

AN EXPLORATORY CASE STUDY: ROMANIA'S DIGITAL INNOVATION OPPORTUNITIES DUE TO RISE OF DIGITAL CURRENCIES

Cristina Sbîrneciu^{1*}, Nicoleta-Valentina Florea²

¹⁾²⁾ Valahia University of Târgoviște, Târgoviște, Romania.

Abstract

This article examines the rise of digital currencies in the Eurozone. By probing into the National Strategy regarding the Digital Agenda for Romania 2020 (Romanian Government, 2015), we are aiming to present future researchers with a set of propositions to continue the inquiry on possible opportunities derived from emerging opportunities associated with innovation in the Decentralized Financial sector. This exploratory case study is determined to identify a positive and advantageous moment for Romania while planning the governmental digital strategy in the Field of action III - eCommerce, research and development, and innovation in Information Technology & Communication (IT&C). Given the strong influence of a well-executed implementation plan to achieve strategic objectives, we consider it crucial to prioritize this subject. In this exploratory case study, we analyzed the development of centralized digital currencies in some European National Central Banks and examined the impact of blockchain technology on the financial sector. Additionally, we provided a detailed analysis of the advantages and disadvantages associated with the increasing popularity of digital currencies. It was concluded that due to the lack of in-depth empirical studies, and due to a relatively young and highly volatile digital currency market, we cannot ignore the chances Romania has to assimilate and develop the latest technologies in the financial sector or to improve the existing e-commerce framework and promote investment in innovation. The outcome of the case study is that there are specific and unique opportunities to improve the existing traditional financial system, by creating digital solutions, flexible and accessible to all consumers in Romania, and beyond.

Keywords

Centralized digital currencies, digital euro, financial innovation, cryptocurrencies

JEL Classification

G11, G14, G15.

* Corresponding author, **Cristina Sbîrneciu** – cristina.sbirneciu@gmail.com

Introduction

Financial innovations based on modern technologies put a lot of pressure on the existing financial systems around the world, which are also constantly changing and expanding. Some technological advances generate alternative financial structures, which either exist in parallel with the old ones or simply replace them over time.

The Fourth Industrial Revolution was defined by the emergence of modern technologies like artificial intelligence, robots, virtual and augmented reality, 3D printing, Internet of Things (IoT), Cloud, blockchain, and biotechnologies (Mhlanga D., 2022), which were accompanied by improved processes such as e-commerce, e-recruitment, e-selection, e-coaching, e-mentoring, e-banking, e-payments, e-booking, e-learning, and e-development (Florea N.V., Tanasescu D.A., 2019). Such modern technologies are used in all fields: technical, social, economic, and particularly, finance. Financial inclusion improved macroeconomic stability, sustainable growth, creation of new jobs, availability of financial services (Mhlanga D., 2021), and social inclusion by reducing the poverty, offering new opportunities for disadvantaged populations (Mhlanga D., 2020), and eliminating income inequalities (Omar A., 2020).

Our economy is in the middle of the technological revolution. The current technological revolution is influencing the financial system, including the construction of money. In addition to improvements and changes to the existing systems, several attempts have been made to innovate in less traditional areas. The most prominent example is digital currencies, which could transcend traditional money in bank accounts and physical cash. Money in bank accounts has been digital for decades, as have electronic deposits in digital registers (Kaczmarek P., 2022). However, the digital revolution is attempting now to digitize all money, including cash.

A complete replacement of either bank accounts or cash is neither desirable nor realistic. Presently, central bank currency is obtainable as physical cash, yet its use for transactions is decreasing as more Europeans (and others) opt for digital payments and online shopping (Panetta F., 2021).

This article aims to analyze what additional digitization of money looks like, and what is the link between the risks associated with emerging financial technologies and opportunities generated by digitalization. By probing into the National Strategy regarding the Digital Agenda for Romania 2020 (Romanian Government, 2015), the study aims to present future researchers with a set of propositions to continue the inquiry on opportunities derived from emerging opportunities associated with innovation in the Decentralized Financial sector. This exploratory case study is determined to identify a positive and advantageous moment for Romania while planning the governmental digital strategy in the Field of action III - eCommerce, research development, and innovation in IT&C.

According to the latest European report, Romania is once again in the last place on the EU's digital ranking (DESI, 2022) as is seen in Chart 1 below.

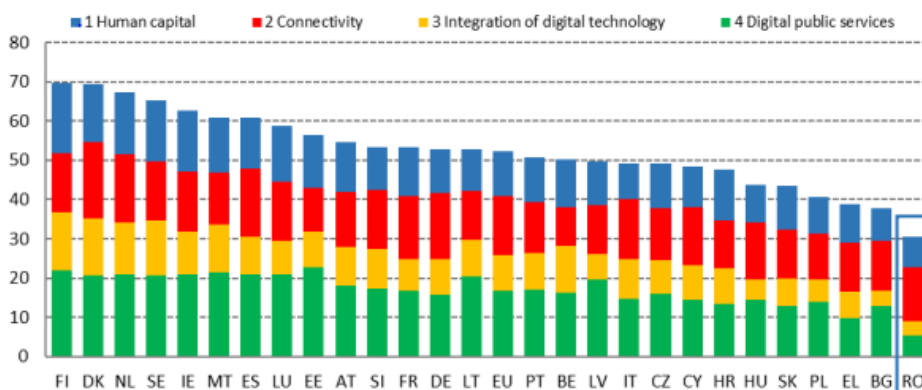


Figure no. 1: Digital Economy and Society Index (DESI) 2022 ranking

Source: European Commission, 2022

For Romania to fully benefit from the momentum of the digital transformation in European countries, and to take advantage of the emergence of technologies in the financial system, immediate action must be taken to seize the opportunities. The adoption of digitalization can contribute to combating the lack of labor, preparing the economy and the population for future market transformation, but also to the rapid and involuntary development of technological solutions, the development of an innovation culture, and finally the legislative environment conducive to new development technologies.

This need for growth in Romania is a unique opportunity to increase the digital potential in public-private partnerships and intra- and inter-sectoral partnerships. We believe that this subject requires high priority because a particularly good implementation plan is one of the strongest drives for achieving the defined goals.

The final goal is to match the opportunities generated by the developments of the European digital currency market with the goals of Romania's digital strategy on enhancing the e-commerce framework and promotion of investments in innovation.

1. Digital Currencies of Central Banks

1.1 Framework Analysis

To better understand the multitude of new entrants in the payments space, we offer a simple classification scheme visible in Chart 2 below, called the "Money Tree" (Adrian T., 2019). At its core are four key features that help distinguish different forms of money: type, value, support, and technology.

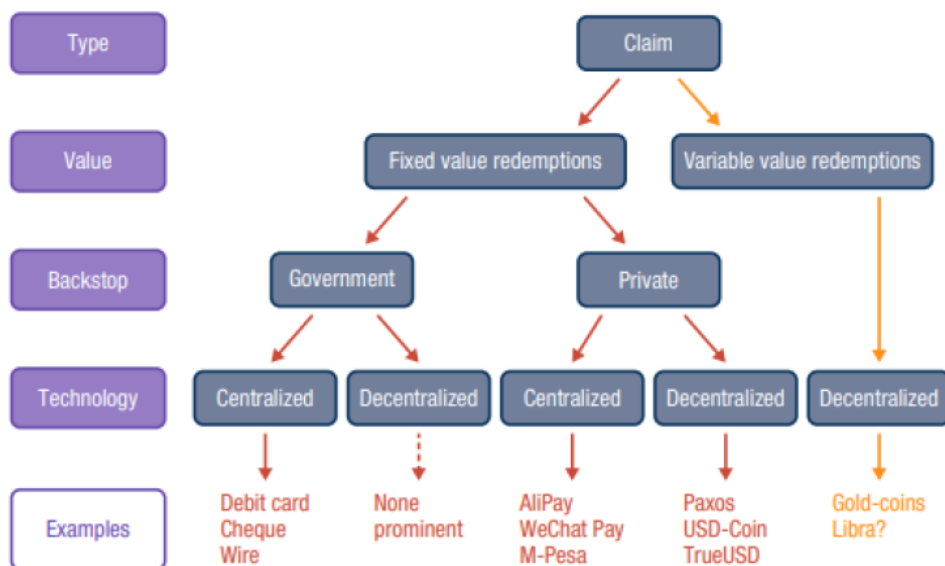


Figure no. 2: Simplified "Money Tree" - classification of different forms of money.

Source: Adrian, T., Mancini Griffoli, T. (2019). The Rise of Digital Money

Cash has value, and bank deposits have value and are good as a means of payment. So, what is the advantage of stable digital currencies (stablecoins)? Why has the adoption of cryptocurrencies by central banks been accelerated? (FATF, 2020).

The power of digital stable currencies is given by their attractiveness as a means of payment. As stated in the Payment Statistic Report 2020 the low costs, and the overall coverage and speed of stablecoins, represent immense potential benefits (European Central Bank, 2021). Stable digital currencies can also allow uninterrupted payments for blockchain-based assets and can be incorporated into digital applications by a community of active developers, given their open architecture, unlike traditional banking systems.

Blockchain is a database that is not very sophisticated but has some peculiarities. First, blockchains are databases in which only information is added, and cannot be modified later. Also, each entry (called a block in the database) is encrypted and contains a "fingerprint." The blockchain is a common immutable register that facilitates the process of recording transactions and tracking assets in a business network (COINZIX Blog, 2022).

1.2 The Rise of Digital Currency

It is becoming increasingly clear that the new era of digitalization is showing major changes both in the context of the global economy, in the way how traditional financial operations are organized and managed, and in technological advancement.

In the Eurozone, the total number of digital payments increased by 3.7% in 2020. Card payments accounted for 47% of the total number of online payments in 2020 as is visible in Chart 3 below, while credit transfers accounted for 23%, and direct debits accounted for 22%. The number of payment cards issued increased by 6.5%, in 2020 and the transactions processed in the euro area retail payment systems totaled 36 trillion Euros out of approximately 46 billion transactions (European Central Bank, 2021).

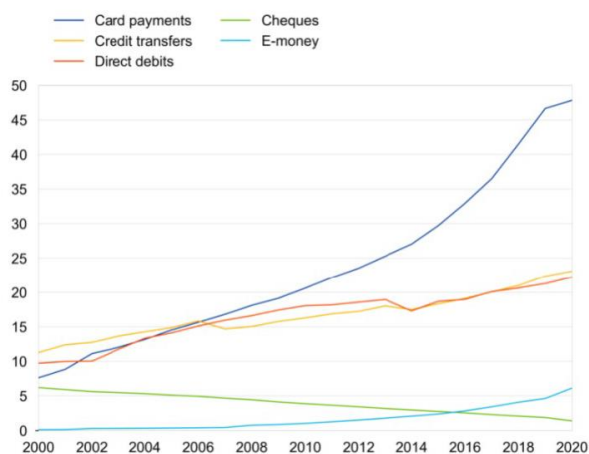


Figure no. 3: Use of the main payment services in the euro area (number of transactions per year in billions)

Source: European Central Bank's Payment Statistic Report: 2020 published on 23 July 2021

In the current context of the global economy and finance, we cannot talk about an integrated economy, without referring to the new blockchain technology, which has revolutionized the way individuals interact and act in financial transactions, investments, and online payments (Renduchintala, T., 2022).

Bitcoin, and consequently blockchain technology, has introduced a crucial innovation in the realm of digital financial transactions by enabling the network to authenticate financial data and double spending without constant central authority oversight. In addition, the system is completely transparent, and all data is available to any user because all records of all transactions were kept in the same place since the beginning of blockchain, thus reducing the risk of hacking or operating the system by almost 0% (Krishnan H., 2015).

Although the subject of cryptocurrencies and blockchain technology is still dominated by major controversy in general, the concept continues to gain popularity, especially among young people, visionaries, or entrepreneurs, extending its benefits and innovative principles in many business sectors, especially in IT, in the public sector or research and development divisions. In addition to its financial application, the blockchain has revolutionized the way virtual data is stored and managed on a large network, offering new ways to do business online and reshaping some classic procedures (Dahiya A., 2022).

The market for financial technologies (FinTech) and global advancements are rapidly expanding in various directions (Chishti S., 2016), including blockchain and cryptocurrency, Initial Coin Offerings (ICOs), artificial intelligence (AI), and automated robotic processes. These advancements encompass online payments, financial transfers, credit, open banking, investments, Decentralized Finances (DeFi), and compliance-driven investments in technology, such as RegTech (Charoenwong B., 2022) and InsurTech (Zarifis A., 2022). As a result, it becomes challenging for researchers to keep up with the accelerated pace of development in these fields.

There is a wealth of literature and research available globally on FinTech and specifically on Bitcoin. These resources present and analyze emerging financial technologies and FinTech products, highlighting their advantages and benefits for the economy and society (Chishti S., 2016). They also discuss the future and prospects of these technologies, including the intersection of engineering and economics (Reed J., 2016), growing security and ethical concerns (Antonopoulos M., 2017), and evaluations of investments and entrepreneurial opportunities. Additionally, these resources discuss the benefits for individuals and businesses (Karame, G., 2016) that embrace the use of cryptocurrencies (Franco, P., 2015).

Talking specifically about Bitcoin, we must, of course, mention the work of the anonymous inventor of Bitcoin (Nakamoto S., 2008), who introduced and described the digital currency Bitcoin, which is by far the most famous and most used cryptocurrency to date. A few months later, in January 2009, Satoshi Nakamoto launched the first version of the bitcoin software, thus generating the first cryptocurrencies – bitcoins. Bitcoin's fundamental concept is that online payments can be transferred from one location to another without the involvement of a financial institution. Instead, it utilizes a peer-to-peer network where the electronic currency is represented by a sequence of digital signatures. The author (or authors, we do not know because Nakamoto is a pseudonym) proposes an online payment system without the use of a trusted third party, relying solely on a peer-to-peer network, using evidence from working algorithms to record all online transactions (Mohanty P., 2019).

Fifteen years after its launch, the system is fully operational, with over 80% of the total number of bitcoins already mined. As of January 2022, 18.9 million bitcoins have already been issued, with approximately 2.1 million bitcoins remaining. Currently, approximately 209,000 confirmed transactions are made daily (Blockchain Charts). What is even more fabulous is the explosive development of the cryptocurrency market, where today we can find over 10,397 (Statista, 2022) different cryptocurrencies and

tokens. The tokens are also cryptocurrencies, but do not have their own blockchain technology; they work on the blockchain of another cryptocurrency (Crypto Dictionary).

There are few books or academic research papers related to FinTech and blockchain in Romania, especially about their implications for the Romanian economy or society, although we can find some active Romanian websites that offer news and analysis through specialized blogs. However, in the last five years, we have noticed a growing interest among Romanian researchers regarding bitcoin and the FinTech area in general.

The first line of research focuses on the analysis of bitcoin in general, as a disruptive innovation, with its advantages and disadvantages and its influence in relation to the traditional banking system (Făt, C., 2015), (Muresan, C., M., 2015), (Bucovetschi, O., 2018).

A second line of research is related to the security and risks involved in using or investing in bitcoin or potentially fraudulent transactions that may occur due to the specific anonymity of bitcoin (Scheuan M, 2018), (Petrescu A., 2018).

A third line of research is related to the viability and prospects of blockchain and bitcoin technology. (Dimbean-Creta, O., 2018), (Badea L., 2017), (Firica O., 2017).

Finally, a fourth direction of research is related to the opportunity to implement regulations for the cryptocurrency market and to find solutions for the taxation of gains made with virtual currencies and other FinTech products. (Paunescu M., 2018).

1.3 SWOT for IT&C Innovation in Romania

Probing into the National Strategy regarding the Digital Agenda for Romania 2020 (Romanian Government, 2015) that was developed by the Romanian Ministry for the Information Society, as the public authority responsible for the realization and implementation of the Digital Agenda for Romania, we have discovered that the method used to help project an overall vision was the SWOT analysis.

The National Strategy for the Digital Agenda in Romania was established in alignment with the Digital Agenda for Europe 2020 program (European Commission, 2010), which serves as a reference framework for the expansion of the digital economy from 2014 to 2020. Because the realization of the 5 common objectives of the European Digital Agenda for Europe 2020 requires cumulative efforts of the member states, Romania must consider maximizing the impact of public policies and look at IT&C investments to transform the Romanian economy. These objectives are closely related to each other, supporting each other, and being promoted as national objectives for each member state of the European Union.

The association of strategic objectives with specific objectives in the field of IT&C leads to the development of the digital economy and transformations on several levels: legislation, innovation, procedural changes, behavioral changes, etc. To support technological development and innovation that can have a positive impact on the digitalization of public services, it is necessary to promote a competitive environment

that ensures equal opportunities for all initiatives. Enhancing the current e-commerce environment to offer a clear legal foundation for companies and customers and encourage spending on innovation.

Action area 3 of the National Digital Strategy is dedicated to eCommerce, Research, Development, and Innovation in IT&C, is built on Romania's regional comparative advantages, and supports economic growth in the private sector.

Table no. 1. SWOT for IT&C Innovation in Romania

| Strengths | Weaknesses |
|--|---|
| <p>Presence of specialized human resources in IT&C research, development, and innovation.</p> <p>Significant development of the national IT&C sector, compared to the region.</p> <p>The connection to international flows of innovation and skills, the existence of IT&C research and development centers in Romania, within private companies.</p> <p>The development of competitive products in the domestic and foreign markets.</p> <p>Low development costs – using local human resources.</p> <p>Improving the quality and modernizing the research infrastructure, including the computing infrastructure used in research.</p> | <p>The low level of investment in innovation and research.</p> <p>Free migration of researchers into European space.</p> <p>Insufficient access of local SMEs and start-ups to private loans to ensure co-financing.</p> <p>The low level of public funding.</p> <p>Hardly reduced budget allocations for innovation and technological transfer.</p> <p>Fragmentation of the research system in Romania, the existence of many specialized research institutes in different fields.</p> |
| Opportunities | Threats |
| <p>The growing demand for autonomous systems that incorporate elements of artificial intelligence.</p> <p>Increasing the volume of transferable data between IT&C systems.</p> <p>Job creation through the development of sectors with regional comparative advantage, such as the IT&C sector.</p> <p>Development of research based on industry needs (“industry driven research”).</p> <p>The development of business incubators or clusters, with the role of stimulating regional development by bringing together all actors in</p> | <p>The technological advantage of economically developed states.</p> <p>High competition worldwide due to advanced research infrastructure.</p> <p>Non-proper use of funding sources.</p> <p>Labor mobility to other countries, due to the attractive salaries and superior conditions offered.</p> |

| | |
|--|--|
| <p>the value chain: universities, SMEs, and legislative forums.</p> | |
| <p>The introduction of fiscal facilities for economic agents that invest in research, development, and innovation.</p> | |

Source: National Strategy regarding the Digital Agenda for Romania 2020 published on February 2015 by the Romanian Government

The following opportunities have been extracted from the Romanian National Digital Strategy Table 1 above, in the context of blockchain technology evolution and the creation of the digital Euro.

- Growing demand for autonomous systems that incorporate elements of artificial intelligence (AI).
- Increasing volume of transferable data between IT&C systems.
- Job creation through the development of sectors, such as IT&C.
- Development of industry-driven research.
- Development of business incubators or clusters, with the role of stimulating regional development by bringing together all actors in the value chain: universities, SMEs, and legislative forums.
- Introduction of fiscal facilities for economic agents that invest in research, development, and innovation.

2. Digital Currencies of Central Banks

The Central Bank Digital Currency (CBDC) is a digital currency that functions as the legal tender of a specific nation. Conceptually, CBDCs are not meant to replace paper money, but only to complement the existing financial systems of the countries that adopt them. These are like stablecoins (stable cryptocurrencies), at a 1: 1 ratio with the specific fiat currency. CBDC is an electronic form of money, a claim on the central bank, complementary to other existing forms of money (cash and bank accounts) used to make payments (Sethapat V., 2023).

The optimal design for central bank digital currencies (CBDCs) analysed the ideal configuration for central bank digital currencies (CBDCs) in a scenario where individuals prioritize cash, CBDCs, and bank deposits based on their preferences for security and anonymity. The payment instruments' dependency on the number of users due to network effects is also considered (Agur I., 2022).

As Bitcoin gained prominence in the public domain, a better understanding of the technology behind it made it easier for people to create alternative cryptocurrencies (altcoins). The first wave of national cryptocurrencies was initiated by individuals.

Recently, however, there have been more mentions and even actions from European governments and institutions to implement national cryptocurrencies. All attempts so far have tried to address real or imaginary problems.

Central Bank Digital Currencies (CBDC) aim to create the opportunity for everyone to use central bank money for digital retail payments. This is the crucial point of the ECB's project to develop the digital Euro.

In the absence of the central bank's currency serving as a definitive monetary reference point, individuals must evaluate the reliability of private issuers to determine the value of each private currency, which undermines the currency's distinctiveness. Historical events have consistently demonstrated that multiple forms of private currency coexisting in the absence of sovereign currency resulted in financial crises.

The main policy objective of a digital Euro would be to prevent such situations. Retail CBDCs aim to ensure that public money remains widely accessible and usable for day-to-day transactions.

2.1 Digital Euro

The introduction of a digital Euro is approaching. Everyone in Europe will have access to the European Central Bank's cryptocurrency money. However, given that the ECB wants to maintain financial stability, a limit is expected on how many digital Euros users can hold. The digital euro is intended primarily as a payment option, rather than an investment tool. However, the widespread use of the digital Euro as a means of payment is unlikely, as it will not provide additional benefits and will be subject to restrictions. However, a high degree of data protection could make this more attractive than other payment options for users who place great emphasis on their privacy. Legislators could also force traders to accept the digital Euro to encourage its use.

The ECB is driven by the policy objectives of the National Central Banks in European countries, which are considering the introduction of digital cash or are already experimenting with their own prototypes. In particular, the underdeveloped economies hope that the ECB's digital money will open the door to greater digitalization and efficiency in the payments sector while giving large sections of the population access to digital payment options.

The ECB, like other major central banks, could soon face foreign exchange competition on its territory for the first time. The Internet and blockchain technology enables the secure transfer of assets without the involvement of local institutions in the security, processing of transactions, or control of access to the transfer system. However, the issuance of digital money by the central bank will not do much to strengthen the competitive position of the Euro in Europe. This would make the digital Euro attractive - as a savings option, as an alternative to bank deposits. While deposit insurance protects small investors, an interest-free digital Euro, as announced, could be a money-saving option if banks extend their negative interest rates on ever-smaller deposits (Mai H., 2021).

3. Digital Currency-Driven Technologies

The European Central Bank is following the trend of numerous other central banks exploring digital currency, with the digital euro set to introduce innovative opportunities in Europe. In July 2021, the ECB announced that it will conduct a two-year investigation into the digital euro, which is scheduled for release in 2026. This venture represents a significant stride for the payments industry and may yield a plethora of exciting prospects for Europe. The digital euro will assist in safeguarding European sovereignty in digital, economic, and monetary contexts by guaranteeing independence over financial transactions within the European Union, thereby limiting the influence of non-EU private entities. The COVID-19 pandemic highlighted the significance of critical infrastructure, such as payments, which are managed by local public authorities.

A digital Euro would offer commercial banks a standard currency that is interoperable, meaning that all commercial banks would be required to use it. This would eliminate the problem of customers of a commercial bank using an isolated currency. In terms of the customer-centric digital Euro currency, commercial banks would be responsible for its distribution, just as they currently handle the physical distribution of the Euro. The potential for the development of new business models is immense with the implementation of a CBDC to complement physical cash, and commercial banks can be an essential component of these new models, expanding their offerings and services.

The introduction of the digital euro would also be advantageous to the European economy. Payment is an essential service for the entire economy, and an efficient solution could enhance the efficiency of companies, produce new business models, and drive economic growth. If programmability is integrated as a feature, with an emphasis on programmable payments, the ECB could provide new avenues for innovation. The advantages of this could revolutionize the business world and propel us further into a digital future.

With the development of blockchain and digital currencies, central banks around the world are accelerating the CBDC development process. However, the adoption of the blockchain in CBDC design is still controversial.

3.1 FinTech and Financial Innovation

While many technologies enabling FinTech are not new, they are now being utilized by financial institutions and entrepreneurs to create innovative financial products and services. Factors driving traditional financial innovation also apply to FinTech, resulting in a significant amount of innovation. The depth of innovation, a newly introduced concept, is important, as deeper innovations have a greater capacity to transform financial services. FinTech innovations are often deep and have the potential to significantly change financial services, which may also increase the likelihood of impacting financial stability (Schindler, J., W., 2017).

Financial inclusion is about the effort of financial products and services to be easily available and affordable for the population (individuals and companies). FinTech such as digital wallets enables digital transactions by using a smartphone (Muhammad, A.,

2021). The digital wallet ecosystem supposes a flexible, strong, valuable, and diverse technological platform to sustain online processes and services to achieve continuous growth and competitive performance in long term and especially to educate its customers about its functions. Computational technologies are crucial in revolutionizing the financial industry through digitization and the adoption of modern technologies. The use of FinTech in managing investment records should provide customers with the assurance of protection against fraud, evasion, and money laundering while managing the associated risks (Nader, N., 2019).

3.2 CBDC as Monetary Anchor for Digital Innovation

The ongoing digitization of our economy is bringing about significant changes in various aspects of our lives, including payments. In response to changing needs, innovative forms of digital private money are emerging, which are transforming the payment landscape and the way we pay. Meanwhile, non-cash payment methods, such as cards, are becoming more prevalent, according to the European Central Bank in 2020. Additionally, due to the pandemic, cash is increasingly being used as a store of value and more frequently as a means of payment (Zamora-Pérez, A., 2021).

If these trends continue and intensify, cash may no longer have a significant role and may become an unpopular means of payment due to its inadequacy to meet people's needs. Similarly to how the internet and email made postage stamps less useful, a digital Euro could also reduce the relevance of cash in an increasingly digital economy. Consequently, the digital Euro should be designed to encourage its widespread use as a means of payment, while also preventing it from becoming too successful and posing a risk to bank transfers or eliminating private money altogether.

The convergence of digitalization and innovation is driving the emergence of novel retail financial services, with an increasingly decentralized provision as more financial and non-financial actors seek to better serve consumers. Additionally, big tech firms are venturing into financial services and exploring fresh ways to offer payment options to their users. Their payment services are now part of everyday life: they allow users to pay at point-of-sale terminals and on e-commerce platforms and applications. But the big tech does not stop there, because they are looking for ways to provide additional financial services (European Central Bank, 2021).

The intersection of these two trends creates the potential for stable currencies, which have been limited in their use and scope so far, to quickly expand worldwide, leveraging the existing large user bases of high-tech companies. This evolution warrants close attention, as the risks of such structural shifts can be sudden and potentially destabilizing.

3.3 Changing the Structure of Financial Intermediation

Big tech companies are starting to offer various financial services and compete with established financial institutions. While their direct involvement in the financial sector is still limited worldwide, they could become key players, particularly in the retail financial services industry. In some markets, major technicians have started lending to

individuals and SMEs and providing insurance and wealth management services (Cornelli, G., 2020). Tech companies have expanded their presence in emerging and developing economies at a rapid pace, but they are also increasing their role in advanced economies.

Given their size, access to a large customer base, and the advantage of artificial intelligence (Chakravorti, B., 2021), great technicians have a large-scale advantage and information in addition to banks (Panetta, F., 2020). The potential for tech companies to expand quickly and compete with banks in financial services could initially lead to innovation and greater financial inclusion. However, it could eventually hinder competition if dominant tech companies abuse their market power. This could lead to higher costs as well as data protection and security issues (Feyen, E., 2021).

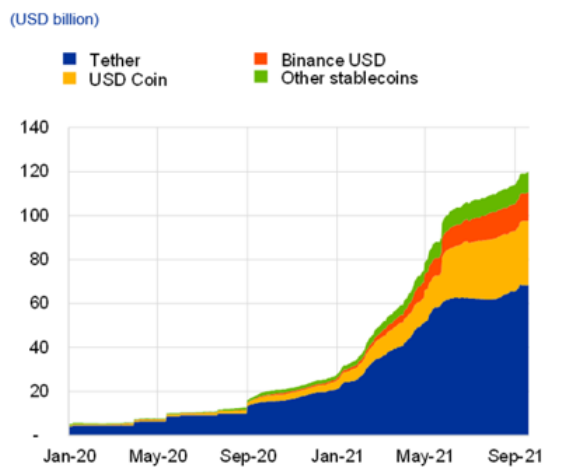
3.4 Changing the Structure of Financial Intermediation

Big tech companies have emerged as significant participants in the global financial markets, despite not providing extensive financial services, owing to their vast reserves of liquid assets, which comprise marketable securities.

The aggregated liquid assets of Alphabet (Google holding company), Apple, Meta (formerly Facebook), and Amazon have quadrupled since 2011 to \$ 370 billion in 2020, more than the (high quality) liquid assets of five of eight systemically important banks worldwide, based in the Eurozone. As of the end of 2020, the combined liquid assets of GAFA exceeded the GDP of eleven euro area countries and represented around 10% of the GDP of the largest euro area economies, using the size of the real economy as a comparison. Given the speed with which their assets are growing, the influence of big tech companies on the dynamics of the global market will increase even more, and the increased lack of secure assets that this may cause could affect financial stability (Gourinchas, P., O., 2012).

The aforementioned factors are only a small part of the picture. Big tech firms are also creating digital substitutes for conventional currencies in the form of stablecoins. Aside from the impact on global payments and finance, these novel financial instruments will gradually transfer wealth to fresh investors with diverse investment tactics and asset portfolios. This change has the potential to change the way money and credit are created (Panetta, F., 2020), and already alter the process of creating money and credit.

According to the European Central Bank, the market capitalization of total stablecoins on the market has grown 30 times between January 2020 and September 2021. In less than two years, stablecoin Tether alone, which is the market leader, reached a total high volume of \$60 billion (about \$180 per person in the US). Together with USDT, Binance USD, and the other stablecoins reached a total volume of \$120 billion (about \$370 per person in the US).

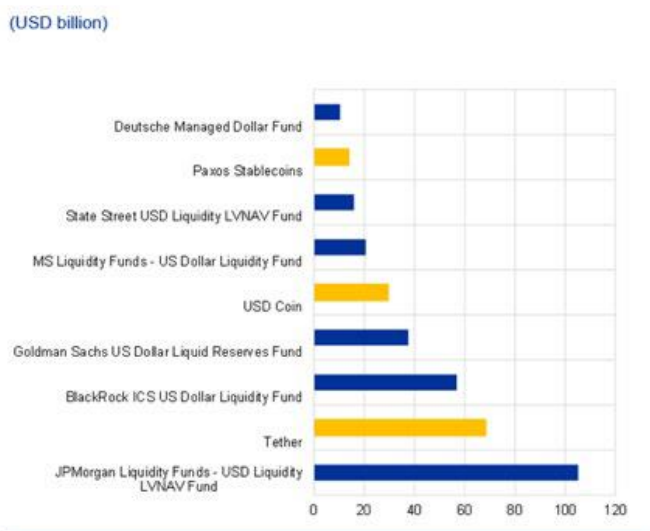


Source: CryptoCompare and ECB calculations.

Figure no. 4: Market capitalization of the largest stable digital currencies

Source: *A regulatory and financial stability perspective on global stablecoins,* Macprudential Bulletin (European Central Bank, 2022)

Stable currencies issued by large tech companies could expand rapidly globally. The substantial customer base of big tech companies and their practice of network outsourcing, coupled with the advantages of payment and other services clustering on platforms and utilizing "super-apps," could lead to a significant expansion of their role in the financial sector. They could become larger than the largest funds in the money market as shown in Chart 4 above and reach a larger order of magnitude than the current market value of existing stable currencies (Mhlanga D., 2022).



Source: Fitch European Money Market Fund Compare (June 2021).

Note: The MMFs displayed are the largest prime-type and USD-denominated Europe-domiciled funds by asset size in June 2021.

Figure no. 5: The size of stable digital currencies relative to major FMMs in Europe

Source: *Macprudential Bulletin* (European Central Bank, 2022)

Over a span of 22 months (about 2 years), only on major FMM in Europe, JP Morgan Liquidity Fund managed to bypass the stablecoins individual volumes with more than \$100 billion (about \$310 per person in the US) (about \$310 per person in the US), but Tether stablecoin overpassed 5 major FMMs with a market volume of almost \$70 billion (about \$220 per person in the US) (about \$220 per person in the US), as it is visible in the Chart 5 above.

3.5 Avoiding the Accumulation of New Global Systemic Risks

Other challenges posed by the confluence of big tech companies and currencies arise from the interaction between financial stability and other public policy objectives. Stable currencies can become a vehicle for money laundering and terrorist financing. (Financial Action Task Force, 2020). Interaction with antitrust issues and data confidentiality are even more relevant. If large tech companies integrate financial services with non-financial services and leverage outsourcing, they could swiftly amass excessive market dominance and engage in anti-competitive conduct.

Without adequate regulation, these developments may exacerbate global shocks and erode financial resilience. Similarly, the regulation of banks required a significant crisis to intensify, and money market funds, investment funds, and marginalization practices necessitated a similar level of focus. To keep up with technological advancements,

regulatory efforts must be continuous, and regulators and supervisors must be given the necessary authority. Nevertheless, it should be noted that while regulation is necessary, it is insufficient in addressing these new concerns.

4. Digital Currency-Driven Technologies

The adoption of new digital means of payment could be rapid, in line with the development of technologies, and could bring significant benefits to customers and society, including payment efficiency, increased competition, financial inclusion, and innovation in related sectors. At the same time, risks are essential for financial stability and integrity, the transmission of monetary and antitrust policy, and must be addressed with innovative solutions.

On the other hand, political factors will not be able to remain indifferent. In fact, their actions will influence the adoption of new means of payment and their design. One approach is for central banks to engage in a public-private partnership with FinTech companies to provide a secure, liquid, and digital alternative to cash - a synthetic central bank digital currency or sCBDC for short - that comes with its own benefits. and risks. The literature briefly summarizes the possible disruptions caused by the new means of payment. (Adrian T., 2019).

An evaluation of the correlation between financial innovation and the growth and vulnerability of banks, as well as economic expansion, determined that multiple indicators of financial innovation, encompassing both general and specific innovations, are linked to accelerated bank growth, as well as heightened fragility and suboptimal performance during crises. These impacts are more pronounced in nations with larger securities markets and more stringent regulatory environments. Despite these ambiguous findings, the evidence indicates a net positive effect of financial innovation on economic growth: this is associated with higher growth in countries and industries with better growth opportunities. (Beck T., 2016).

With the rapid development of digital currencies such as Bitcoin, it is difficult to extract efficient information and quantify the value of digital assets using current methods. As an underlying key technology, blockchain technology can no longer meet most of the needs of digital currency transactions, and the digital asset establishes an analysis model for its value using deep learning technology. The supervised digital currency model based on enhanced blockchain technology can link public chains, alliance chains, and user portfolios and achieve transaction information traceability. In short, the quantitative analysis of the value of digital assets was performed and the supervision of digital currency transactions was performed using improved blockchain technology. (Fan H., 2022).

Digital transformation requires continuous recalibration of both businesses, operating and customer interaction models, and the skills held by companies.

Companies that are at the beginning of the road, in addition to being aware of all the benefits of a digital transformation process, must understand that the return on

investment in digitalization of the company is reflected in exceptional growth, efficient processes, high-quality services, and products, business with external collaborators and close relationships with employees. (Deloitte, 2020).

Romania has a unique chance with the rise of digital currencies to transform digital disability into a fantastic opportunity.

The European Commission published in November 2021 the results of the Digital Economy and Society Index (DESI, 2022), which tracks the progress made in EU Member States in terms of digital competitiveness in areas such as human capital, broadband connectivity, integration of digital business technologies and digital public services. Romania ranks 27th out of 27 EU member states in the 2021 edition of the Digital Economy and Society Index (DESI), the quantitative analysis of the value of digital assets was performed and the supervision of digital currency transactions was performed using improved blockchain technology.

In terms of human capital, Romania ranks 26th, obtaining a score below average for most indicators, according to the DESI Report for Romania, conducted by the European Commission. In contrast, in terms of the number of women specialists in the field of ICT, Romania ranks 3rd. Romania also ranks 10th in terms of connectivity and 25th in the EU in terms of integrating digital technology into business activities.

Romanian companies have not taken full advantage of digital technologies (electronic information exchange, social media platforms, large volumes of data, and cloud), except for artificial intelligence, the quoted document shows. Therefore, the visible gap represents a big opportunity to achieve all the European goals and take advantage of its position to transform the opportunities into strengths.

Conclusions

While some contend that the broad accessibility of digital private payment mechanisms would elevate the status of central bank digital currencies, the significance of central bank money in the payment and financial systems is overlooked.

Central bank money provides the benchmark for all other forms of money in the economy. Playing a crucial role in sustaining currency confidence and the proper functioning of the payment system, central bank money is needed to maintain the transmission of monetary policy, and thus to protect the value of money and monetary sovereignty.

With digitization at full speed, central banks need to prepare for a digital future in which the demand for cash as a means of exchange could weaken, requiring the convertibility of private money into cash to be complemented by the digital currency convertibility of the central bank. This is the main reason the ECB would issue a digital Euro.

With the launch of a CBDC to supplement physical cash, there is the potential to develop new business models. The government and the business sector must work

together to ensure that consumers can easily access and use their money in digital form as more and more people switch to digital payments.

While the European Union is working on the digital Euro as an attractive means of payment for everyone - households, businesses, traders, and intermediaries alike - FinTech companies at the beginning of their journey in Romania can play the role of monetary anchor needed to develop the digital age in Romania.

The underdeveloped economy and progress of Romania have a unique opportunity to take advantage of the ECB's digital money because it will open the door to greater digitalization and efficiency in the payments sector while giving large sections of the population access to more digital payment options.

The process of Euro digitalization will require the full involvement of stakeholders and encourage innovation and experimentation, based on the advantages, competitive benefits, and potential for the excellence of each sector. There is no progress in IT&C without innovation, and innovation is the result of people's activity and smart ideas, solving everyday problems.

The entire innovative potential of Romania must be mobilized to achieve the objective of smart growth, proposed by Europe 2020. Innovation is important for all regions: more advanced regions must maintain their current position, and less developed regions should close the gap that separates them. The knowledge and innovation capacity of the regions depends on multiple factors - entrepreneurial culture, workforce skills, education and training institutions, services to support innovation, technology transfer mechanisms, infrastructure for innovation in ICT, researcher mobility, business incubators, new funding sources, and local creative potential. Good governance is also essential.

Investments in research, development, and innovation in Romania's IT&C field and the application of the results obtained through those investments are key factors for improving the competitiveness of SMEs and public institutions. In this context, Romania must carry out a regional analysis of the innovative potential, place itself in this context, develop a specific vision of specialization in information, and establish its development priorities.

Analyzing the strengths and weaknesses of the IT&C sector in Romania, we note on one hand that it is a sector with great economic potential and a growing contribution to the development of the Romanian economy. In Romania, however, the development of domestic software products, with its own resources, is not sufficiently encouraged, because there is no strong domestic demand for such products and because there is no investment in them or in product companies. However, the IT&C sector tends to be an innovative one. Companies have the desire to internationalize and there are domestic companies that become recognized on the international market through the products they develop. All of these have intellectual property rights (patents, trademarks, etc.) that are capitalized on the world market.

To make the leap towards the development of business models based on innovation, a collaboration between actors in the IT&C industry is needed, ideally in cluster structures. These structures offer, by definition, and empirically demonstrated in many places in the world, easy and fast access to research results to implement them in production and create innovative products using high-performance technologies, as well as common development strategies, starting from those of cooperation in production and acquisition of high-performance technologies and equipment intended for joint use, up to those of marketing. Thus, on a higher level, the advantages of diversity and complementarity of the network are accumulated with the intense interpenetration between the activities involved. By supporting clusters leading to the integration of value chains at the local, regional, and national levels, it can facilitate the transition from outsourcing to custom software, then to in-house research and development of IT products, and finally to in-house products. Such clusters have the power to attract within them new companies developing innovative products, motivating them to develop products applicable to the domestic market and contribute to the growth of exports by developing new strong international brands.

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