The Digital Leu Challenges and Possible Areas of Implementation

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Abstract

The potential implementation of the digital currency issued by central banks (CBDC) in the economy raises a number of challenges, including the idea of decentralization and the loss of the central bank's ability to effectively monitor the payments market and the fear that CBDC could exclude traditional payment solutions. Finding the balance in implementing CBDC-based payment solutions, integrating traditional payment ensuring that all stakeholders benefit from incentives so that they are interested in being involved in the process of distribution, use and processing of CBDC, while increasing financial inclusion and creating a competitive market for private sector payment solutions instruments is the new challenge for regulators. This paper addresses current limitations in implementing a CBDC-based payment solution, the potential risks of using CBDC, reducing the exclusion of traditional payment players and what this type of currency needs to ensure so that the implementation adopted by the users on a large scale.

Key words: digital currency issued by central banks (CBDC), settlement, clearing system, risks, financial stability
J.E.L. classification: E50, E51, E58, E59, E71

1. Introduction

Payments are vital to our daily lives and for the economy, allowing money to be a medium of exchange and help maintain citizens' confidence in the national currency. Digital innovation has significantly reshaped the world of payments and recent technological developments have changed people's payment habits, by using a card, a phone or a smartwatch to pay. In this new era, a digital currency issued by a central bank (CBDC) would ensure that citizens can maintain permanent access to their own funds at a lower cost, using a simple, universally accepted, secure and reliable means of payment.

The aim of the research is to identify opportunities in the local market that could lead to the implementation of a CBDC project and the benefits of such a project.

2. Literature review

Central bank digital currency (CBDC) would be an electronic form of central bank money that could be used by households and companies to make payments and store value, similar to traditional money. This form of money would provide wider access to central bank money and could create new payment opportunities, while helping the central bank maintain monetary and financial stability (Bank of England, 2020).

Digital currency is different from cash in the accounts (scriptural money) and will not allow converting this currency into cash in the form of coins and banknotes. In 2016, Barrdear, J. and Kumhof M. defined CBDC as a digital currency issued by a central bank in the form of an electronic service, permanently available, unanimously accepted, which provides access to the interest rate facility offered by central bank's. A similar definition was stated in the report published by the IMF

in 2018, which referred to this new currency as a new form of money, issued by the central bank and intended to serve as a legal means of exchange (Mancini-Griffoli et al 2018, IMF).

A digital currency would circulate in parallel with the normal currency, with cash, and would not replace its existence. The purpose of creating such a currency is to reduce the use of cash through a payment instrument that provides similar functionality and to ensure better monitoring of cash flows. A digital currency would provide consumers with an additional way to make payments and would be easily accessible to all, including the possibility to be accessed/used in areas where there is no banking infrastructure (rural areas).

There are a number of central banks worldwide that are considering implementing a CBDC-based system. In the first phase, only the central banks would be the entities that will issue a digital currency.

Central banks are considered risk-free financial institutions (Bindseil, U. et al. 2021), with a monopoly position as sole issuers of banknotes influencing physical cash payments. The introduction of digital currency should not have any negative effect on banking lending and may, in certain circumstances, help to promote lending (Andolfatto, D., 2020).

As central banks have no experience in providing digital means of payment directly to the public and also for using the physical network already in place, the relationship between them and the public should be mediated by financial-banking institutions. The supervised financial intermediaries would play an important role in integrating the new digital payment services and providing these solutions to all consumers, as central banks do not manage accounts for individuals and legal entities, so digital currency should not be seen as a competitor to digital payment services, but a competitive and innovative alternative to today's payment services.

Traditional credit institutions are slow, costly and often opaque when it comes to developing low-value payments and remittances, at national level, and especially in cross-border activities. Cross-border payments are currently inefficient, and technology could play a key role in their development, including through the use of CBDC (Aurer R. et al 2021). In addition, there are 1.7 billion people globally who are not banked or do not have access to financial services (G7 report 2019), for whom a digital solution could help increase the financial inclusion.

While financial institutions are constantly constrained by making profits for their shareholders, in the detriment of providing public services to the general public, the approach of central banks is to provide services to the public and to ensure their security, to support low value payments and to promote a competitive and efficient market for payment services that meet all consumer needs, by providing people with money for their payments, trying to reduce the cost of making payments by efficient and secure payment methods, to ensure the integration with traditional financial infrastructure and to reduce costs and pollution related to the use of cash.

In March 2020, the Bank of England released a report outlining the ways in which a CBDC could support the Central Bank's goals of maintaining monetary and financial stability: by developing and ensuring an efficient and resilient payments market, by avoiding the risks of CBDC counterfeiting, by supporting competition, efficiency and payment innovation while meeting the payment needs of consumers in a digital economy, improving the availability of the use of central bank money and decreasing use of cash, while also facilitating cross-border payments.

The rapid progress of technological change is stimulating central banks interest in CBDCs. The last decade has seen a huge increase in the use of electronic payments, and large technology companies are starting to be seen as a real threat to traditional financial institutions.

Central banks are increasingly concerned about the confluence of two trends: technology companies entering the financial world, especially in the field of payments, and the evolution of new forms of digital "money"/crypto assets used to make payments.

Major technology companies issueing their own digital currencies available to the entire network of users can pose a risk to financial stability, as it could facilitate the rapid and widespread adoption worldwide of new "digital currencies" issued by these entities in the detriment of currencies issued by central banks. Given the size of these entities, with very large number of users and given the network externality (the more users a payment solution has, the more incentives the rest of the population who are connected to them has to join), it could potentially have a major effect on the traditional financial system. Digital currency issued by large technology companies can allow these companies to capture a considerable number of consumers and reshape the payment landscape,

affecting the reach of central banks, who will face major difficulties in implementing monetary policy decisions (House of Lords, 2022).

The use of cash is declining in many countries in the world, and some central banks are concerned that this could undermine the public confidence in the monetary system if citizens are not able to convert commercial bank money into cash. Thus, it is essential for central banks to provide the consumer with a digital currency that responds to the technological developments in the field of payments proposed by technology companies. Also, considering the health crisis triggered by the recent pandemic, central banks are increasingly interested in issuing a digital currency as a quick and direct way to provide financial assistance to vulnerable populations during emergencies, including the non-banked cathegory. The CBDC is considered as a means of rapid payment that provides increased health security compared to cash and in line with the need for social distancing imposed as a result of the Covid crisis.

A digital currency could increase cross-border payments and ultimately behave similarly to internet-based communications services. The current money market is based on an interconnection between different banking systems around the globe that operate in different time zones and, to meet the new requirements of consumers of financial services, these services must be reconfigured.

At this time, it is difficult to quantify the benefits of CBDCs and the global payment systems based on them, but from a first analysis, it has been found that they have the potential to increase the efficiency of these types of transactions by flattening account relationships, reduction the number of actors involved in the cross-border payment ecosystem and increasing the speed of remittances.

Digitization will revolutionalize the remittance market and, if traditional financial institutions do not innovate in this field, they will lose a large part of their customers who will turn to the services offered by FinTech companies, that are constantly evolving and providing services at a much lower cost than the current financial system. These companies reduce consumers' dependence on traditional payment service providers, expand access to financial services in areas where banking financial infrastructure does not exist, thus promoting increased financial inclusion by providing financial services via mobile phones. At the same time, these service providers offer consumers the opportunity to access complementary services and facilitate access to e-commerce services available on a global scale.

Potential technological developments are also highlighted in the study published by the BIS in 2020 (Boar, C., et al 2020), which increased the interest of central banks to develop analyses in the field of CBDC to keep up with these companies and to maintain the population's confidence in the national currency. Over 80% of the 66 central banks that participated in the CBDC interest study reported that they are conducting studies in this area. According to the Atlantic Council, about 89 countries, which account for more than 90% of global GDP, are evaluating projects related to the introduction of CBDCs as their own form of public digital money. According to this site, 9 countries have launched a CBDC project, the most recent being that of Nigeria e-Naira. A further 14 countries, including major economies such as China and South Korea, are in a pilot phase and are preparing for possible launches. China was the first major economy to conduct a pilot project to issue a CBDC in April 2020 and aims to use e-CNY widely by 2022.

With regard to the need to issue CBDCs, according to the above-mentioned study, central banks have interest in: (i) providing an alternative to cash and ensuring public access to a state-guaranteed means of payment; ii) reducing the cost of handling cash in countries with large or inaccessible territories; (iii) promoting financial inclusion, especially for the non-banked population; and (iv) improving the efficiency and security of internal payments, in particular cross-border payments.

3. Research methodology

After analyzing secondary data and relevant literature, we conducted a qualitative research focused on an explanatory, theoretical "case-study" type of research, as a pilot project of implementing a CBDC-based system has not taken place in Romania.

4. Findings

4.1. Objectives of issuing digital currency

For CBDCs to be successfully adopted by consumers, they must respond to changing payment preferences and address all the facilities offered by cryptocurrencies so that the latter are no longer used as payment methods, but only for investment/speculative purposes.

Digital currency would be a form of risk-free currency, issued by central banks with legal payment status. People who use a digital currency can have the same level of confidence as in cash, because a central bank ensures their stability. Given that this currency will be issued exclusively digitally, it can be easily confused by financially uneducated people with crypto-assets. Such assets are not the responsibility of any entity that supports their value and protects their direct holders, are currently unregulated, which poses a high risk to users. Their price is very volatile, because crypto-assets have no intrinsic value, which means that they are traded as a speculative asset.

Digital currency could open new horizons for developments in digital payments and financial services by opening the market for new players such as FinTech companies specializing in innovation and digitization, which represent real competition for traditional financial institutions that are quite reluctant when it comes to innovation.

A competitive market will always benefit the consumers, who will have innovative, efficient and secure financial solutions at their disposal.

The implementation of a CBDC-based payment solution at the national level would help maintain or even increase the national autonomy of payments, reducing dependence on major international players in the field (Visa, Mastercard, etc.).

The CBDC would be a quick, easy and secure tool for daily payments, combining the efficiency of a digital payment instrument with the safe use of money issued by central banks. Such an initiative would support the digitalisation of the national economy and actively encourage the innovation of low-value payments and the development of e-commerce.

The widespread adoption of such a currency could reduce the use of cash as a means of payment and ensure better monitoring of capital flows, including better taxation, by clearly highlighting all payment transactions to merchants by synchronizing cash registers with turnovers from accounts and electronic reporting to the tax authorities of all transactions regarding the sales of goods and services.

In order to reduce the use of cash, a digital currency must allow offline payments and be easy to use, especially by vulnerable groups, at no cost of usage for citizens and ensuring the confidentiality of transactions.

Digital currency must be available through standardized solutions and must be interoperable with existing payment solutions, easily accessible to anyone, including people without a bank account, easy to use, similar to payment instruments. Digital currency must coexist with traditional cash and payment instruments.

The current technology used for issuing CBDC could have the effect of reducing the costs payed by the final consumer and would significantly contribute to reducing the level of pollution generated by current payments ecosystem, mainly those generated by the use of cash.

The new financial system must be based on the latest and most efficient technological solutions that minimize the environmental footprint of the current financial ecosystem and to change the behavior of consumers as to make payments digitally, by diminishing the use of cash as much as possible.

Perhaps the most difficult feature of the new digital currency is ensuring the anonymity of payments, similar to cash, in order to protect the confidentiality of the payer and the payee.

At the moment, a limited range of products can offer this facility, respectively prepaid cards or cryptocurrencies, only in certain markets, where these types of products are accepted as a means of payment.

As the pace of digitization accelerates, the international financial landscape is likely to be constantly changing, being increasingly integrated with the digital economy. Technological progress can lead to the rise of new forms of digital currency and the emergence of a new, more efficient and interoperable global financial system that transcends time and space barriers. At the same time, the

effectiveness of monetary policy measures could be affected and the authorities would have to use different policy instruments to ensure financial stability.

For countries adopting the CBDC, the main challenges are how to maintain macroeconomic and financial stability without sacrificing the benefits of more efficient cross-border payments and how to ensure better access to international capital markets. The balance may differ from country to country, depending on the economic development of each state and the maturity of the national financial system, fiscal policy space and the availability of other stabilization tools will also be important.

Countries issuing CBDCs must carefully consider the costs and benefits of allowing non-residents to use their CBDCs. Non-resident access could help companies and households in the issuing country to better manage risks (for example, by issuing debt denominated in their own currency) and to improve the size and depth of the issuing country's financial markets. Unless there is a close link between financial intermediation and economic development at the national level, that state is most exposed to developments in international financial markets with systemic effects on the national economy. These currencies cannot only operate locally, but must ensure cross-border transactions and interconnection between all national payment systems in order to ensure capital flows and e-commerce.

The CBDC should ensure that financial inclusion is stimulated by offering this currency to the public/citizens without the need to open accounts with traditional financial institutions. In our opinion, a mass adoption of this new payment method cannot be ensured if it is accompanied by costs for consumers.

To improve the resilience of the financial system, digital currency must be permanently available to all users, and settlement channels must be efficient and secure, operationally resilient and resilient to concerted cyber attacks. The channels used for digital payments must be completely separated from those used for traditional payments and allow interconnection between these systems in the event of a major incident. The financial system must be resistant to cyber threats and provide a high level of consumer protection against cyber attacks. In case of successful attacks, the recovery time should be short, without blocking the financial system and without affecting the integrity of the data. The digital currency must be secure and efficient, the operational costs of issuing and managing such a currency must be estimated and compared with the benefits of these solutions, also taking into account the costs associated with the traditional financial system.

The financial revolution cannot be achieved in a very short time without taking all the associated risks into account, including the assessment of the tendency of BigTech companies to diversify their activities (the Facebook case with the Libra project being the most eloquent in this regard), including in the field of payments by issuing their own payment instruments addressed in the first phase of their own network of users and the consequences of such initiatives could have systemic effects on small developing economies, including undermining the ability of the central banks in those states to meet their stability goals, financial confidence and confidence in the national currency.

4.2. Possible negative effects

There is currently no CBDC project that completely eliminates all risks posed to the traditional financial system. Thus, there may be possible negative implications for monetary policy and financial stability given that no complex stress tests have been performed to detect possible negative effects on the implementation of monetary policy decisions. At the same time, it is extremely difficult to quantify the effects of the global adoption of these new payment solutions and how current payment service providers will be affected, as extensive use of digital currency as a form of investment and the associated risk of mass conversion of bank deposits into digital currency is quite difficult to predict, manage and evaluate.

Digital currency would have the status of a legal tender and this could cause panic among financially uneducated consumers, given that the degree of financial education at national level is quite low.

Given the limited capacity of central banks to provide services to the general public, the issuance of digital currency must also be done through the use of supervised intermediaries that do not maintain and do not have the same level of operational security as a central bank. The technology

currently available does not fully cover the availability and security requirements for the implementation of such currencies.

At national level, there is no technical banking infrastructure that can be used to implement such a solution. A possible implementation of this solution could be achieved by involving the Romanian Post Office in the integration of this new payment instrument, given the extensive area of availability of post offices nationwide. Digital currency could be provided as a web service and/or through dedicated physical devices, such as smart cards. There is currently no device that provides complete security for the efficient management of cyber threats. The digital currency needs to be based on an infrastructure separate from the existing payment infrastructure, which comes at an additional cost and risk, but could ensure the resilience of the financial system to extreme events such as cyber incidents and attacks, natural disasters and pandemics.

The issues of countering money laundering (AML) and terrorist financing (CFT) must also be addressed, the Know Your Customer (KYC) requirements must pe met, while ensuring the confidentiality of transactions. Currently AML and CFT issues in Romania are managed by another national authority, namely the National Office for Preventing and Combating Money Laundering, and an involvement of the central bank would affect its independence. Effective implementation of a robust anti-money laundering and anti-terrorist financing (AML/CFT) framework is needed in all scenarios to mitigate the risk of the CBDC becoming a tool for supporting/carrying out criminal activities.

The current regulatory framework does not cover all requirements for the issuance of such currency. Updating the regulatory framework is a complex and time-consuming process and there is currently no generalized approach to all the characteristics that such a currency must meet. In order to avoid regulatory arbitrage and to ensure a level playing field, it is essential that issuers and service providers of digital currencies based on the evolution of a significant currency or basket (*stablecoins*) be regulated and supervised at national level, with similar requirements as the digital currency, to fully comply with the Payment Services Directive (PSD2) and the European Commission's legislation on cryptocurrencies (MiCA) and the proposals for digital operational resilience (DORA), anti-money laundering (AML) and counter-terrorism financing (CFT) and Know Your Customer (KYC) obligations. The existing monitoring framework needs to be harmonized to ensure competition and innovation in payments, while limiting the risks that new payment services and new players in the payments market may pose.

4.3. The potential design of the digital leu project

After studying all the exercises for the possible implementation of the CBDC, at national level, we identified an opportunity regarding the implementation of a clearing system in the relationship between the Romanian state (Trezoreria Statului) and private companies.

An analysis was carried out by the Romanian Fiscal Council, in which the structure of the arrears of the state companies from 2019 was highlighted, and it resulted that these companies registered debts of over 14 billion lei. In order to reduce the liquidity requirement for the payment of debts, at the level of Romanian companies, we identified the need to implement a clearing system based on CDBC. The need to use CBDC is given by the possibility to use these funds strictly to settle debts between participating entities and protect small companies from the risk of not collecting the value of delivered products or services from general contractors, with the final beneficiary being the Romanian state.

In many cases, Romanian contractors pay their subcontractors with big delays, in the case of implementing public contracts. Failure to collect invoices on time can lead to increased liquidity shocks for companies, including bankruptcy. Thus, a debt clearing system would reduce the liquidity pressure among these companies and could save some of these companies from bankruptcy. At the same time, reducing the need for liquidity would increase the performance of Romanian companies that would not have to use such a large volume of working capital loans to the detriment of investment loans.

As a starting point, the system would be built with the exclusive participation of the National Bank of Romania, the State Treasury and banks operating in Romania. All state and private companies that have a direct or indirect relationship (subcontracting) with the Romanian State would participate in this system through their bank accounts.

The system would be completely independent from the infrastructure of the high value payment system ReGIS and would function as an auxiliary system, with settlement in the central bank money through the ReGIS system. The communication within the system would be carried out through a private network owned by all the entities participating in this system and the message standards would be similar to SWIFT messages, but with a more detailed content of information, including attached documents. Messaging will be encrypted with unique encryption keys available only to system participants.

In order not to induce additional risks in the financial system, the central bank would convert some of the liquidity from the current account of the State Treasury opened at the NBR into CBDC, the conversion being made on principle 1 to 1 (1 leu = 1 digital leu – CBDC). The amount to be converted would be communicated by the State Treasury, according to the maturity of the payment obligations to be paid within one month.

Each company that is in a direct or subcontracting relationship in relation to the Romanian State or with a company in which it is the majority shareholder would send a compensation request to bank where it has opened its account and would send the contract for which it requests compensation, the payment invoice approved by the beneficiary and the payment amounts it has to collect from the consolidated state budget (VAT, income/profit taxes and payroll taxes). The system would centralize all these compensation claims and would clear them with the amounts that the Romanian State has to pay to these companies. The clearing would result in a net settlement position. The instruction would be settled in this system and each company would charge the CBDC for that position. These amounts of CBDC would be shown in the individual accounts of companies opened with commercial banks and will be shown separately from their current accounts. At the same time, these amounts of CBDC could be used strictly to extinguish the obligations in the contractual relations with the subcontracted companies in order to honor the obligations of the contracts with the Romanian state.

After settling all these debts, the companies that would have CBDC would be able to convert them into lei by sending a conversion instruction to the ReGIS system through the bank where it has an opened account and confirming that all debts/obligations have been settled. The debt settlement mechanism would be an automatic one on the principle of delivery against payment, respectively the delivery of CBDC and the settlement of the debt highlighted in the fiscal invoice. This debt settlement would be recorded in the accounting of each company. The conversion of CBDC into lei would be highlighted in the accounts opened with the central bank by debiting the CBDC account of the State Treasury and crediting the lei account of the bank to the beneficiary of the payment. Such a system is similar to the existing systems at the national level before the implementation of electronic payment systems and the need to use CBDC is essential from the perspective of the exclusive use of funds to offset debts between companies.

In order for such a project to be implemented, an update of the regulatory framework and a major involvement of all stakeholders must be made.

5. Conclusions

Digital currency is the new age of digitization, but digital currency needs to be designed to replicate some key features of cash that are useful in the digital economy, such as the ability to make offline payments and ensuring the confidentiality of transactions.

CBDCs have the potential to enable the governments' and central banks' ability to monitor all citizens' payment transactions, which could affect the population's confidentiality of payments, which is currently ensured by cash payments.

Along with coins, banknotes and other payment instruments, digital currency should be accessible to all citizens and provide them with additional payment options. Digital currency should be easy to use, free for consumers, unanimously accepted by the legal tender status of a country. These features must be accompanied by a number of technical features that include holders' privacy, investment features, payment methods that include debit payment functions, including payments without an

internet connection.

The previously opened clearing system can be a first step in implementing a CBDC-based payment solution at national level.

Digital currency would be an adequate option to reduce overhead costs and to reduce the harmful effects on the environment generated by current financial systems.

The widespread adoption of these currencies could lead to the use of this currency at the expense of the normal currency, which could have the effect of reducing the use of the traditional financial system.

The excess of money in a foreign currency diminishes the control of the monetary authorities over the internal liquidity by limiting the use of the national currency over which the authorities have a direct influence.

The cross-border use of the CBDC could affect the monetary policy of the issuing country, which is influenced by changes in the external demand for CBDC and would cause significant movements in capital flows. The capital flows associated with the use of CBDC present challenges for the issuing central bank and are proportionate to the size and development of the country's financial markets.

Thus, the state intervention through the monetary policy that aims at the indirect influence of the aggregate demand, the control of the inflation, the external balance or the evolution of the economic cycle (Isărescu, M., 2006) would be more and more difficult to achieve.

The role of central banks is to ensure that the public has confidence in the national currency and that the digital currency will meet all the requirements of consumers in the digital age. Central banks are responsible for maintaining citizens' confidence in the national currency, including the digital currency.

The negative effects on the central banks' ability to implement monetary policy decisions are difficult to assess, given that there is no one-size-fits-all solution on the market that meets both the needs of payment service consumers and the independence of central banks.

At the same time, this type of currency, which would be issued exclusively digitally, would be permanently exposed to cyber risks which, in the opinion of many specialists, is the biggest threat to the global financial sector.

It is premature to talk about the final form of a digital currency. It must not be a parallel currency, but must be issued and controlled by the central bank. Currently, it is difficult to identify all the levers through which central banks can create new monetary policy instruments whose effects on the economy would be effective over time. CBDCs can affect the transmission of monetary policy by increasing the money supply in circulation, in particular by increasing foreign exchange reserves, which would require the reshaping of monetary policy strategies.

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