysis of the draft European Directive on Markets in Crypto-assets, and amending Directive (EU) 2019/1937<sup>19</sup> indicates a consistent understanding of virtual assets, just as a derivative financial instrument, with properties and requirements similar to securities.

#### **4. Properties of blockchain registers that are subject to legal definition**

In the analysis and development of legal mechanisms and legal support of the blockchain in different legal systems, too much attention is paid to determining the status and legal titles of cryptocurrencies, but the legal nature of the blockchain is bypassed.

Instead, not only the cryptocurrency settlement function or smart contracts need to be studied and forecasted, but also other features and capabilities of blockchain technology for the development of progress and economic phenomena.

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<sup>18</sup> Communiqué Finance Ministers & Central Bank Governors 19–20 March 2018, Buenos Aires, Argentina. Retrieved from: [https://back-g20.argentina.gob.ar/sites/default/files/media/communique\\_g20.pdf](https://back-g20.argentina.gob.ar/sites/default/files/media/communique_g20.pdf).

<sup>19</sup> Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Markets in Crypto-assets, and amending Directive (EU), 2019/1937 (p. 17). Retrieved from: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020PC0593>.

The United Nations Economic Commission for Europe (UNECE) discussed and prepared a report on the need to introduce a blockchain in the financing of trade and services, entitled: “White Paper. Blockchain in Trade Facilitation” (White Paper. Blockchain in Trade Facilitation)<sup>20</sup>. According to it, promising areas of application of the blockchain are identified:

- Security and protection of information,
- Maritime trade,
- Road transport,
- Agricultural farming, fishing, food,
- Energy,
- Finance and calculations,
- Public administration,
- Tourism,
- Medicine and health care,
- Music and art.

Given the development of technology, to this list should be added architecture and urban planning, communications, engineering, because the development and implementation of distributed registers began in these areas.

All these areas have their own regimes of legal regulation, the range of subjects of legal relations, basic and derivative legal relations and relations between subjects (creditor, mortgagor, carrier, insured, patient, supplier, surveyor, agent, acquirer, provider, supplier of last resort, issuer, author, distributor, producer, performer, etc.) Each industry has historically established regulatory regimes and not always a dispositive method of regulation is acceptable and consistent with the established legal framework.

Therefore, when using blockchain in these industries, it is important to maintain the established regimes of legal regulation, avoiding changes in the sustainable balance of the system of checks and balances, in favor of the rights of new entities that have emerged in the blockchain.

Equality of subjects in the conduct of the blockchain, can lead to an imbalance of the legal system and serve for Sibyl (breaking ties in the

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<sup>20</sup> White Paper. Blockchain in Trade Facilitation. The United Nations Economic Commission for Europe (UNECE). (Version 2). Retrieved from: <http://www.unece.org/fileadmin/DAM/cefact/GuidanceMaterials/WhitePaperBlockchain.pdf>.

blockchain) because it will violate the guarantees of vulnerable entities that need additional legal guarantees (energy consumers, patients, individuals with special needs, etc.).

## 5. Subjects arose and naturally exist when using blockchain technologies

Given that the financial sector is the main engine of blockchain development, it is proposed to analyze the entities involved in the financial mechanisms of cryptocurrencies. Based on this, the question arises of the definition and scientific justification of various actors and their role.

By researching various sources and reports on the use of the blockchain, it is possible to identify the following subjects.

A Miner, a person who issues a “block” actually records information, an object (virtual asset), a person who carries out activities to support a distributed platform and create new blocks with the ability to receive remuneration in the form of issued currency and commissions in various cryptocurrencies (Samokhodsky I., Shelest O. (2018)<sup>21</sup>).

A Validator, a person who confirms the action with a virtual asset (transfer, change of status, change the contents of the registry entry, etc.) and who is responsible for verifying transactions on the blockchain. After checking the transaction, they are added to the distributed registry (Jay Kurahashi-Sofue)<sup>22</sup>. The role of the Validator may coincide with the role of Miner, but the composition of responsibilities and functions of these entities are different (Damiano Dal Maso)<sup>23</sup>.

A Holder, a person who may be recognized as the owner, user, virtual asset holder, the person which in its rights and obligations is associated with the virtual asset. The scope of rights and competence of which

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<sup>21</sup> Samokhodsky, I., & Shelest, O. (2018). Green Paper on cryptocurrency market regulation. Retrieved from: <https://regulation.gov.ua/book/91-zelena-kniga-reguluvanna-rinku-kriptovalut>, p. 67.

<sup>22</sup> Kurahashi-Sofue, Jay. (n.d.). What is a blockchain validator? support.avalabs.org. Retrieved from: <https://support.avalabs.org/en/articles/4064704-what-is-a-blockchain-validator>.

<sup>23</sup> Damiano, Dal Maso. How Blockchain works: Validation protocols (n.d.). theidfactory.com. Retrieved from: <https://www.theidfactory.com/blog/how-a-blockchain-works-validation-protocols>.



can be interpreted as identical to the holders of electronic money: “Despite their similarities, electronic money and crypto-assets referencing a single fiat currency differ in some important aspects. Holders of electronic money as defined in Article 2, point 2, of Directive 2009/110 / EC are always provided with a claim on the electronic money institution and have a contractual right to redeem their electronic money at any moment against fiat currency that is legal tender a t par value with that currency<sup>24</sup>.”

An Issuer – (crypto asset issuer) (Houben R, Snyers A. (2020)<sup>25</sup>), a person who places a crypto asset (token) on the market in exchange for fiat money or another virtual asset. In this case, the mining function of the asset itself may not be performed (Advice Initial Coin Offerings and Crypto-Assets.<sup>26</sup>).

A Developer and an Auditor of distributed registers are also singled out, but given that they do not directly participate in blockchain transactions, their analysis and study of the legal nature of their status is not relevant in this research.

It should be noted that some of these participants in the relationship use artificial intelligence in performing their functions. Therefore, the question arises about artificial intelligence and its legal personality.

Given the significant involvement of artificial intelligence in all functions in blockchain systems, it is important to determine that artificial intelligence cannot have its own legal personality, it is a coordinated way for entities to simplify the performance of functions and for actions taken, transactions should be responsible and a person who uses artificial

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<sup>24</sup> Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Markets in Crypto-assets, and amending Directive (EU), 2019/1937 (p. 17). Retrieved from: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020PC0593>.

<sup>25</sup> HOUBEN, Robby, & SNYERS, Alexander. (2020). Policy Department for Economic, Scientific and Quality of Life Policies. Directorate-General for Internal Policies. Authors: PE 648.779. April 2020. Crypto-assets Key developments, regulatory concerns and responses. (p. 23). Retrieved from: [https://www.europarl.europa.eu/RegData/etudes/STUD/2020/648779/IPOL\\_STU\(2020\)648779\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2020/648779/IPOL_STU(2020)648779_EN.pdf).

<sup>26</sup> Advice Initial Coin Offerings and Crypto-Assets (n.d). esma.europa.eu. Retrieved from: [https://www.esma.europa.eu/sites/default/files/library/esma50-157-1391\\_crypto\\_advice.pdf](https://www.esma.europa.eu/sites/default/files/library/esma50-157-1391_crypto_advice.pdf).

intelligence and who acquires rights and responsibilities in connection with actions committed by artificial intelligence.

The role of artificial intelligence and the legal personality of its actions requires detailed research and development of legal doctrine on this phenomenon.

## **6. Blockchain systems which are used in practice**

In this study, we will limit ourselves to identifying the main types of DLT registers, in order to explore future roles and changes in the roles of entities, depending on the type of registers.

Blockchain technologies in the form of registers exist in two key types:

- Open, where all users have the opportunity to make changes, and where the audit and validation is carried out in the manner agreed by all participants.
- Closed (private) registers, where only certain users can make changes to the entire registers or parts of them, or different roles and statuses of entities are possible.

Private registries can be used in enterprises where roles and statuses are set administratively by the owner. Also, this form of registers is permissible in the public sector, for maintaining registers of property, companies, intellectual property, etc., in that case the roles and statuses are established by state acts.

## **7. Conclusion**

Thus, we observe the evolutionary development of legal regulation of the blockchain. The legislation of many countries already recognizes cryptocurrencies as an independent object of legal regulation. Subjects of legal relations are already finding a legal definition: issuers, miners, holders, validators. The types of DLT were also identified, namely open and closed registers.

The leaders in adapting legislation to modern technological change are Japan and the United Kingdom, although in 2021 Ukraine has a chance to become a leader in digital transformation, which implements

the state strategy of digitalization and development of artificial intelligence.

To accelerate the use of blockchain technologies in the settlement system, it is necessary to adopt the drafts Laws of Ukraine “On Virtual Assets” (registration number №3637 from 11.06.2020<sup>27</sup>) and “On payment services” (registration number № 4364 dated 12.11.2020<sup>28</sup>) and to involve legal scientists in the development of legal acts for the implementation of the Concept of Artificial Intelligence Development (approved by the order of the Cabinet of Ministers of 02.12.2020).

Also in Ukraine the necessary coordination of all categories and concepts in the Civil Code, the Commercial Code, Laws of Ukraine “On Protection of Rights consumers”, “On Advertising”, “On electronic documents and electronic document”, “On protection of information in information and telecommunication systems” “On Telecommunications”, “On electronic digital signature”, “On payment systems and transfer of money in Ukraine”, “On financial services and state regulation of markets of financial services”, “On protection of personal data”, “On banks and banking activity”, “On insurance”, “On enforcement proceedings” that relate to virtual assets, technology blockchain, the technology of artificial intelligence .

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<sup>27</sup> Draft of Virtual Assets Act. Verhovna Rada of Ukraine (n.d.). *rada.gov.ua*. Retrieved from: [https://w1.c1.rada.gov.ua/pls/zweb2/webproc4\\_1?pf3511=69110](https://w1.c1.rada.gov.ua/pls/zweb2/webproc4_1?pf3511=69110).

<sup>28</sup> Draft of Payment Services Act Verhovna Rada of Ukraine (n.d.). *rada.gov.ua*. Retrieved from: [http://w1.c1.rada.gov.ua/pls/zweb2/webproc4\\_1?pf3511=70412](http://w1.c1.rada.gov.ua/pls/zweb2/webproc4_1?pf3511=70412).

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## Summary

The author analyses the legislation of different countries, analytical studies of international experts in order to determine trends in the legal regulation of blockchain.

Regulations of government banks, regulatory organizations regarding the operation of the virtual assets and growing demand for virtual currency leads to high risks in the area crypto actives. Uncertainty and complexity of legal support for the development of blockchain technologies and artificial intelligence in economic activity leads to limited practice of regulatory definition and government processes. However, state order is to sanction the stabile existing social relations from considering international legal institutions of legal regulation, such as the protection of personal data, identification and verification subjects of entrepreneurial activity, prevention of laundering money, prevention of evasion from payment of taxes.

The author draws attention to the fact that it is necessary to concentrate analyses on resolving not only virtual currency, but the system blockchain in general, to provide legal definition of those phenomena which are not associated with just speculation or payments of cryptocurrency. In the article discusses current problems of the EU, Asia, Ukraine on implementation of international standards in the field of prevention of laundering of money, protection of per-

sonal data and the possibility of crypto actives and use the technology of artificial intelligence, which will develop business operations, including technology blockchain.

**Keywords:** blockchain technology, artificial intelligence, database data, virtual assets, payment services, crypto actives, cryptocurrency, crypto actives issuer