

*Martin KÁLMÁN**
Faculty of Law, University of Pécs, Hungary

MOSAICS FROM THE LEGAL REGULATION OF BLOCKCHAIN TECHNOLOGY

The use of distributed ledger technology could bring breakthroughs in many sectors beyond the popular cryptocurrencies, such as Bitcoin, which remain the most exciting new developments in blockchain technology. As the decade-long euphoria surrounding the explosion of cryptocurrencies subsides, the underlying technology may gain prominence and find applications in various fields in the near future. Governments have recognised that the benefits of blockchain can be harnessed in the public sector, provided there is a suitable regulatory environment and safeguards. The growing number of governments using the technology to modernise their public services is clear evidence of this recognition. Blockchain technology can improve transaction efficiency, reduce costs, democratise data systems and increase trust. The use of blockchain technology can potentially reduce corruption and increase resilience to cyber-attacks. However, there are still many challenges to overcome in integrating distributed ledgers and fully realizing the transformative power of blockchain. The purpose of this research is to provide a snapshot of the legal issues and improvements of blockchain technology, identify legal opportunities, and draw some useful conclusions for both theory and practice by highlighting some of the main characteristics of the regulative landscape worldwide.

Keywords: innovation, cryptocurrency, blockchain, regulation, challenges.

1. INTRODUCTION

In recent years, the dazzling rise of cryptocurrencies like Bitcoin has captivated the world's attention, showcasing the potential of distributed ledger technology (DLT) to revolutionise financial transactions. However, as the initial fervour for digital currencies begins to stabilize, it is becoming increasingly clear that the true potential of blockchain technology extends far beyond the realm of cryptocurrency. This technology, characterized by its decentralized and immutable record-keeping capabilities, is poised to bring about

* LLM, ORCID: 009-0006-7459-1271, e-mail: martin.kalmanka@gmail.com

significant advancements across a multitude of sectors. The blockchain technology behind crypto-assets offers a wide range of untapped opportunities, from improving public administration, healthcare, simplifying and speeding up payment services, redefining public procurement (Glavanits, 2022) to the introduction of digital money (Bujtár, 2022). One of the most compelling advantages of blockchain is its potential to mitigate corruption and bolster cybersecurity, making public services more resilient and transparent. With the right regulatory frameworks and safeguards in place, blockchain stands to streamline processes, cut down on costs, democratize access to data, and bolster trust among stakeholders. Nevertheless, the journey towards integrating distributed ledgers into the fabric of public administration is fraught with challenges. It is imperative to navigate these obstacles carefully to unlock the transformative power of blockchain. At the same time, innovation also has adverse effects, as consumer protection, investor protection, the fight against money laundering (Gáspár, 2022) and tax fraud (Szívós, 2022), and data security are all issues that are under review in order to ensure that the legislator discourages illegal behaviour.

As governments worldwide begin to recognize the numerous advantages blockchain offers, there is an increasing trend toward adopting this technology to improve and modernize government functions, they begun to face different regulative challenges. Due to their different economic, social and cultural characteristics, some countries have a very advanced regulatory environment, such as Switzerland, Malta, and Estonia (Alper, 2023), but on the other side of the scale, there are countries such as China, India, Russia or Mexico where economic transactions involving crypto-assets are almost completely prohibited (Kecskés & Bujtár, 2019; Gupta, 2021). Some nations, including the United States of America, have not yet come to a decision in their public policy thinking, or even in their own domestic law, to vote for or against the technology. In Hungary, the legislator seemed oblivious to blockchain technology until the amendment of the personal income tax law in January 2022, but the new legal provisions lay the foundations for a crypto-friendly environment. Furthermore, the application of Markets in Crypto-Assets Regulation (MiCA) rules as an EU member state.

This study aims to present a snapshot of the legal regulation opportunities and challenges of blockchain technology. The objectives of this research are multifaceted: to present the most common issues regarding the adoption and legal acceptance of the technology, to mention some of the liberal and some of the conservative approaches, highlighting their effective way using the public and private sectors. Furthermore, to underline the European Union's role in driving the future of legal regulation and finally to unveil the Hungarian legal measures from a country-specific point of view. The structure of the paper follows the abovementioned objectives.

2. BARRIERS TO ADOPTION AND EMERGING ISSUES

Cryptocurrency regulation is a complex task, and there are many challenges associated with it. Different jurisdictions have different definitions and approaches to crypto regulation, which can make it difficult to create a unified framework. Barriers to cryptocurrency adoption include jurisdictional impacts because different countries have different laws and regulations regarding cryptocurrencies, decentralized finance, and

blockchain technology. This can create confusion and inconsistency for users and companies operating in multiple jurisdictions, taking cross-border economic activities. Furthermore, the regulatory landscape is constantly changing. This can create uncertainty and make it tough for companies and individuals to comply with the law. With regards to consumer protection, there is currently no uniform law. The lack of norms complicates the protection of consumers from scams and fraud, especially in the cyberspace (Gáspár, 2021). One of the biggest barriers is that there is currently no clear general definition of what qualifies as a cryptocurrency, decentralized asset, or security. It is worth mentioning that tax treatment of cryptocurrencies, decentralized finance and blockchain technology is still being debated in many jurisdictions. It is also difficult for users and companies to know how to properly report their income and calculate their taxes (Szívós, 2022). The poor level of understanding of crypto-assets causes many policymakers to have no or minimal technical knowledge to effectively regulate crypto assets, which puts a huge barrier before effective regulations.

In their study from 2018, Maria Demertzis and Guntram B. Wolff highlighted six key public policy issues posed by crypto-asset developments. What is the potential of crypto-assets in developed financial systems? How best to combat illegal activities such as money laundering and terrorist financing? How to protect consumers and investors? What about financial stability? How can crypto-assets be taxed? How can blockchain applications be integrated into the existing regulatory framework? (Demertzis, Merler & Wolff, 2018) These questions have not been answered yet, or have only been partially answered, in the few years since the study was written. This means that the regulation of crypto-assets has gone from full support to outright prohibition in some jurisdictions, such as China and India, but the development of a comprehensive legal environment has not yet been achieved in any jurisdiction (Kecskés & Bujtár, 2019), with the exception of Malta (Bujtár, 2018) and partially Estonia.

3. THE EFFECTIVE USE OF BLOCKCHAIN – EXAMPLES FROM THE PUBLIC AND PRIVATE SECTOR

The state and blockchain technology can intersect at numerous points. Public interest primarily focuses on the role of innovation within the financial sector, along with the consumer and investor protection challenges it presents. However, the application of blockchain has expanded to encompass a much broader scope and continues to grow (Shang & Price, 2019; Carvalho, 2019). One of the most prominent areas of sustainability efforts is the implementation of smart city projects. Smart cities utilize information technology and data to integrate and manage physical, social, and business infrastructures, streamlining services provided to residents while ensuring the efficient and optimal use of available resources. By combining innovative solutions such as artificial intelligence, cloud-based services, and blockchain technology—the subject of this discourse—municipalities can offer superior services to citizens and local communities. Blockchain can provide the mechanism for establishing a secure infrastructure that manages these functions. It can offer a secure, interoperable framework that allows all intelligent urban services and functions to operate beyond currently conceived levels. An

integral part of smart city projects is the blockchain-based storage of information related to taxation, registrations, and public services, all of which can be realized through blockchain and smart contract solutions (Henno, 2018; E-estonia, 2024). In the case of smart contracts, we refer to an electronically formed agreement where rights and obligations within the electronic contract automatically come into effect upon the proper sequence of predefined digital transactions—and under certain conditions, the fulfilment of additional terms. An agreement made entirely or partially in electronic form, which can be automated and executed via computer code, may require human input and oversight in some parts and can also be executed using conventional legal methods or a combination thereof (Sánchez, 2019; Thio-ac *et al.*, 2019).

4. COMPREHENSIVE APPROACHES – MARKETS IN CRYPTO-ASSETS DIRECTIVE

As in many other economic and financial areas, The Organisation for Economic Co-operation and Development (OECD) is calling for international action regarding blockchain technology and the crypto market. As a consequence, OECD recently approved the Crypto-Asset Reporting Framework (CARF) in August 2022 (see OECD, 2022). This new framework requires standardized reporting of tax information on crypto-asset transactions for automatic exchange of information. The CARF defines the relevant crypto-assets to be covered, as well as the intermediaries and service providers subject to reporting. The CARF also includes the latest developments in the Financial Action Task Force's Global Anti-Money Laundering Standards. Similar to the Common Reporting Standard (CRS), due diligence procedures require the identification of individual and legal entity clients and control persons. Additionally, the OECD approved amendments to the CRS in August 2022 to include electronic money products and central bank digital currencies (CBDCs) within its scope.

The Bank for International Settlements (BIS) has established an Innovation Hub as part of its global cooperation efforts, which involves collaboration with various financial institutions to explore new technological tools. The Innovation Hub is pioneering experiments on shared ledger technology platforms, exploring cross-border digital money and wholesale CBDC.

In response to most of the questions posed in the previous chapter, the European Union provided a complex and detailed answer. Back on 30 June 2022, the European Parliament and Council reached a temporary agreement on the Markets in Crypto-Assets (MiCA) regulation, which is a complex and comprehensive regulatory framework designed to regulate the entire crypto ecosystem. The formal adoption of the regulation happened on 16 May 2023 as the final step in the legislative process and entered into force 20 days after its publication in the Official Journal.

MiCA, along with the Digital Operational Resilience Act (DORA) and the DLT pilot regime, are part of the EU's comprehensive package of digital financial legislation aimed at supporting the digital transition and making Europe a global digital player. The aim of MiCA was to establish a regulatory framework for the crypto-asset market that supports

innovation and maximizes the opportunities offered by crypto-assets while preserving financial stability and protecting investors. With this agreement, the EU reaffirms that digital finance remains a top priority on its agenda and becomes the first significant jurisdiction to regulate crypto-assets.

MiCA covers all crypto assets that are currently not subject to existing financial services regulations. These range from utility tokens that provide access to services, to stablecoins that aim to maintain a stable value by referencing the value of multiple fiat currencies, commodity exchange products, or cryptocurrencies, and to general crypto-assets such as Bitcoin. MiCA categorizes crypto-assets into four broad categories: asset-referenced tokens that seek to maintain a stable value, e-money tokens that exclusively reference the value of a single fiat currency, utility tokens that provide access to the issuer's product or service, and general crypto-assets. User tokens that provide access to a specific product or service are generally exempt from the MiCA's whitepaper requirements (Fintechzone, 2023).

On the way to reach legal clarity, the European Securities and Markets Authority (ESMA) more precisely defined the conditions under which crypto-assets qualify as financial instruments, and therefore fall under the existing financial services regulation, or conversely, in this case, these other cryptos would fall under the scope of MiCA.

Crypto-asset issuers obliged to prepare and publish a crypto-asset information document that contains all relevant information regarding the specific crypto-asset. The members of the issuer's governing body must comply with the fairness requirements, and it will be prohibited for crypto-asset issuers to engage in misleading market communication.

To avoid undue administrative burdens, competent national authorities (NCAs) generally do not approve the whitepaper before its publication, although there are exceptions, such as for stablecoins. The issuer still needs to report the whitepaper to the national competent authority, providing an explanation as to why the crypto-asset does not qualify as a financial instrument under Annex I, Section C of Directive 2014/65/EU (MiFID II) or as another category outside the scope of MiCA, such as e-money or a deposit.

MiCA introduces several exemptions from the obligation to prepare and publish whitepapers, for example, in the case of crypto-assets that are offered for free, are automatically generated through mining activities, or are offered to a small number of investors or exclusively to qualified investors (Deloitte, 2022).

5. HUNGARIAN MEASURES

According to some estimates, the crypto sector operating in Hungary is worth several hundred billion forints, which means that without adequate regulation, the central budget can expect significant revenue losses from money laundering, fraud or tax evasion. However, until 1 January 2022, Hungarian lawmakers did not address the hype surrounding innovation, and as a result, they did not create any definition, categorization, or detailed guidelines in any of the most important areas, such as investor protection, consumer protection, taxation, and criminal law. Regarding the definition, the previous statement of the National Tax

and Customs Administration stated that bitcoin represents an unconditional payment promise without expiration or term, which can only be demonstrated as a claim, has no interest, but if it is converted to money or used, it will have a return, which can be a profit or loss. In practice, the tax authority's description has been generalized to other altcoins for several years (Szívós, 2021).

As part of the Digital Welfare Program, the FinTech strategy released in 2019 outlined important initiatives in terms of digitalizing the domestic financial system, and also highlighted the importance of blockchain technology. The document states that the aim is to provide regulatory protection for consumer interests and to reflect the needs of economic stakeholders, while also supporting legal harmonization with the European Union's norms. The authors also consider the use of blockchain technology for enabling smart city functions, as well as for potential use in public administration (Digitális Jólét Nonprofit Kft, 2019).

The amendment to the personal income tax law that came into effect on 1 January 2022, which placed cryptocurrencies into a separate category for tax purposes, is considered a major step forward. They are now treated similarly to income from regulated capital market transactions, which means that the previously high tax burden, which could reach almost 30%, has been significantly reduced by the legislature and private individuals' crypto earnings are subject to a favourable 15% tax rate. This move is likely to make Hungary a more attractive destination for digital nomad crypto investors, and it could also lead to greater economic transparency, as taxpayers are more likely to declare a higher percentage of their cryptocurrency income with this more favourable tax rate.

The author highlights that the personal income tax law has also specifically defined cryptocurrencies. According to the new definition, a "cryptocurrency" is the digital representation of value or rights that can be transferred and stored electronically using shared ledger technology or similar technology. Looking at the rule as a whole, it can be said that crypto assets now include cryptocurrencies or coins, various tokens, including NFTs. In addition, income from the transfer of rights related to other cryptocurrencies, such as an option right, is also considered cryptocurrency income, provided that this right is recorded using shared ledger technology. Practically any right or value recorded on a blockchain qualifies as a cryptocurrency, but it does not necessarily mean that every transaction in which a cryptocurrency changes hands will result in income from a cryptocurrency transaction.

It is important to note that regulatory efforts must continue, not just limited to taxation. The communication published by the National Bank of Hungary this year also projects this image, provided that the MiCA regulation on regulating crypto-assets progresses as planned, strict regulation will be expected in the Hungarian legal environment from mid-2024.

Similarly, the financial law bracket submitted in November 2022, also known as blockchain act, was adopted in December of that year and will come into effect in March of this year. The provisions create the possibility of tokenizing financial instruments, i.e., the appearance of financial instruments in shared ledgers. The National Bank of Hungary, which oversees financial supervision, has been designated to supervise and regulate blockchain applications (Magyarország Kormánya, 2022). The law was created to reflect on the normative handling of technology surrounding crypto-assets and to serve harmonization objectives in line with European Union legislation.

6. CONCLUSION

Ongoing debates about the merits and risks of cryptocurrencies are expected to intensify, particularly in corporate boardrooms where multi-billion-dollar decisions are made. Courts will play a crucial role in shaping blockchain's future, much like legislators. While a wave of compensation lawsuits could erode trust in cryptocurrencies, fair legal outcomes could reassure investors that they may be protected from significant losses. The current unregulated status of crypto-assets has led to numerous legal disputes, indicating a need for tighter and more comprehensive regulation (Morrison Cohen LLP, 2022).

Both the OECD and the European Union, along with the United States, are moving toward stringent regulations in response to the legal challenges posed by crypto-assets. This could signal a shift in the success story of cryptocurrencies as the state recognizes the potential risks to public order and the economy. The author suggests that the European Union and Hungary should foster a regulatory environment that protects consumers while promoting innovation in the cryptocurrency sector. Educating the public and businesses about digital assets is also crucial for building trust in this evolving market. A collaborative regulatory approach is essential for integrating cryptocurrencies into the financial system.

However, some believe that the growing interest of the state marks the end of the success story of cryptocurrencies, as lawmakers become aware of the negative impact and myriad risks on public order, the state budget, and the economy. It will then become clear what the real societal and economic goal and benefit of creating cryptocurrencies were, as it was an important and expensive experiment that transformed financial culture and paved the way for the introduction of digital state or central bank currencies (Szilovics, 2021).

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