



DEVELOPMENT OF CRYPTOCURRENCIES AND THEIR PLACE AND SIGNIFICANCE WITHIN THE GLOBAL FINANCIAL SECTOR

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ABSTRACT

Cryptocurrencies have emerged in recent years as a transformative innovation in the financial sphere, distinguished from traditional fiat currencies by their decentralized and digital characteristics. This novel asset class introduces unique market dynamics alongside new categories of risk. With the potential to broaden financial inclusion and enable faster, lower-cost transfers, cryptocurrencies are expected to enhance the efficiency of the financial system. However, their intensive speculative use and pronounced volatility may pose threats to financial stability. The risk of their use in illicit activities—such as money laundering and the financing of terrorism—also remains salient. States have adopted divergent policy approaches in light of these opportunities and risks; some have implemented prohibitive measures, while others have established regulatory frameworks to bring these assets under supervisory oversight. The ultimate impact of cryptocurrencies on the future of financial markets remains uncertain, and developments in the field are being closely monitored. Accordingly, countries must design robust policy frameworks that preserve financial stability and legal order while harnessing the potential benefits of cryptocurrencies. The concept of money, evolving from past to present, continues to transform in line with commercial and technological advances; in the current period, the strengthening trend toward digitalization has brought cryptocurrencies to the fore. Given their increasing recognition and expanding use cases, it is important to examine cryptocurrencies in depth. In this context, the study aims to analyze the theoretical foundations of money, to evaluate the cryptocurrency ecosystem theoretically based on the existing literature, and to delineate the financial landscape by examining the approaches of selected countries and international organizations worldwide, as well as that of Türkiye.

Keywords: Crypto Money, Bitcoin, Financial Markets

JEL Classifications: E42, G15, G18, O33

1. INTRODUCTION

With the acceleration of technological advances, significant transformations have occurred across commerce, finance, accounting, auditing, law, and numerous other domains; as digitalization has become more widespread, many commercial products have migrated to online environments. Cryptocurrencies one of the digital assets that have captured broad global interest over the past decade have garnered intense attention from both the public and private sectors, and some states have taken steps to recognize and encourage their use. Nevertheless, these developments have introduced uncertainties into processes of definition, use, accounting, and financial analysis, thereby underscoring the need for oversight.

A historical examination reveals that, particularly in step with advances in financial markets, media of exchange have evolved into different forms, with the aim of facilitating commercial life in line with market needs. Money one of the fundamental elements of the economy continues to take shape in parallel with commercial and technological developments; in this context, the phenomenon of cryptocurrency has come to the fore in recent years.



Despite the widespread belief that the use of cryptocurrencies will increase in the future, it is considered unlikely that they will replace central banks in the short to medium term. Despite prevailing uncertainties, it is observed that certain countries, financial institutions, and firms have made substantial investments in blockchain technology and cryptocurrencies. In advanced economies such as the United States, China, and Russia, as well as in regional structures like the European Union, regulatory steps such as defining tax frameworks, organizing trading processes, allowing collateralized cryptocurrency exchanges, monitoring cash flows on exchanges, and mandating data sharing with competent authorities in jurisdictions of operation—are deemed to have the potential to bolster confidence in cryptocurrencies.

The objective of this study is to examine the concept of money on a theoretical basis, to address the cryptocurrency ecosystem theoretically in light of the extant literature, and to delineate the financial landscape by analyzing the approaches of selected countries and international organizations, as well as that of Türkiye.

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2. THE PLACE OF CRYPTOCURRENCIES WITHIN THE GLOBAL FINANCIAL SECTOR

Virtual currencies, while sharing characteristics with physical monetary units, are defined as network-based media of exchange that enable cross-border transfers of ownership, instantaneous transactions, online commerce, and rapid fund transfers. Their use appears to be increasingly widespread; however, their medium- and long-term trajectory is anticipated to be shaped by future technological and institutional developments. Although it is conceivable that such systems may be recognized and accepted by monetary authorities in the future, it is also



possible that they will remain confined to an infrastructure limited to internet-based transactions (Pirinççi, 2018). At present, the stage reached by cryptocurrencies still entails uncertainty, and national stances and practices exhibit substantial variation across the globe.

2.1. Perspectives of International Organizations and Selected Countries on Cryptocurrencies

The emergence of cryptocurrencies represents a new phase in both technological and financial terms for numerous countries. The rapid increase in market capitalization and transaction volume has attracted the attention of governments and relevant authorities, prompting investigations into their areas of application. In this context, debates persist as to whether cryptocurrencies should be regarded as money or as assets; in some countries they are classified as money, while in others they are treated as assets. In jurisdictions where a legal framework has not yet been established, it is noted that, as a novel phenomenon, they are considered neither explicitly legal nor illegal. Nevertheless, Bitcoin and altcoins are generally interpreted as constituting income or remuneration and are taxed accordingly; thus, it is emphasized that governments are expected to clarify the matter within a legal framework. In addition to tax regulations, various countries have instituted regulatory measures aimed at preventing the financing of terrorism and combating money laundering (Yıldırım, 2019).

2.1.1. Approaches of International Organizations

2.1.1.1. The World Bank

The World Bank, similar to other relevant institutions, continues to study and analyze the cryptocurrency ecosystem. In this context, it supports the strengthening of the Blockchain Laboratory (Innovation Lab); moreover, together with the IMF, it reportedly introduced a crypto token called “Learning Coin” to address the knowledge gap regarding blockchain technology and to facilitate a more in-depth understanding of the technology (Ünalır, 2021). During his tenure, former World Bank President Jim Yong Kim expressed reservations concerning the legal status of cryptocurrencies; however, he also indicated that they hold promise for more effectively tracking fund flows and reducing corruption in developing countries (Fortune, 2018).

2.1.1.2. IMF (International Monetary Fund)

The IMF assesses that the absence of a central authority behind cryptocurrencies may pose risks to financial integrity; it notes that these assets can be used for money laundering, that sanctioned countries may potentially circumvent restrictions via cryptocurrencies, and that such systems do not rest on any guarantee mechanism. It is also stated that the Fund classifies cryptocurrencies under the category of virtual currencies (IMF, 2016). It is argued that the International Monetary Fund is the actor with the strongest institutional capacity for the international oversight of state-backed cryptocurrencies; proponents contend that the IMF could provide protections for consumers, investors, and states by conferring legitimacy on such publicly supported digital assets and by facilitating the formation of international consensus (Goldsmith, 2020).

2.1.1.3. European Central Bank

The European Central Bank (ECB) conducted the first comprehensive examination of virtual currency schemes (VCS) in October 2012 and published its findings in a report. That study addressed both the value dimension of VCS and the technological mechanisms enabling the transfer of that value, and it offered a definition of virtual currencies. Accordingly, virtual currencies were described as “a type of digital value that is generally issued and controlled by their developers, accepted and used within a specific virtual community, and not subject to legal regulation.” In its 2015 report, the ECB revisited this definition; due to the lack of broader societal adoption, it removed the term “currency” from the earlier text, and, given that some countries had introduced regulations, it also omitted the phrase “not regulated by law.” Thus,



in the 2015 update, a VCS was defined as “a virtual representation of value that is not issued by a central bank, credit institution, or e-money institution, and which in some circumstances can serve as an alternative to money” (Üzer, 2017).

In addition to monitoring crypto-assets, the ECB analyzes their potential effects on monetary policy and the risks they may pose to the functioning of market infrastructures and payment systems, as well as to financial stability. The Internal Crypto-Assets Task Force (ICA-TF), established for this purpose, has found in its assessments that crypto-assets do not currently constitute a near-term threat to financial stability in the euro area. This conclusion rests on their combined market capitalization remaining small relative to the scale of the financial system and their limited interlinkages with the financial sector. As crypto-assets do not fulfill the functions of money, they are not expected, at present, to exert a tangible impact on the real economy or to produce discernible consequences for monetary policy (Manaa et al., 2019). International fora, such as the Financial Stability Board and standard-setting bodies, are undertaking work aimed at monitoring the implications of crypto-assets for global financial stability and coordinating policy responses. The ECB has tracked cryptocurrencies since their inception, deepening its analysis in 2015 following its first report in 2012. The institution acknowledges that crypto-assets currently entail significant risks primarily related to anti-money laundering, countering the financing of terrorism, and consumer protection; beyond these areas, it supports regulatory analyses pertaining to a broader assessment of the EU regulatory framework. Pursuant to the European Commission’s 2018 FinTech Action Plan, the European Banking Authority (EBA) and the European Securities and Markets Authority (ESMA) have recently presented their recommendations on crypto-assets to EU institutions. The relevant document addresses selected regulatory issues within the scope of risk assessment and gap analysis. There is no common international consensus on how crypto-assets should be defined; high price volatility, the absence of central bank backing, and limited acceptance among merchants hinder their use as substitutes for cash and deposits and complicate the fulfillment of obligations (Manaa et al., 2019).

In conclusion, the risks arising from the use of crypto-assets in financial market infrastructures are assessed to be limited and manageable within the existing EU regulatory and supervisory frameworks. Even at the peak of cryptocurrencies in 2018, the level of risk remained low for the EU financial system and economy. Looking ahead, depending on the evolution of the regulatory framework, the use of crypto-assets in market infrastructures may become easier; this could potentially deteriorate their risk profiles. The ECB commits to monitoring these developments in coordination with other relevant authorities, enhancing awareness, and maintaining preparedness against potential adverse scenarios.

2.1.1.4. Federal Reserve (THE FED)

Although Federal Reserve Chair Jerome Powell has acknowledged the growing appeal of digital assets such as Bitcoin, he has stated that these instruments still constitute ineffective payment mechanisms and that crypto markets require regulation. Powell noted that technological advances are offering new opportunities to central banks, particularly the Fed; while different institutional arrangements and technologies could be deployed, a central bank digital currency intended for general public use could be designed. It was observed that the Fed has been working on payment infrastructures for several years and likely planned to launch a product called FedNow in 2023. In parallel, it was emphasized that digital currencies represent one of the alternative avenues pursued by central banks in line with the objective of enhancing efficiency in payments. Nevertheless, it was stated that there are numerous issues that slow the transition to implementation and complicate its realization. Powell indicated that research on central bank digital currencies would continue, taking into account the full spectrum of risks and opportunities (Ünalır, 2021).



2.1.2. Approaches of Selected Countries

With the rapid proliferation of cryptocurrencies in recent years, the investor base has expanded steadily, and demands for their use as a means of payment in commercial transactions have increased; these trends are assessed to compel states to establish regulatory frameworks for cryptocurrencies. In international markets, crypto-assets have exhibited pronounced increases in value; however, given that the body of knowledge concerning the functioning and characteristics of the concept is relatively nascent, it is observed that countries' regulations have not yet fully institutionalized (Özkul and Ece, 2020).

It is understood that countries' legal approaches to cryptocurrencies vary and possess the capacity to evolve over time. As Bitcoin is the earliest and most well-known virtual currency, it is evident that states have largely formulated their initial assessments of cryptocurrencies through the lens of Bitcoin. It has been noted that certain central banks and regulatory authorities have issued warnings regarding the risks inherent in Bitcoin and/or virtual currencies in general (Üzer, 2017).

2.1.2.1. United States (U.S.)

The United States classifies cryptocurrencies as commodities and, within this framework, treats gains arising from transfers involving crypto-assets as capital gains. Payments made by employers to employees or independent contractors in cryptocurrency are considered personal income and fall within the scope of income taxation. Profits derived from cryptocurrency trading must be declared at the stage when they are reflected in bank accounts and taxed accordingly. This approach is assessed to facilitate the tax administration's oversight of crypto-asset transactions and to contribute to effective taxation practices (Özkul and Ece, 2020). Federal Reserve Chair Jerome Powell has stated that a ban on cryptocurrencies is not on the agenda, but that regulation is necessary; he also noted that work on a central bank digital currency is being pursued within a cost-benefit framework.

2.1.2.2. China

It is observed that Asian markets are among the regions where cryptocurrencies have developed most rapidly and where usage is most intensive; nevertheless, certain Asian countries have brought restrictive measures to the agenda, particularly targeting Bitcoin mining. In China, which stands out among these countries, the high electricity consumption associated with mining activities has generated public discontent; in response to rising energy demand, legislators have enacted prohibitive regulations on Bitcoin mining (Köylü, 2018).

China, which has been a favorable hub for Bitcoin and other crypto-assets due to cost advantages, accounted for approximately 80% of the total hash rate of the Bitcoin blockchain in 2019, according to data from the Cambridge Centre for Alternative Finance; this share declined to 65% in April 2020 and has reportedly fallen to around 40% at present. Findings from the Cambridge Bitcoin Electricity Consumption Index indicate that this decline stems from the Chinese government's restrictions and sanctions. Following the bans, mining activities shifted to other countries; in this context, the United States increased its share in Bitcoin mining from 4% in September 2019 to 17% as of April 2021; Kazakhstan held an 8% share, Russia 7%, Iran 5%, while Türkiye's share remained at approximately 0.04% (Ünalır, 2021).

It is emphasized by the Chinese authorities that cryptocurrency markets entail high risks and are prone to speculative fluctuations; they have expressed that the market should be brought under control through stringent regulation. In this regard, regulatory steps have been undertaken with a view to standardization, and the role of cryptocurrency exchanges within the system has been delineated through these regulations. While work on central bank-issued digital currencies is ongoing at the Federal Reserve and in other countries, China has moved swiftly, aiming to see the digital version of its national currency, the yuan, in use prior to the 2022 Beijing Winter Olympics.



2.1.2.3. Japan

Japan is positioned among the leading countries in the field of digital currencies; as of April 1, 2017, it recognized Bitcoin as legal tender and classified it as money. The country has emphasized the need to strengthen the regulatory framework against the risk of cryptocurrencies being used in illicit transactions; accordingly, it brought crypto-assets under the supervision and oversight of the Financial Services Agency of Japan and implemented measures aimed at verifying investor identities. Similar to the United States, Japan is among the countries that classify cryptocurrencies as commodities; however, it defines crypto-assets as asset-like instruments that can be transferred digitally and used for payments. Under this definition, they are subject to income and capital gains taxation (Günay and Kargı, 2018). It is reported that the Bank of Japan (BOJ) announced it would initiate work on a digital currency.

2.1.2.4. The United Kingdom

It is stated that the United Kingdom treats cryptocurrencies both as private money and as assets; it recognizes Bitcoin as a form of private money and subjects crypto-assets to capital gains taxation. The Financial Conduct Authority (FCA) is reported to have indicated that, because the state cannot fully supervise crypto investments, risks in this area may remain elevated and regulatory frameworks in the country may change rapidly (Özkul and Ece, 2020).

Although a comprehensive, standalone cryptocurrency statute has not yet entered into force in the country, the government has announced that Bitcoin transactions will be treated similarly to foreign exchange (forex) transactions and that gains arising from such transactions will be taxed as capital income. It is further stated that, when Bitcoin is used as a means of payment, transactions will be subject to value-added tax. The FCA, whose general stance toward digital assets is positive, maintains that forthcoming regulations should be designed to support the cryptocurrency ecosystem (Ünalır, 2021).

2.1.2.5. Germany

It is reported that Joachim Wuermeling, a member of the executive board of the Deutsche Bundesbank, emphasized that, due to their cross-border nature, cryptocurrencies should be regulated at the international level and that regulatory authorities ought to develop rules jointly. Germany is positioned among the countries that articulated an early call for global-scale regulation of crypto-assets (Çarkacıoğlu, 2016).

Germany is understood to treat cryptocurrencies in a status similar to foreign currencies; however, it does not recognize them as legal tender (Özkul and Ece, 2020). It is further reported that, in the country, when income derived from cryptocurrency trading exceeds the threshold of 800 euros, such income is deemed speculative and taxed at a rate of 25 percent (Topçu and Sarıgül, 2020).

2.1.2.6. Swedish

It is observed that, due to the marked decline in cash usage in recent years, the Sveriges Riksbank has put on the agenda the option of issuing a digital currency (e-krona) as a complementary and alternative form of cash. The report published on the e-krona project recommends initiating the development of the technical architecture so that potential solution sets and viable options for this digital cash alternative can be tested; considering the necessary amendments to the existing central bank law to clarify the legal status of the e-krona; and continuing research into the financial implications of the e-krona (CBRT, 2018).

Sweden is counted among the countries that aim to phase out the use of cash. It is noted that, in the face of the Riksbank's negative interest rate policy, individuals have turned to Bitcoin to preserve their wealth, and that Bitcoin usage has accordingly been preferred by some. It is further stated that the Swedish Financial Supervisory Authority has legally recognized Bitcoin as a means of payment (Çarkacıoğlu, 2016).



From a macroeconomic perspective, the use and holding of crypto-assets has remained limited in Sweden as in many other countries; nevertheless, the crypto ecosystem is a rapidly evolving and dynamic domain. The multiplicity and heterogeneity of crypto-assets make it difficult to maintain comprehensive oversight of developments; however, given the relatively limited extent of use, the current level of financial stability risk is assessed to be low. It is emphasized, however, that the high volatility of crypto-assets entails risks that may lead to substantial losses for individuals through persistent price declines. For this reason, the European supervisory authorities ESMA, EBA, and EIOPA, together with the Swedish Financial Supervisory Authority (Finansinspektionen), have issued a warning that crypto-assets constitute an inappropriate and risky asset class. It is also reported that many central bank officials, including those from the Sveriges Riksbank, have expressed the view that crypto-assets should be regarded not as money but as a type of asset (Söderberg, 2018).

2.1.2.7. Australia

It is stated that Australia classifies Bitcoin as a commodity and, within this framework, has abolished the previously applied double taxation; however, there is no specific regulatory framework tailored exclusively to Bitcoin. It is further noted that the Australian Securities Exchange is conducting projects related to blockchain technology, and that Australia Post aims to design a blockchain-based digital identity infrastructure to enhance service quality (Çarkacıoğlu, 2016).

It is reported that Australia treats Bitcoin within the category of foreign currency and, accordingly, permits natural and legal persons to engage in its mining and trade. In line with Japan and the United States, Australia's treatment of cryptocurrencies as commodities entails that returns arising from the purchase and sale of cryptocurrencies are addressed for tax purposes under the capital gains regime (Özkul and Ece, 2020).

2.1.2.8. Russia

Due to the initial suspicion that cryptocurrencies could facilitate crimes such as money laundering and the financing of terrorism, a comprehensive prohibition was initially envisaged; however, this policy has been revised in the face of growing global interest. In the country, the authority for oversight and supervision of cryptocurrency regulations rests with the Central Bank of the Russian Federation, which has indicated that additional information is required regarding the principles governing the use of crypto-assets and that the matter will be examined in detail. At present, there is no specific legislation in force pertaining to distributed ledger technology or cryptocurrencies; nevertheless, it is suggested that, going forward, the Russian Parliament may enact legal regulations concerning cryptocurrencies and may even impose a ban on currencies not based in the country. It is observed that Russia continues to develop its national digital currency, while emphasizing that the ruble cannot be substituted by any cryptocurrency (Ünalır, 2021).

2.1.2.9. South Korea

There is no comprehensive law or binding guideline in Korea that explicitly defines the legal issues related to crypto-assets and how they are to be assessed under national legislation. Nevertheless, in South Korea, the Government Policy Coordination Office has announced that it will enhance its supervisory capacity to prevent illegal activities and money laundering that could be conducted via cryptocurrencies. Steps are being taken to tighten supervisory mechanisms in order to prevent speculative price movements from acquiring bubble-like characteristics. In addition, Finance Minister Kim Dong-yeon's emphasis that banning cryptocurrencies is among the available options indicates that the policy approach is taking shape along a cautious axis (Köylü, 2018).

On the other hand, major technology companies operating in South Korea, such as LG and Samsung, accept Bitcoin as a means of payment despite the absence of a clear legal



framework regulating it; moreover, the frequency of cryptocurrency use is on the rise. The country also hosts bitcoin-themed conferences (Çarkacıoğlu, 2016).

2.1.2.10. India

India is among the first countries to have brought the legal status of cryptocurrencies onto the agenda. In its 2013 statement, the Reserve Bank of India warned that there is no central authority to which one could resort for issues arising in cryptocurrency transactions; that user credentials may be compromised through software-based cyberattacks; that these assets entail significant risks due to high volatility; and that they may be used for money laundering and the financing of terrorism. Subsequently, a 2018 circular prohibited banks from conducting transactions involving cryptocurrencies and imposed obligations on banks to monitor accounts engaged in crypto-asset trading and to suspend the activities of such accounts. However, upon applications by cryptocurrency exchanges, the circular was subjected to judicial review; in March 2020, the Supreme Court annulled the measure on the grounds of the freedom to choose one's trade or profession and the principle of proportionality (Ünalır, 2021).

2.1.3 Countries Where Cryptocurrencies Are Banned

While cryptocurrencies are welcomed in many countries, some states approach them with caution due to high volatility, decentralized architecture, perceived threats to the existing monetary order, and associations with illicit activities such as drug trafficking and money laundering. Although their number is limited, certain countries impose outright bans on crypto-assets, while others move to withdraw the banking and financial infrastructure support necessary for the continuation of trading and usage (Ünalır, 2021). Bangladesh prohibits Bitcoin on the grounds that it is not legal tender and has the potential to expose users to financial risks. In March 2014, the Central Bank of Iceland announced that purchasing Bitcoin contravenes Iceland's Foreign Exchange Act. In July 2013, the Bank of Thailand stated that, in the absence of a legal framework for Bitcoin, its use could not be deemed legally valid. The Central Bank of Bolivia banned Bitcoin on the basis that "the use of currencies not issued and controlled by official authorities is unlawful." Ecuador, for its part, has blocked the use of Bitcoin to prevent competition with its national electronic money project (Çarkacıoğlu, 2016). The Bank of Finland contends that crypto-assets can be characterized neither as a currency nor as an electronic means of payment; to qualify as an electronic means of payment, it argues, there must be an issuing authority responsible for the operation of the crypto system (Onay, 2018). Alongside countries where crypto-assets are completely banned, it is noted that they are recognized within a legal framework in jurisdictions such as Japan, the United Kingdom, Germany, the Netherlands, Hong Kong, the United States, Malta, Canada, Ukraine, Switzerland, Estonia, Slovenia, Georgia, and Singapore. In Turkey, as of April 30, 2021, the use of crypto-assets as a means of payment is prohibited; by contrast, cryptocurrency mining and trading are permitted, and no additional restrictions have been envisaged for these activities.

2.2. Turkey's Approach to Cryptocurrencies

There is no specific statutory provision dedicated to cryptocurrencies in Turkey. The Banking Regulation and Supervision Agency (BDDK) and the Capital Markets Board (SPK), two of the country's principal regulatory authorities, do not classify cryptocurrencies as electronic money in light of their current structural and operational characteristics. The Central Bank of the Republic of Turkey (TCMB), perceiving a potential contribution to financial stability, has initiated research activities in this field. Through a cooperation mechanism established under the umbrella of the "Blockchain Working Group," with the participation of the TCMB, BDDK, and SPK, the legal framework and practices concerning cryptocurrencies have begun to be examined. Economic authorities continue to remind the public that crypto-asset prices exhibit high volatility and that caution is warranted (Yıldırım, 2019).



2.2.1. Center

The Central Bank of the Republic of Turkey's (CBRT) 2018 Financial Stability Report includes the following assessments regarding cryptocurrencies: Money is defined as a medium of exchange issued by central banks at a generally accepted nominal value and not backed by collateral such as gold or silver; in economic theory, its three core functions—medium of exchange, unit of account, and store of value—are accepted as the fundamental attributes of money. With technological advances, the form of money has transformed, acquiring a digital character; it is understood that central banks, which are tasked with financing the economy and developing payment systems, have intensified their research accordingly. In this process, it is deemed necessary to closely monitor Bitcoin and similar crypto-assets as well as the technologies underpinning these assets. Given that crypto-assets at present do not satisfy the three essential functions of money and do not constitute a substitute for legal tender, the term “crypto-asset” is preferred over “cryptocurrency.” International organizations such as the FSB, the CPMI (Committee on Payments and Market Infrastructures), the IMF, and certain central banks emphasize that crypto-assets should be monitored closely due to the complexity of their governance structures, the ongoing maturation of their technologies, risks arising from transaction anonymity, and high price volatility. On the other hand, Distributed Ledger Technology, which underlies crypto-assets, and the associated blockchain structure are considered capable of making a meaningful contribution to the digitalization of money by enabling the secure transfer of digital assets without the need for a central institution, much like the transfer of cash.

It appears that the CBRT completed its regulatory work aimed at restricting the use of crypto-assets in payments as of 16 April 2021. It is stated that, owing to factors such as the unregulable/unsupervisable nature of crypto-assets, the absence of a central counterparty, the possibility of use in illicit activities due to anonymity, and the risk of wallets being stolen or used unlawfully, significant risks arise for relevant stakeholders. Because transactions are irreversible and ownership information cannot be altered, any losses that may occur are difficult to remedy; moreover, there has been a recent increase in initiatives to use these assets in the field of payments, a practice that may result in outcomes that are difficult to redress for the parties and could undermine confidence in existing payment instruments. In this context, it is observed that regulations were enacted under Law No. 6493 on Payment and Securities Settlement Systems and Law No. 1211 on the Central Bank of the Republic of Turkey.

The CBRT's Regulation on the Prohibition of the Use of Crypto Assets in Payments, published on 30 April 2021 (CBRT, 2021), sets forth the following provisions:

- The direct or indirect use of crypto-assets in payments, and the provision of services for this purpose, are not permitted.
- Payment service providers are prohibited from developing business models that directly or indirectly use crypto-assets in payment services and in the issuance of electronic money, and from providing any services related to such models.
- Payment and electronic money institutions are prohibited from acting as intermediaries for fund transfers to platforms that provide services for the purchase and sale, custody, transfer, or issuance of crypto-assets, and for fund transfers from such platforms.

Additionally, by Presidential Decision No. 3941 dated 1 May 2021, crypto-asset service providers and savings finance companies were brought within the scope of the Regulation on the Prevention of Laundering Proceeds of Crime and the Financing of Terrorism.

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deemed necessary to closely monitor Bitcoin and similar crypto-assets as well as the technologies underpinning these assets. Given that crypto-assets at present do not satisfy the three essential functions of money and do not constitute a substitute for legal tender, the term “crypto-asset” is preferred over “cryptocurrency.” International organizations such as the FSB, the CPMI (Committee on Payments and Market Infrastructures), the IMF, and certain central banks emphasize that crypto-assets should be monitored closely due to the complexity of their governance structures, the ongoing maturation of their technologies, risks arising from transaction anonymity, and high price volatility. On the other hand, Distributed Ledger Technology, which underlies crypto-assets, and the associated blockchain structure are considered capable of making a meaningful contribution to the digitalization of money by enabling the secure transfer of digital assets without the need for a central institution, much like the transfer of cash (CBRT, 2018).

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The CBRT’s Regulation on the Prohibition of the Use of Crypto Assets in Payments, published on 30 April 2021 (CBRT, 2021), sets forth the following provisions:

- The direct or indirect use of crypto-assets in payments, and the provision of services for this purpose, are not permitted.
- Payment service providers are prohibited from developing business models that directly or indirectly use crypto-assets in payment services and in the issuance of electronic money, and from providing any services related to such models.
- Payment and electronic money institutions are prohibited from acting as intermediaries for fund transfers to platforms that provide services for the purchase and sale, custody, transfer, or issuance of crypto-assets, and for fund transfers from such platforms.

Additionally, by Presidential Decision No. 3941 dated 1 May 2021, crypto-asset service providers and savings finance companies were brought within the scope of the Regulation on the Prevention of Laundering Proceeds of Crime and the Financing of Terrorism.

The Central Bank of the Republic of Turkey’s (CBRT) 2018 Financial Stability Report includes the following assessments regarding cryptocurrencies: Money is defined as a medium of exchange issued by central banks at a generally accepted nominal value and not backed by collateral such as gold or silver; in economic theory, its three core functions—medium of exchange, unit of account, and store of value—are accepted as the fundamental attributes of money. With technological advances, the form of money has transformed, acquiring a digital character; it is understood that central banks, which are tasked with financing the economy and developing payment systems, have intensified their research accordingly. In this process, it is deemed necessary to closely monitor Bitcoin and similar crypto-assets as well as the technologies underpinning these assets. Given that crypto-assets at present do not satisfy the three essential functions of money and do not constitute a substitute for legal tender, the term “crypto-asset” is preferred over “cryptocurrency.” International organizations such as the FSB, the CPMI (Committee on Payments and Market Infrastructures), the IMF, and certain central



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2.2.2. BRSA

In its press release dated 25 November 2013, the Banking Regulation and Supervision Agency (BDDK) stated that cryptocurrencies have no issuer, whether public or private, and that no collateral or guarantee is provided for these assets. It was further indicated that, pursuant to Law No. 6493 on Payment and Securities Settlement Systems, Payment Services and Electronic Money Institutions, cryptocurrencies cannot be considered within the scope of electronic money due to their inherent characteristics; accordingly, the BDDK does not possess oversight or supervisory authority over these assets. Additionally, it was emphasized that transactions conducted with Bitcoin and similar virtual currencies may provide a conducive ground for illicit activities, given that the identities of the parties are not known (BDDK, 2013).

A more detailed examination of the legal status of virtual currencies in Turkey reveals a division of responsibilities under Law No. 6493. According to the said Law, the authority over payment and securities settlement systems is vested in the Central Bank of the Republic of Turkey, while the authorization and supervision of electronic money institutions and payment institutions is assigned to the Banking Regulation and Supervision Agency (Üzer, 2017).



2.2.3. CMB

It is known that investment firms in Turkey sought the Capital Markets Board's (CMB) opinion as to whether Bitcoin could be the subject of contracts for differences and whether Bitcoin-based derivatives could be traded. In its decision dated 1 December 2017, the CMB stated that there was no national-level regulation concerning crypto-assets and determined that, for the purposes of the Capital Markets Law, cryptocurrencies do not qualify as underlying assets for derivative instruments. In line with this determination, it was ruled that spot or derivative transactions based on cryptocurrencies may not be executed on behalf of clients (Ünalır, 2021).

2.2.4. MASAK

In the Sectoral STR Guide of the Financial Crimes Investigation Board (MASAK) dated 3 August 2016, transactions conducted with Bitcoin and its derivatives were included among suspicious transaction patterns related to banking operations. By contrast, in the updated Sectoral STR Guide dated 11 September 2019, it was stated that transactions involving crypto-assets would not, in and of themselves, be deemed suspicious; however, they would be subject to suspicious transaction assessment where the transaction amount and frequency exceed the customer's profile, the sources of funds are indeterminate, or the transactions are incompatible with the individual's financial capacity (Çarkacıoğlu, 2016).

2.3. The Situation of Cryptocurrencies in Turkey

It is observed that cryptocurrencies, which emerged globally in 2009, have also attracted a broad investor base in Turkey. Conversely, the recognition and prevalence of crypto-assets in the country have been found to increase markedly as of 2017.

Bitcoin usage appears to vary across different cities and sectors nationwide, spanning a wide range of applications from fees for consulting, legal, information technology, and contracting services to football player transfer payments and instant expenditures in shopping malls. The first Bitcoin ATM installed at Istanbul Atatürk Airport is known to be among the pioneering examples worldwide. It is understood that there has been at least one business in Turkey paying its employees in Bitcoin, and that online platforms facilitating the purchase and sale of crypto-assets in exchange for Turkish lira have been operating. Discussions suggesting that the prevalence of blockchain technology will grow—enabling even healthcare, postal services, banking transactions, and referendum and election voting to be conducted from home—have become prominent (Dizkırıcı and Gökgöz, 2018). It is reported that, as of 2021, the number of Bitcoin ATMs offering the option to purchase with cash and credit card reached 10, nine of which were located in Istanbul and one in Izmir.

It is observed that work concerning cryptocurrencies and the underlying blockchain technology has been ongoing in Turkey. The 11th Development Plan, covering the 2019–2023 period, declared that steps would be taken toward developing a blockchain-based central bank digital currency. It is reported that the Interbank Card Center, in cooperation with T2 Software, created an experimental digital currency named “Keklik,” through which transactions such as money transfers and retail payments could be conducted, albeit with a limited user base (Topaloğlu, 2021). Past initiatives such as E-lira and Turkocoin were launched but did not succeed; nevertheless, there are companies—albeit few—that accept Bitcoin for payments (Üzer, 2017). To support research in the blockchain field, the Blockchain Turkey Platform was established by the Turkish Informatics Foundation on 8 June 2018. In Borsa Istanbul's first financial blockchain project, launched in September 2018, information in the customer database was matched via blockchain infrastructure; a fast, secure, and transparent platform eliminating data-entry errors was created, and it was indicated that numerous transactions could be executed on this technical infrastructure and that it could be adapted to other projects if necessary.



The number of businesses in Turkey accepting Bitcoin is reported to be increasing; digital currency payments have begun to find a place particularly in sectors such as real estate, education, and restaurants. The experiences of crypto-asset intermediaries indicate that domestic crypto exchanges encourage the use of Bitcoin in e-commerce and retail payments as a hedge against exchange-rate risk. At the international level, the influence of cryptocurrencies and Bitcoin-based technology firms exhibits an upward trend; it is assessed that Turkey, in parallel with this trend, has taken steps beyond individual initiatives. Indeed, it is noted that Akbank has begun to utilize Bitcoin technology to facilitate international money transfers (Şimşek, 2019). However, with the regulation dated 30 April 2021, the use of cryptocurrencies in payments was prohibited; nonetheless, the purchase and sale of crypto-assets do not fall within the scope of the ban.

In a study by the World Economic Forum covering 74 developed economies across Europe, the Americas, Asia, and Africa, countries with the most intensive use of cryptocurrencies were ranked. According to the findings, Nigeria ranked first with 33 percent, while Turkey, with a usage rate of 16 percent, ranked fourth globally and first in Europe. Within the data obtained, the top five countries using cryptocurrencies the most were Nigeria, Vietnam, the Philippines, Turkey, and Peru; Japan and Denmark, at 4 percent, were reported among the countries with the lowest usage.

2.4. Reflection of Cryptocurrencies in Financial Markets

Due to the structural characteristics of Bitcoin and other altcoins, which do not rely on a central authority, it appears that truly comprehensive legal frameworks specific to cryptocurrencies have not been effectively implemented worldwide. These monies, developed in the virtual realm, are regarded as a financial-technological innovation in international financial markets and by individual countries; nevertheless, their values are observed to continue an upward trajectory. The growth in transaction volumes has attracted attention among governments and financial circles; accordingly, numerous research initiatives have been launched in the private sector and academia. Debates and inquiries continue as to whether the legal nature of cryptocurrencies should be characterized as “money” or as an “asset,” and how gains and losses derived therefrom should be classified for tax purposes. It is noted that countries such as Germany, the United States, Singapore, Australia, and Switzerland treat cryptocurrencies as assets, whereas some countries, such as El Salvador and the Central African Republic, recognize them as “money” (Lea, 2022). In certain countries where there is no explicit legislation on the matter, crypto sources are said to be regarded as neither legal nor illegal (Yıldırım, 2018). Should Bitcoin and altcoins be accepted as an instrument of income or remuneration and become taxable, states are not expected to adopt a prohibitive stance toward this new form of money. The regulation of the circulation of cryptocurrencies within the financial system, the determination of the principles of taxation, and the establishment of a framework to prevent money laundering and the financing of terrorism are assessed as priority areas that states should review with respect to virtual currencies (Öztürk, 2024).

It is reported that in 107 out of 251 countries worldwide there is neither a specific statute nor a general regulation concerning Bitcoin transactions (Lea, 2022). A country-by-country analysis indicates that many states have made the use of Bitcoin legally possible, and that there is deemed to be no need for additional monitoring of transactions conducted within those jurisdictions. A small number of countries, however, have introduced provisions that restrict or seek to block crypto-based transactions by deeming them illegal. As Bitcoin’s recognition and areas of use expand, regulations enabling its function as a means of payment have come to the fore; it is understood that legal infrastructure efforts have accelerated, particularly to allow crypto-assets to be utilized as an instrument in real estate transactions. It is noted that real estate companies in Dubai have adopted cryptocurrency as a medium for buying and selling; sectoral



publications feature informative content on purchasing real estate with crypto; and a company named Real Estate has announced the development of a web platform to enable trade with Bitcoin (Dupuis and Gleason, 2020).

The United States, which occupies a leading position in the global economy, has enacted various regulations concerning the taxation of cryptocurrencies and has taken steps to record and tax income obtained through mining. In the U.S., if cryptocurrencies are sold after being held for more than one year, taxation is applied under the capital gains tax regime. Canada applies corporate income tax and value-added tax to institutional crypto transactions; in the case of individual investments, it exempts 50 percent of the gains and taxes the remainder at general rates. It is stated that, as a reflection of Canada's favorable stance, a national crypto initiative called "Mazacoin" has emerged (Öztürk, 2024).

In Australia, commercial transactions conducted with crypto at the corporate level are subject to corporate and transaction taxes; for individual users, purchases and sales of goods and services under 10,000 Australian dollars are reported to be exempt from tax (Kargı and Günay, 2018). Japan has applied a tax ranging from 15 to 55 percent on gains from Bitcoin investments as of 2017; in the United Kingdom, crypto transactions are exempt from VAT, whereas a 20 percent corporate tax applies, and individual investors fall under the capital gains tax regime depending on their gains. In Germany, gains arising from crypto trading exceeding 800 euros are classified as "speculative gains" and taxed at a rate of 25 percent; purchase and sale transactions with crypto are excluded from VAT. In the Netherlands, those transacting with crypto pay corporate tax, while individual investors pay income tax on their gains; in Switzerland, individuals' cryptocurrency transactions are stated to be tax-exempt (Topçu and Sümerli Sarıgül, 2020).

Cryptocurrencies are increasingly assuming the functions of traditional money as a means of payment, offering a broad range of use cases from airline tickets to electronic cigarette equipment and the online payment of VPN services. Despite the banking sector's initially cautious stance, a waiting period followed an incident in January 2018 attributed to a Visa card processor; today, however, successful crypto systems that have matured across global networks are observed to be received more favorably by banks and their use is being supported. Solution providers such as Wirex, Bitwala, MCO, and TenX offer crypto wallet services linked to cards compatible with Visa and Mastercard infrastructures; with these cards, crypto spending can be made at physical stores around the world (Öztürk, 2024).

The Bitwage service, which allows companies to pay contractors in crypto, stands out as a significant development; it is stated to have reached a user base of 20,000 and, by forming partnerships with payroll companies, aims to expand the possibility for businesses to pay employee salaries in cryptocurrency. It is reported that in the United States, the State of Ohio accepted tax payments in Bitcoin in October 2018; subsequently, Indiana and New Hampshire, through regulations in January 2019, made tax collection in cryptocurrencies possible; and that Wyoming, by a law dated 1 February 2019, fully legalized cryptocurrencies by recognizing them as "digital assets" (Efe, 2021).

It is assessed that an increasing number of employees are able to purchase Bitcoin with their wages; that the purchase and sale of goods and services with Bitcoin is possible; and that even taxes on crypto gains can be paid in Bitcoin; in this context, it may be argued that Bitcoin has de facto evolved into a global currency. It is anticipated that the attainment by cryptocurrencies of the appearance of a real value will have significant effects on the usage domains and value formation of national currencies; under this scenario, national seigniorage rights and the sovereignty of money issuance may be opened to debate (Efe, 2021).



2.5. The Place of Cryptocurrencies in the Financial Sector

It is observed that a profound digital transformation has taken place in the provision of financial services over the past decade, supported by advances in technology and computing capacity, and that crypto-assets have emerged as a product of this innovative wave. These assets have become the subject of intense policy debates and are understood to raise serious concerns due to their potential effects on anti-money laundering, financial integrity, consumer protection, and financial stability. It is noted that financial authorities in Europe and globally have undertaken various regulatory and supervisory activities concerning crypto-assets within the confines of their mandates (Manaa et al., 2019).

It is stated that cryptocurrencies can be used as investment and payment instruments; however, their use for payment remains low on a global scale. The number of Bitcoin transactions has displayed a volatile yet upward trend in recent years; nevertheless, transaction volumes remain limited compared to traditional payment methods such as cash and credit cards. The use of Bitcoin-derivative assets as a means of payment is emphasized to be quite rare (Söderberg, 2018).

Although Bitcoin and altcoins have not, in the short and medium term, reached the level of fully substituting international money and financial instruments as payment and investment vehicles, current trends indicate that these assets have acquired the characteristics of a significant online currency and payment system. They have generated profound effects in many markets, particularly in financial markets; by virtue of advantages such as 24/7 trading, low transaction fees, and rapid transfers, they provide a competitive edge against traditional intermediaries and compel institutions operating with existing financial instruments to transform their business models (Ünalır, 2021).

Financial markets function as mechanisms that channel resources from economic units with a surplus of savings households, firms, the public sector, and the foreign sector—to those with a funding deficit, and they play a decisive role in capital allocation that enhances productivity and efficiency (Mishkin, 2007). An increase in the savings surplus raises the rate at which savings are transformed into investment; given the high multiplier effect of the financial system in Turkey, an emerging economy, the development of institutions and the diversification of financial instruments are assessed to be of strategic importance.

Financial markets are classified, by issuance method, as primary and secondary markets; in primary markets, securities such as bonds and stocks are issued for the first time, while in secondary markets these securities change hands (Mishkin, 2007). In the money versus capital market distinction by maturity, short-term debt instruments of less than one year are traded in the money market, while those with maturities longer than one year are traded in the capital market; owing to shorter maturities, risk is lower and investor preference relatively higher in money markets (Mishkin, 2007).

Among money-creating financial institutions are central banks and deposit/participation banks, which occupy a critical position in the economy through the creation of book money; non-money-creating institutions consist of structures that channel funds, such as investment companies, private pension and insurance firms, brokerage houses, financial leasing, factoring, forfaiting, and asset management companies (Turan, 2023). Banks, whose capacity to create book money stands out, have financial intermediation as their core function; they collect funds from surplus units and channel them as credit to deficit units; owing to their status as trusted institutions, savings are directed toward the banking system (Güven and Şahinöz, 2018).

Banking activities are conducted on the basis of information and document flows; despite processes of multiple copying and backup, systems may be exposed to cyberattacks or failures; by contrast, in blockchain, trust is established systemically thanks to the distributed ledger infrastructure and chain structure (Güven and Şahinöz, 2018). As noted in previous



sections, cryptocurrencies developed as an alternative to fiat money are predominantly perceived by users as payment or investment instruments; advantages such as high transaction speed, low cost, and disintermediation are assessed to increase interest in crypto-assets (Turan, 2023).

It is stated that banking transactions are increasingly migrating to digital environments worldwide and in Turkey, and that blockchain technology, which underpins cryptocurrencies, is among the most significant innovations of this digitalization process. Considering the frequent exposure of financial institutions to cyber risk alongside the robust infrastructure of blockchain, it is anticipated that grounding financial architecture in this technology could make substantial contributions to financial and price stability; moreover, thanks to crypto-assets and smart contracts, costs are expected to decrease further and the use of physical branches to decline.

Despite the distinctive infrastructure and innovative features of cryptocurrencies, their usability is dependent on fiat currencies; although they have gained acceptance in certain domains, their usage rates remain low compared to transactions conducted with fiat currencies such as credit cards or the U.S. dollar; therefore, under current conditions, their impact on monetary policy is considered limited (Alpago, 2018). On the other hand, should cryptocurrencies replace fiat currencies issued by central banks, demand for fiat currency in circulation would weaken; this could adversely affect the effectiveness of monetary policy and seigniorage—one of the principal income items of central banks—and the disintermediated structure could heighten uncertainties regarding the future of banking (Turan, 2023).

2.6. The Place of Cryptocurrencies in the Financial Framework

It is observed that the projection whereby Bitcoin and cryptocurrencies will assume a transformative role in financial architecture, thanks to their blockchain-based structures and distinctive characteristics, is shared by a large number of enterprises, and that concrete implementation steps have been taken in this direction (Turan, 2023). In parallel with the growing awareness of blockchain technology, diverse technological solutions have been developed via various cryptocurrencies; these innovations have come to be closely monitored at both the national and corporate levels. Following the publication of Nakamoto's paradigm-shifting article in the field of finance, it is assessed that the transition from the Bitcoin approach characterized as "DOS" to more user-friendly and scalable "WINDOWS"-like applications has gained momentum (Turan, 2023).

It is stated that features such as the operation of algorithmic mechanisms in lieu of third-party intermediaries and the elimination of transfer costs have accelerated the adoption of these assets in financial transactions. Ripple, one of the cryptocurrencies with broad application in the financial sector, is reported to have emerged in 2012 as an alternative to relatively slow and costly networks such as SWIFT or Western Union (WU), aiming to finalize payments between banks and their customers in the shortest possible time.

Founded in 2009, Fidor Bank is reported to have announced a collaboration with Ripple in May 2014, thereby becoming the first bank to integrate Ripple into its transaction infrastructure; the bank's CEO, Matthias Kröner, emphasized that customers could make instant and secure transfers without paying additional fees. Ripple is stated to have announced that it can work with a broad spectrum of stakeholders—from banks and regulatory authorities to entrepreneurs—and that, rather than disrupting the existing order, it aims to add value to products and services (Ripple, 2014).

It is noted that DISH Network, a telecommunications and internet service provider, attained the status of the first company in the pay-TV sphere to collect payments in crypto by accepting Bitcoin for monthly bills; that Lamborghini enabled payments in Bitcoin for vehicle sales; and that Wikipedia announced it would accept cryptocurrency donations (Turan, 2023).



Following the May 2015 announcement by the Commonwealth Bank of Australia that it was conducting crypto-based tests with Ripple, it is reported that in June, Westpac Banking Corporation and Australia and New Zealand Banking Group began trials with Ripple to achieve time and cost efficiencies; owing to the efficiency potential of distributed ledger technology, Deutsche Bank is also stated to have undertaken test-focused initiatives (Ghosh, 2021).

Cross River Bank, a U.S.-based institution, is cited as one of the first banks to offer services to commercial and retail clients on the U.S.–Europe corridor via the Ripple protocol; CEO Gilles Gade is reported to have stated that transactions would be executed as swiftly as possible and as securely as traditional banking, rendering international transfers instantaneous and lower cost. CBW Bank, founded in the United States in 1892, announced in September 2014 that it would use the Ripple protocol for international payments; CEO Suresh Ramamurthi emphasized that uninterrupted, reliable banking on a 24/7/365 basis was seamlessly achieved with Ripple; that this approach, which addresses structural problems of payments, offers a secure pathway at the international level; and that it could benefit banks in the future (Turan, 2023).

Earthport, established in 1997 and providing cross-border payment services to banks and financial institutions, announced in December 2014 that it would integrate the Ripple protocol into its existing network, thereby reducing costs for clients; its customer portfolio includes major institutions such as Bank of America and HSBC; following this agreement, Ripple's value reportedly increased by 200 percent in December 2014, elevating it to the position of the second-largest cryptocurrency after Bitcoin (Ripple, 2014d; Üzer, 2017).

In Turkey, it is recorded that Akbank entered into an agreement with Ripple to utilize blockchain for money transfers and, by the end of 2018, began sterling transfers via the blockchain network.

Inguard, which offers consulting and insurance products across all U.S. states, is reported to have become the first insurance company to accept crypto payments by announcing in 2013 that service fees could be paid in Bitcoin; it is noted that this choice also took into account its technology-focused customer base (Inguard, 2016).

According to a Reuters report dated October 2017, the Saudi Arabian Monetary Authority (SAMA) requested that banks in the country work with Ripple to support the execution of payments via blockchain-based software; training was planned for this transformation, which would provide banks with advantages in speed, transparency, and cost; the application aimed to render domestic and cross-border payments instantaneous; this development is assessed as an indication that central banks may also adopt favorable views toward crypto approaches (Reuters, 2018; Turan, 2023).

According to a report from February 2018, Western Union (WU), which provides international money transfer and payment services, had been conducting collaboration and testing processes with Ripple since 2015; Ripple's infrastructure was being evaluated to increase the speed of fund flows (Bloomberg, 2018).

It is noted that in July 2017, Falcon Private Bank, operating in Switzerland, offered clients the ability to buy and sell Bitcoin, thereby becoming the first institution in the country to facilitate crypto transactions at the banking level; in August 2018, Zurich-based Maerki Bauman Private Bank announced that it would accept cryptocurrencies, excluding illicit activities such as money laundering (Turan, 2023).

FINMA stated that it recognizes the innovation and potential within the financial sector and granted banking licenses to the blockchain-based Seba Crypto AG and Sygnum AG; however, by emphasizing that the element of anonymity could entail risks of money laundering and terrorist financing, it indicated that blockchain-based business models must be subject to regulation (FINMA, 2019).



A report published in September 2020 states that Atupri, one of Switzerland's major health insurance providers, would accept Bitcoin and Ether for health policy payments; it is noted that the company entered into an agreement with a service provider to conduct these transactions (Wright, 2020).

2.7. Expectations and Future Situations for Cryptocurrencies

It is observed that perspectives on the transformative capacity of technology diverge markedly: optimists envision utopian social orders composed of self-regulating individuals that dispense with the need for the state or trusted intermediaries, while skeptics contend that the domains of application are overstated, that the absence of regulation may yield adverse outcomes, and that in many cases trusted intermediaries will continue to provide valuable services. The long-term evolution of these technologies remains uncertain; some intermediaries may become obsolete, and a multitude of new financial instruments may be developed by firms that have not yet emerged. It is further posited that the most enduring legacy of cryptocurrencies may not be blockchain per se, but rather standardized digital identities in open-source software based on combinations of public and private keys; such a transformation could enable individuals to exercise greater control over their own data instead of being incorporated into closed information networks. Regardless of how the future unfolds, cryptocurrencies and blockchain protocols are moving forward as part of a technological wave that is reshaping the organization of production and trade; digital platforms, the sharing economy, applications, and three-dimensional printers are fragmenting production and facilitating peer-to-peer transactions; with increasing market concentration, risks are likely to rise.

It is anticipated that, because cryptocurrencies operate via easily deployable open-source software and decentralized network structures, they will retain their character as a digital means of payment; at the same time, alternative payment solutions may emerge, or the existing system may be enhanced to evolve into a stronger, more effective, and more secure form of virtual money; these processes could compel a fundamental restructuring of banking and the monetary order.

Given the dynamic character of the cryptocurrency market and the prospect that its interactions with the financial sector may expand in scope in the future, it is stated that the sector should be continuously monitored; as the crypto-asset ecosystem develops, risks may increase, and greater clarity regarding the application of standards could create a more conducive framework for investment (Manaa et al., 2019).

It is noted that, owing to advantages such as high transaction speed and low costs, some cryptocurrencies may become more widely adopted over time; the possibility that they could assume most of the core functions of money in certain regions or within particular e-commerce networks should not be discounted; if crypto-assets become prominent in the digital age, demand for central bank money may decline (He, 2018). It is further stated that the range of commentary concerning the future of cryptocurrencies is broad; in the current conjuncture, where money transfers can already be executed instantaneously and at low cost thanks to the widespread use of credit cards, debit cards, and online bank accounts, the prospect of a digital currency may be less disruptive than it appears (Arnason, 2015).

It is emphasized that, alongside the strengths of crypto-assets, there are also weaknesses; despite a history exceeding a decade since gaining visibility with Bitcoin, uncertainty regarding their future persists; alternative solutions that could supplant this architecture may be developed in the period ahead; consequently, there is always scope for speculation concerning the forms that money and value systems may take. Cryptocurrencies constitute the latest link in the history of payments, which extends from the barter stage to metallic and paper money and then to the phase in which EFT and checks gained prominence; in parallel with changes in conditions



within the economic cycle, such monetary systems will continuously evolve; therefore, the crypto system cannot be regarded as the final stage (Ünalır, 2021).

It is argued that the lack of legal infrastructures for cryptocurrencies creates a country-level disadvantage insofar as states face difficulties overseeing this domain and deriving tax revenue; that the crypto ecosystem harbors a dark side due to its potential to facilitate money laundering; and that the impossibility of issuing new money once a software-determined supply cap is reached could lead to excessive appreciation and unfair competition (Köylü, 2018). Nevertheless, it is stated that the primary priority should be to establish a framework that minimizes the likelihood of virtual currencies being used for illicit transfers; that the development of virtual currencies should not be categorically rejected, as it may improve value transfer among users; and that the establishment of foundational regulatory infrastructure on a global scale is of paramount importance (Dibrova, 2016).

3. CONCLUSION AND RECOMMENDATIONS

It is observed that rapid transformations are taking place in individuals' habits and attitudes alongside advancing technology; the fact that information has become accessible independent of time and place has opened the door to new financing channels and laid the groundwork for the emergence of diverse investment instruments. Technological progress has reshaped the form of money and thereby constituted a new domain; blockchain-based virtual assets are assessed to be generating fresh opportunities in the financial sphere. Owing to their non-reliance on a central authority, robust security features, and the possibility of fast and convenient trading, cryptocurrencies are attracting growing interest day by day; their appeal to investors is further reinforced by difficulties in traceability and the immaturity of taxation practices. In line with the benefits offered, as transaction volumes of crypto-assets—which provide a user-friendly and secure framework—increase, governments have begun to voice concerns regarding untaxed gains, the laundering of illicit proceeds, and the financing of terrorism; in this context, some countries have enacted legal regulations, others remain in the monitoring and assessment phase, and still others have imposed comprehensive bans owing to vulnerabilities in their financial systems. While innovative financial instruments and services continue to possess value-creation capacity, the fundamental rules of economics and finance retain their validity; given the high volatility and speculative character of crypto markets, price stability and effective use in financial services are of critical importance. It is further evaluated that the blockchain architecture underpinning cryptocurrencies, as an innovative and high-potential field, may move to the center of investment decisions; the adoption and development of this technology could contribute to a future financial system that operates more transparently, securely, and efficiently.

It is stated that the acceleration of globalization and technological innovation has given rise to a multitude of concepts and applications that are transforming daily life, and that among these developments, blockchain-based cryptocurrency systems constitute one of the most noteworthy financial innovations of recent times. The cryptocurrency phenomenon entered the agenda of financial markets in 2008 with Bitcoin and has persisted to the present; alongside advantages such as low cost, high transaction speed, and the potential to function as an investment vehicle, it also entails drawbacks such as inadequate legal safeguards regarding consumer protection, as well as high volatility and uncertainty; nevertheless, it is observed that its use has spread steadily since inception and its popularity has increased.

It is noted that, as one of the most striking developments in the financial domain, cryptocurrencies elicit divergent and often opposing assessments regarding their future; the optimistic view is supported by arguments grounded in the facilitation of transactions, the reduction of costs, and structural security, and within this framework, it is observed that Bitcoin



in particular has begun to gain recognition across many countries; by contrast, the opposing view emphasizes risks related to ease of use in the financing of illicit activities and heightened speculative effects.

It is reported that the total market capitalization of cryptocurrencies exceeded 2 trillion dollars in 2021, signaling a significant scale within the economy; taking into account their advantages and technological innovations, it can be projected that the trend toward greater diffusion will continue in the future; in light of this landscape, international organizations and many countries have underscored the need for more comprehensive research.

It is asserted that the solution set for the current situation is centered on the blockchain infrastructure; progress in this technology will yield outcomes favorable to cryptocurrencies in terms of transaction speed, capacity, cost, and security; another determinant of the future trajectory will be the regulatory framework, given that the legal infrastructure remains uncertain; regulations that are supportive and enabling—without stifling innovation—will enhance confidence and interest, reduce uncertainty, and institutionalize the market; although in the short term such regulations may trigger value declines driven by speculation, in the long term they will have positive effects; increasing cryptocurrency literacy is critical for the healthy development of the market; in any event, it is stated that a future vision in which cryptocurrencies are excluded is becoming increasingly untenable.

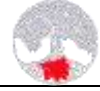
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