ON THE DEMAND FOR A DIGITAL EURO

In the autumn of 2023, at the end of two years of investigation, the ECB will decide whether to launch the implementation phase of the digital euro. Many aspects of a European CBDC have been evaluated, but the relationship between digital euro emission and adoption from the public has received far less attention. For a currency to be successful, high usage rates are indispensable. Based on a comparison between the driving forces of CBDC adoption and ECB choices, it appears that the Central Bank is neglecting to consider how to create a demand for a digital euro, with the risk of having no demand at all.

I. Introduction

Central Bank Digital Currency (CBDC): the future of our monetary system, a potentially disruptive event for our financial system or a tool that nations will use to compete and influence the global economy. Like it or not, 90% of central banks worldwide are currently debating, investigating, testing and even introducing their digital form of public money, and the European Central Bank (ECB) is among those. In October 2020, the ECB launched its "digital euro" investigation, based on the evidence of an increased tendency of European citizens and firms to pay digitally instead of using physical cash. Forecasting a scenario where Europeans would rarely use cash anymore, the ECB would still guarantee the existence of public money and preserve its policy objectives. Hence, the ECB (2020) presented the digital euro as an instrument to support the European Commission's mission of creating a Europe fit for the digital age, preserving the Monetary Union's sovereignty, increasing payment markets' efficiency, increasing general trust in the economy and the monetary system, and promote financial inclusion.

Since then, the debate over the digital euro has gained momentum, with academics, central bankers and financial experts discussing the desirability of a CBDC and its possible repercussions on the business model of the financial sector, citizens and firms. At the moment, the ECB is investigating possible design options, a critical step for the future functioning of the digital euro. Nonetheless, it seems that the ECB has disregarded one critical element in the overall digital euro development process, even though it has an important effect on the future design and success of the digital euro: the adoption by the public of the digital euro has been either given for granted or poorly considered. The vagueness surrounding objectives and adoption of the CBDC leads ECB board members to release statements somehow contradicting. For example, Christine Lagarde, president of the ECB, pointed out that "only a widely accepted digital euro can make a difference"[1]. On the other hand, Fabio Panetta, an executive board member of the ECB, declared that the ECB does not intend to create a "too successful digital euro that would crowd out private investment solutions and financial intermediation"[2]. In other words, the ECB wants a strong adoption of the digital euro, but not so strong that it would result in a significant change in the functioning of the monetary and financial system. Especially in an environment where cash and private forms of digital money are already fully established, it seems to be fundamental to understand what drives the demand for a new form of money, both in general terms and specifically for a CBDC. By

[1] C. Lagarde, November 2022 https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp221107~dcc0cd8ed9.en.html

[2] F. Panetta, March 2022 https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp220330_1~f9fa9a6137.en.html

doing so, it will become possible to understand if the public will decide to adopt the digital euro, or if instead, it will remain loyal to current digital means of payment.

II. Drivers of adoption of a new form of money

Money satisfies multiple needs. Aristotle was one of the first to define indirectly these needs in his *The Nicomachean Ethics*[3]. More than 2000 years later, Anderson (1917) arrives at the same conclusion: money has the function of a unit of account (a common measure of value), a medium of exchange, and a store of value. In contexts without money, these functions alone would have been enough to guarantee the adoption of a form of money from economic agents. But in a system where a monetary means already exists, a new form of money has more difficulty in reaching a minimum adoption rate to become successful.

To be successful, a new form of money must be widely accepted and used by many economic agents. The more people use a particular form of money, the more valuable it becomes for others to use it as well. As confirmed by BIS (2022), this creates a network effect, meaning a virtuous cycle which can further steer the adoption of a new form of money. This is also fundamental to convincing users to switch to the new form of money.

Furthermore, the new form of money must also compete with existing means of payment to gain market share. Hence, as Mancini-Griffoli et al. (2018) suggested, users of the new form of money should be able to enjoy some new and unique benefits that the other payment means do not offer.

Adrian and Mancini-Griffoli (2021) also pointed out that the regulatory environment in which a new form of money circulates can significantly impact its success. Supportive legislation can encourage adoption and innovation, while hostile ones can depress it.

III. Drivers of adoption of a CBDC

Zamora-Pérez, Coschignano and Barreiro (2022) reviewed 15 papers on CBDC and found four factors determining a CBDC's success.

1. The first factor concerns the usability of the currency for payments: as for the general case, a new form of money should be easy to use, widely accepted, with a low cost and not subject to amount restrictions. When other means of payment are already available and widely used, the new means of payment should possess the same benefits as the existing ones, while offering more.
2. The second factor refers to the protection of users' data in a centralized system. Hence, a means of payment should ensure a high degree of privacy and/or anonymity, as cash, and a high degree of security against fraud, cyber-attacks and misuse from public or governmental authorities.
3. The third factor concerns the possibility to store the CBDC and earn an interest rate on the stored amount. This latter feature would work as a price incentive for users to hold the new form of money while strengthening its level of competitiveness with other foreign currencies and forms of money. Besides, the ECB (2020) recognizes that a remunerated CBDC could accelerate and strengthen monetary policy transmission since it would create enough pressure in the deposit sector to changes in levels of interest on reserves. But a CBDC can offer more and new opportunities for monetary policy. For instance, Reis and Tenreyro (2022) argue that a CBDC would simplify helicopter money policies, where transfers of money to economic agents could become targeted and immediate, without the need for private banking intermediation. This tool would be more effective in stimulating spending in

[3] "*[…] all things that are exchanged must be somehow comparable. It is for this end that money has been introduced, and it becomes in a sense an intermediate.*" (1133a18-22). First, Aristotle identifies money as a means to express the value based on a common measure (unit of account), and then as a means of exchange. "*[…] And for future exchange – that if we do not need a thing now we shall have it if ever we do need it – money is as it were our surety.*" (1133b11-13). Here, Aristotle recognizes the opportunity to use money as a store of value.

an economy compared to policies such as Quantitative Easing. The unorthodox policy failed to a large extent in its objective of injecting money into the real economy and worked instead largely as a subsidy to the financial sector, where financial institutions used the extra liquidity to increase their profitability and finance their acquisitions, as reported by Acharya, Banerjee, Crosignani, Eisert and Spigt (2022).

4. The fourth and last factor affecting CBDC adoption refers to its intrinsic reliability. Citizens should not only have relatively high trust in the monetary, financial and political institutions, but they should also understand the new means of payment, its features and implications. Without understanding, the means of payment would be either boycotted, or individuals would remain loyal to those already used means of payment.

IV. The digital euro case

By comparing the driving factors of the success of a CBDC highlighted in the previous section with the expected design features of the digital euro, we can aim to understand to what extent the ECB is building a successful digital euro.

1. For what concerns the usability of the currency for payments, based on the ECB (2022) the digital euro would support person-to-person (P2P), business-to-person (B2P), business-to-business (B2B) and government-to-person and vice-versa payments. In doing so, the ECB would ensure broad use and acceptance of the digital euro. Nonetheless, in the current plan, it will be possible to use the digital euro only for online payments. For offline payments, citizens will still need to rely on cash or money transfers (such as cheques or ATM transfers), since this feature is dependent, based on the ECB, on a currently unavailable technology solution. By developing a pan-European rules-based framework, the Eurosystem would promote a payment scheme which will ensure easy access to the digital euro and homogeneity in the end-user experience across the euro area (pay anywhere). The digital euro will also ensure a low cost of usage for merchants, although it is not clear yet the magnitude of the cost itself. Finally, the ECB does not desire an excessive use of the digital euro. The ECB justifies this desire because it foresees undesirable consequences first for the financial system, which would face the Central bank as a new powerful competitor, and second for the effectiveness of the central bank's monetary policy. Therefore, the ECB is proposing a tiered-rate account (based on the amount of digital euro held, the user is remunerated with different interest rates) together with a limit on digital euro holdings. Besides, it will put a short-term limit on conversion amounts from private digital money to public digital money, to avoid mass movements of funds from private banks, especially in moments of financial distress.

   The digital euro design seems to match the easiness, broad acceptance and low-cost requirements. At the same time, there is no intention to make the digital euro fully anonymous and restriction-free (at least regarding the holding levels). Furthermore, it appears that the digital euro does not offer clear-cut extra benefits compared to other currently available means of payment. Current private forms of money are widely accepted and easy to use, and recently the European Commission has approved new legislation[4] to make private instant payment solutions universally available, secure and low-cost. The only two benefits generally recognized are that the digital euro would preserve the opportunity for citizens to access a public means of payment and that citizens' money would be safer than if deposited at private banks. Nonetheless, as point 4 of this section argues, the first benefit is clear only if citizens are well informed about the difference between public and private money. The second one is mitigated by current European Banking Authority schemes (Deposit Guarantee Scheme), which already fully guarantee banking deposits of up to 100 thousand euros, even in case of bankruptcy of a private bank. At the end

[4] European Commission Press release, 26 October 2022: Payments: Commission proposes to accelerate the rollout of instant payments in euro https://ec.europa.eu/commission/presscorner/detail/en/IP_22_6272

of 2021, in the EU more than 6.1 trillion euros out of 16.5 trillion euros[5] deposited (37% of total deposits) are protected by the DGS[6]. These mechanisms not only work as an implicit subsidy for private banks, whose business risk is directly insured by public funds, but they also work as direct public support to private money. No other existing form of money retains such privilege.

2. For what concerns the protection of users' data, this is an essential and critical feature that European citizens request. As highlighted by the ECB (2021) in the report on the public consultation on a digital euro, 43% of respondents identified privacy as the most important feature expected from a CBDC. Nonetheless, the ECB believes that there exists a trade-off between some public objectives of the ECB and full anonymity, especially when it comes to money laundering, tax evasion and terrorism financing, as well as the European regulatory framework on money control. Therefore, the ECB is considering ensuring anonymity and privacy for low-value/low-risk (amount still to be decided) transactions only. Nonetheless, they also informed the public that the actual application of privacy rules will be left to co-legislators, depending on their interests and policy objectives. Furthermore, the ECB plans to adopt the same technology and privacy rules private payment entities offer for all other transactions. There is no clarity on the security features of the digital euro, even though there is an objective to develop European-based technologies around digital payments which would guarantee the strategic autonomy of the EU from foreign technologies and foster internal innovation.
   Clearly, the ECB is not able to meet the desire expressed by the public consultation on the digital euro. Cash will remain the most anonymous payment means, and the digital euro, if designed to depend on the existing technology and privacy legislation, will allow the same level of traceability as current private electronic payment tools, which record all user's transactions. Especially in a context with low trust in public institutions, this choice could heavily undermine the success of the new currency. This argument will be further developed in the last section.

3. Regarding the deposit and interest-rate possibility offered by the CBDC, as previously described, the ECB is considering imposing a tiered interest rate system on deposits as an approach to discourage people from keeping large sums of money deposited at the ECB.
   Still, the ECB does not want the digital euro to become a form of risk-free investment. Furthermore, the ECB would compete with other private financial intermediaries over depositors' money by issuing an interest-bearing digital euro. Competition on people's deposits is something that the central banks want to avoid as much as possible, as without depositors the private banking business model would enter into crisis. A choice has not been made yet, but if the ECB were to adopt a zero interest rate on the digital euro, there would be no monetary incentive in depositing money at the ECB, especially if the amount of savings is less than 100,000 euros.

4. Concerning the last factor, reliability, as explained previously, trust in the public system and financial literacy are considered relevant factors to the success of the digital euro. Based on the latest data[7] released by the Eurobarometer regarding public opinion in the EU27, only 34% of European citizens trust their governments. Trust in national parties shows the same value. And for both institutions, the trust is declining over time. Instead, it seems that citizens trust the European Union more, with 49% of European people expressing confidence in European institutions. More in detail, 52% trust the European Parliament, 48% the European Commission and

[5] Banking In Europe: Facts And Figures 2022 https://www.ebf.eu/factsandfigures/

[6] EBA Deposit Guarantee Schemes data https://www.eba.europa.eu/regulation-and-policy/recovery-and-resolution/deposit-guarantee-schemes-data#:~:text=The%20level%20of%20deposit%20protection,this%20guarantee%20to%20their%20depositors.

[7] Standard Eurobarometer 97 – Summer 2022 https://europa.eu/eurobarometer/surveys/detail/2693

47% the European Central Bank. Regarding the latter institution, the trust is still below pre-financial crisis levels (53% in 2007), but way above the level reached during the end of the European public debt crisis (31% in 2014). Besides, the inability of the ECB in foreseeing high levels of inflation as well as the following choices to reduce it, will negatively impact the trust of the Eurozone citizens towards the Central Bank.

Still, if it is true that current trust levels in national and European political and economic institutions are not high, it is also true that the same is happening within the private sector. As reported by van der Linden (2022), who has gathered some data coming from different contexts and sources about the topic, a decade after the Great Recession, 66% of British citizens believe that private banks do not act in the system's best interests, and 72% argue that the banking system should be subject to stronger fines in case of misconduct. Similar distrust has been seen in the Netherlands, where 62% of surveyed people reported that banks have not learned much from the consequences of the financial crisis, and 81% of respondents invoke a stronger role of the state in the banking sector.

Finally, financial literacy, or at least an understanding of the CBDC, its added value and its features, are needed to ensure proper adoption by the public. From a national perspective, we can argue that financial literacy and payment attitudes vary based on specific factors. Young generations are more likely to use digital payments than the elderly, which prefer cash. Similar conclusions can be drawn comparing high- with low-income and education levels. In the case of the digital euro, users should also be able to understand the difference between private digital money and public digital money. The OECD (2020) shows that financial literacy in 17 selected European countries ranges between 14.4 and 10.3 points, out of a maximum score of 21. The report shows that financial literacy is quite low and that a big disparity exists between countries. Therefore, we can expect that only a limited part of European society will be able to understand the added benefits offered by the digital euro and gain from them. Hence, even though the digital euro is brought as a tool that would increase financial inclusion in theory, in practice could actually exacerbate financial exclusion and worsen the already high levels of inequality within a country.

In addition, the European Monetary Union is already affected by large financial disparities between countries. With the adoption of the euro, northern countries have benefitted from a euro weaker than their national currencies, which increased their competitive abilities and made them register surpluses consistently over the years. Southern countries, experiencing the opposite, have become weaker and more financially unstable. This created large fiscal and financial asymmetries which risked making the EU and euro explode during the European debt crisis. In a context where northern countries tend to have higher financial literacy levels, adding a new source of asymmetry as the digital euro may worsen the current imbalances within the EMU area.

V. Conclusion

In October 2020, the ECB started its research into the digital euro. Since then, the debate has gained momentum, and the central banking field has started theorizing the impact of a CBDC on the current economic, monetary and financial systems. Nonetheless, several questions about the demand for a digital euro have not been answered yet. This article contributed to the discussion on the demand for a digital euro by evaluating the factors that determine the success of a new form of money in general and a CBDC in particular By comparing these factors with the current digital euro design choices taken by the ECB, four main contradictions, issues or possible obstacles have been identified.

First, the digital euro does not seem to provide extra and obvious benefits to convince economic agents to switch to the new form of money. Easiness of use, acceptability and low-cost transactions are qualities already offered by other payment means. The safety and stability that only the digital euro would offer are attributes that are limited by low financial literacy and a strong and wide public protection scheme offered to private money. If the digital euro will be

implemented, then the ECB should consider reviewing current protection mechanisms for private banks. In fact, these rules had the undesired effect of increasing the risk appetite of commercial banks and financial institutions, increasing the systemic risk within the sector and the too-big-to-fail issues. Only with lower protection offered to private money, the digital euro will be able to attract new users, which would benefit from the safest payment and deposit option on the market.

Second, despite a strong request from the public for an anonymous and privacy-friendly digital euro, it seems that the ECB wants to leave to national legislators the choice regarding the right balance between privacy and public policy objectives. After all, this is quite a political decision, and the ECB does not want to take full responsibility for this. Besides, the Central Bank has admitted that they are currently facing technological limitations and international and national banking supervision rules that would make the digital euro fully anonymous. If any case, the ECB needs to clarify to the public what consequences on privacy there could be, to minimize the negative impact of a not fully anonymous and private digital euro.

Third, there is no clarity yet on the position of the ECB regarding the interest-bearing option for the digital euro. The ECB wants to avoid the use of the digital euro as a risk-free investment. At the same time, a digital euro without an interest rate may discourage accumulation and limit the use of the same as a monetary tool. The ECB needs to take a decision on what objective they want to prioritize. Independently of the decision taken, an interest rate on the digital euro would make the new form of money more attractive and competitive in the international scenario.

Fourth, low trust in the national and European institutions, low trust in the banking sector and low financial literacy may heavily undermine the digital euro project. Before issuing the digital euro, the ECB should think about actions to increase the level of trust of European citizens in the institution. One important, symbolic but large effect on the public and the ECB policies as well, could be to start a process of review of the current mandate of the Central Bank, where the protection and enhancement of the European public wealth would become a fundamental and priority objective of all monetary policies. This shift of paradigm would invite citizens to see the ECB as an institution that works for them, instead of the financial system only. Finally, in the short and medium term, the ECB could promote a set of information campaigns to improve the European society's understanding of the monetary system, the difference between public and private money and the impact of a CBDC on the system and everyday life.

In short, it is possible to highlight already at this stage several obstacles to a successful demand for the digital euro. It seems that the ECB has overlooked the relationship between issuance and demand for a new form of money and this lack of evaluation may jeopardize the digital euro project. If the digital euro is presented as a revolutionary tool, we need to ensure that the same is properly designed to be successful and fully adopted. In the first quarter of 2023, the digital euro will enter its testing phase. Still, before going further, the ECB, and the European and National institutions should debate and decide on what function the digital euro should have on our society. Once these aspects have been clarified, we can start talking about design choices and technology. Until this does happen, we should ask ourselves if we are going too fast.

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