



AMSA

Asset Management Study Association

The Future of the Digital Euro

Global Markets Team – June 2023

Amina Aliyeva – Analyst

Nemo Groenewegen – Analyst

Karolina Zajaczkowska – Analyst

Tom Behrends – Head of Global Markets

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Introduction

In recent years, payment methods have drastically changed, as the emergence of cryptocurrencies challenges the current financial system. Additionally, payments and digital payments have become more prevalent. The European Central Bank (ECB) is the authority that is responsible for managing the euro and shaping and executing economic and monetary policies within the EU (European Central Bank, 2023). Recently, the ECB has started researching the possibility of issuing a digital version of the euro, known as the digital euro or central bank digital currency (European Central Bank, 2023). Although the launch of the digital euro would bring numerous potential benefits, it is important to analyze its impact on the current economic system and the future of the euro. This paper first explores what the digital euro entails, the project's timeline, and its main objectives. Next, the economic implications of the potential issuance of a CBDC (Central Bank Distributed Currency) are discussed to provide the basis for the final chapter. Finally, the opportunities and challenges are examined. Particular attention is paid to the role of a digital currency in strategic autonomy and monetary sovereignty, benefits to competition and innovation, and the importance of confidence in the euro. This is then contrasted with the concerns regarding financial intermediation and the need to balance the interests of all parties involved. Herbey this paper aims to provide a comprehensive overview of the digital euro and envisions the future of the project and its implication for the financial system.

Chapter 1: Key objectives of the Digital Euro

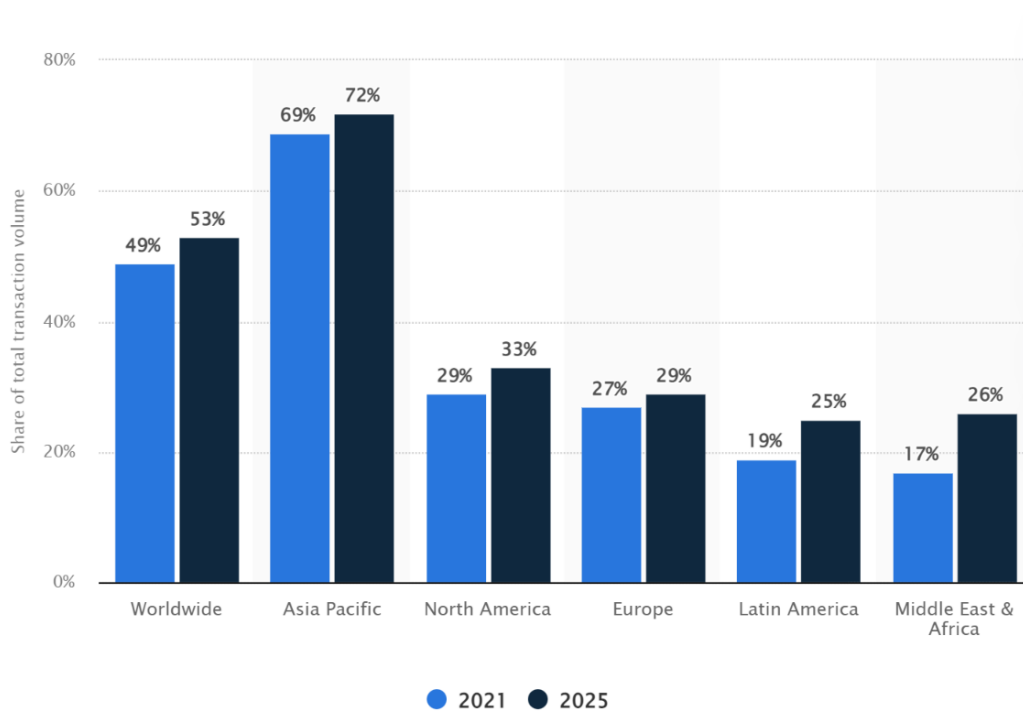
Introduction

A central bank digital currency (CBDC), also known as the digital euro, is a new form of electronic payment issued by the European Central Bank, which could be used across the Eurozone (European Central Bank, 2023). With the digital euro, which is currently in the investigation phase, people could access a safe and convenient form of digital money that can be used to conduct fast and easy payments (European Central Bank, 2023). The digital euro has the potential to significantly impact the future of finance trends and ways of payment, depending on its level of accessibility and the technological capabilities it may possess (Giaglis et al., 2021). Therefore, despite the fact that currently the European CBDC is only in its investigation phase, it may be useful to analyze its general characteristics and financial aspects.

General description

To begin with, it is important to note that CBDC (central bank digital currency) is intended to complement traditional cash, rather than completely replace it (European Central Bank, 2023). As a result, people will have the choice of using exclusively cash, exclusively digital euros, or both. Although the Eurosystem will maintain the availability of banknotes and provide cash as long as cash money is demanded, it is noticeable that the use of cash for transactions is gradually decreasing (European Central Bank, 2023). Consequently, the digital euro may ultimately become more prevalent due to the exponential increase in cashless payments over the last decade (Giaglis et al., 2021). According to a recent report (Figure 1), it is predicted that by 2025 digital wallet payments will account for over half of all e-commerce payments worldwide, indicating a significant rise in mobile wallet market share (Statista, 2022). Therefore, it is possible that the digital euro may become the dominant form of payment, potentially leading to a completely cashless society in the future.

Figure 1: Digital wallets payments on total e-commerce payments worldwide 2021



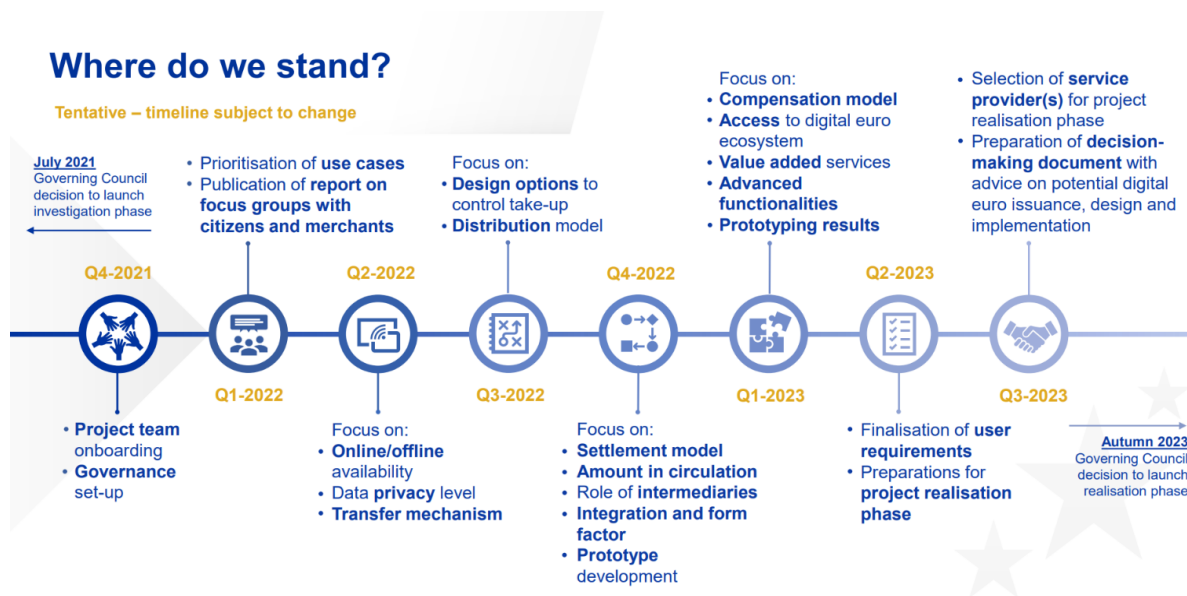
As aforementioned, currently the digital euro is in the investigation phase, which was initiated by the Governing Council in July 2021 and is expected to finish in autumn 2023 (European Central Bank, 2023). Although some sources mention that it is likely that the digital euro will be launched in 2026, at the moment, there is no official date for the launch of the digital euro (Sandner & Gross, 2023). By the end of the investigation phase, ECB's Governing Council will decide whether or not to move to a realization phase based on the results (European Central Bank, 2023). The investigation phase encompasses securing funding, ensuring availability and designing the currency, as well as developing a prototype, conducting tests, and analyzing the outcomes (European Central Bank, 2022). At present, the investigation phase primarily focuses on developing a compensation model, determining access to the digital euro ecosystem, and analyzing the results of the prototype testing stage (Figure 2).

The investigation phase encompasses the compensation model for CBDC with the aim of incentivizing distribution (Ledger Insights, 2022). The compensation model has four principles: “free of charge for consumers to meet their basic payments needs, network effects which generate

economic incentives for acquirers and merchants, comparable economic incentives for issuers, and that the eurosystem bears its own costs, as for the production and issuance of banknotes” (Ledger Insights, 2022). This model is one of CBDC’s key objectives, and ECB is currently working on it.

Figure 2: Project timeline

Source: European Central Bank, 2022



First, funding and defunding refer to adding or removing money from an account. According to the report discussing the investigation phase of a digital euro, this process needs to be available around the clock, or in other words 24/7 (European Central Bank, 2022). Additionally, the report states that although typically the device requires internet connection for validation by a third party, offline transactions may also be possible in some cases (European Central Bank, 2022).

Availability refers to the distribution of CBDC. To promote financial inclusion, the digital euro aims to be available to anyone in the eurozone regardless of their country of origin, thus enabling universal access to the currency (European Central Bank, 2022).

The investigation phase also includes the analysis of design options, which involves the development and evaluation of the various functionalities and services that the digital euro can provide, such as determining how users can access it (European Central Bank, 2022).

The prototyping phase will be finished by the first quarter of 2023, and, subsequently, in the second half of 2023, the high-level design options will be reviewed by the European Central Bank (European Central Bank, 2022). Finally, by autumn 2023, the Governing Council will evaluate the investigation phase's findings and decide whether to start the realization phase.

Financial description

To gain a better understanding of the design of digital euro, it is important to first highlight the difference between private and public money. Public money, also known as central bank money, refers to physical currency, such as banknotes and coins, that is issued by a public institution - the central bank (Adrian & Mancini-Griffoli, 2021). In contrast to public money, private money refers to currency issued by commercial banks, which individuals use for various financial transactions using credit cards and mobile payments (European Central Bank, 2023).

Given that the digital euro is issued by the central bank, it may be concluded that CBDC (central bank digital currency) is a form of public money in an electronic format. This suggests that the central bank would preserve a hybrid model, which utilizes both private and public money, that has been proven to be successful in the past (European Central Bank, 2023). In other words, people would be able to convert their private money for the public digital euro and use the public money for their transactions. This provides financial stability in the event of a financial crisis (European Central Bank, 2023). In contrast to cryptocurrencies, which may not have the same level of convertibility as central bank money, the digital euro would offer greater stability and security (European Central Bank, 2022). Moreover, it reduces the chances of the market oligopoly, where a small number of large private providers have significant control over the whole market. Therefore, the introduction of the digital euro would guarantee a stable financial system.

It is crucial to mention that the digital euro would be different from the cryptocurrencies (N26, 2021). Unlike cryptocurrencies, which are issued by private individuals, digital euros are issued by a central bank (N26, 2021). Both assets require a digital wallet for storage, but with digital euros, users can expect a higher degree of privacy due to the fact that, as mentioned before, the central bank issues them (European Central Bank, 2023).

Chapter 2: Economic Outlook on the Digital Euro

Introduction

The financial impact of a CBDC in the Eurozone will be reflected through the corresponding monetary policy and the stability of the system itself. Currently, non-cash money with the central bank is reserved for a limited amount of governments and foreign central banks, however, a CBDC will give this access to the general public, impacting the monetary system in several ways (De Nederlandsche Bank, 2020). This chapter will give an outlook on potential economic consequences and necessary measures to take when introducing the Digital Euro to the economy.

Monetary policy

The Digital Euro could be a substitute for both cash and commercial bank money, and hence, creates an additional liability on the balance sheet for the ECB. Changes in the central bank's balance sheet would most significantly be seen if citizens moved funds from commercial bank deposits to the CBDC (Passacantando, 2021). This will cause banks' liquidity to undergo significant pressure and limit their ability to create money through lending as loans would have to be refinanced with CBDC, giving more control to the ECB. According to former Chief Economist of Deutsche Bank, Thomas Mayer and former Governor of the Spanish central bank, Miguel Ángel Fernández Ordóñez this could grant a more stable banking system (Gross et al., 2020). However, there must be a clear separation of the role of central banks and commercial banks in issuing loans. For this, the ECB could use the additional funds received as an increase in loans given to commercial banks. This restructuring would require alternations in the central bank's lending policies to avoid problems in the monetary system. Some of these problems include the possibility of low-quality collateral that banks would offer in their loan component and potential conflicts of interest arising from the ECB acting as a structural long-term investor (Passacantando, 2021). Overall, transparent rules for market neutrality would be essential.

It is also important to highlight that as the demand for banknotes and CBDC increases, the reserves in banks will decrease. Changes in interest rates are sometimes done through reserves as the interest paid on a reserve often represents banks' willingness to pay to lend or borrow money in a day, which influences future expectations of banks, which later pass on these rates to customers. For this to be efficient and in accordance with current monetary policy, reserves must be more than required to have a dominant effect on financial markets. Banks use their reserve accounts to buy banknotes from the central bank. However, if customers transfer funds to CBDC accounts, the reserves of commercial banks would decrease (De Nederlandsche Bank, 2020).

The previous explanation describes the substitution from commercial bank money to CBDC. As long as it is smaller or equal to the sum of the surplus, no action is required by the ECB. If it is the case that the ECB must counterbalance the excess demand of CBDC, new reserves will be necessary. Additional assets will be required to increase the balance sheet (De Nederlandsche Bank, 2020)t. The following figure demonstrates if this increase is done through monetary portfolios, where CBDC2 depicts the amount substituted.

Assets		Liabilities	
Gold and foreign currency reserves	15	Equity capital	10
Own euro-denominated investments	15	Banknotes	20
Loans	20	Minimum reserves	30
Monetary portfolios	10 +CBDC2	CBDC	+CBDC2

Figure 3. Example of central bank balance sheet in case of monetary policy normalization

Source: De NederlandseBank, 2020

In January 2020, the ECB proposed a way to control such potential massive outflows from bank reserves, by potentially implementing a two-tiered interest rate system for the Digital Euro. This entails zero or negative interest rates for the excess currency if the Digital Euro threshold is surpassed in the central bank account. This will discourage users to store CBDCs in large quantities. On one hand, Tier 1 Digital Euro would result in non-negative interest when the amount of currency is still within the threshold. On the other hand, Tier 2, which represents the currency that exceeds the specified CBDC threshold, would never have positive interests. The combination

of these two tiers would make CBDC unattractive to store. This system can be further visualized in the following figure (Gross et al., 2020)

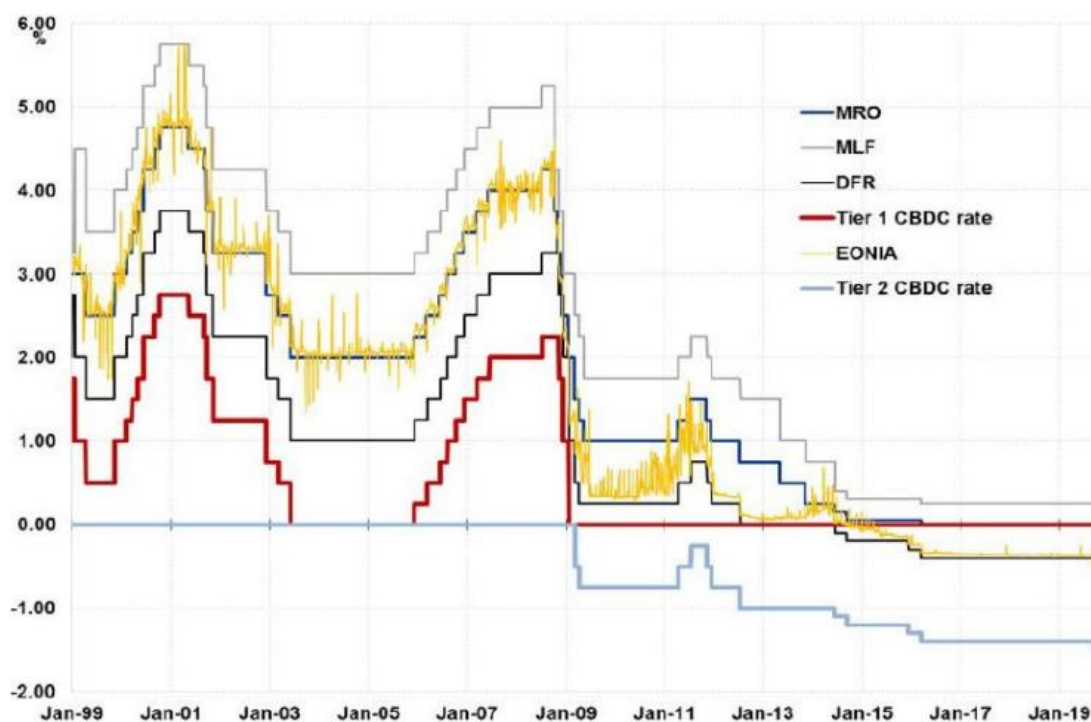


Figure 4. Two-tiered interest rate system proposed by the ECB

Source: Gross et al., 2020

Wagner, Bruggink, and Benevelli (2021) argue that to reduce the risk of bank liquidity shocks, issuing digital currency should go hand in hand with an according reduction in physical cash and M0 (monetary base). Another opportunity to control the quantity and price of CBDC in circulation, for example, by charging fees to own CBDC. Yet, the currency must be sufficiently attractive to customers to be successful (De NederlandseBank, 2020).

Financial stability

Introducing changes to the basis of the banking treasury system means there has to be precise monitoring and controlling to ensure maintaining economic stability. To smoothen the effect, a gradual implementation would be reasonable. This would give time for adjustment to the

conditions of the CBDC in accordance with the demand and may prevent any unwanted substitution of bank deposits. Also, it allows for the depiction of the behavioral responses of users, commercial banks, and the central bank (DeNederlandsche Bank, 2020).

Chapter 3: Challenges and opportunities of the Digital Euro

Introduction

When plans for the digital euro were first announced it was not only seen as an evolution of the traditional cash system but also as a reaction to the increasing prevalence of cryptocurrency. More specifically, it appeared to be a reaction to Facebook's endeavoring to create its own currency, Libra (Milkau, 2021). During its development, this turned into a so-called stablecoin, meaning that its value would be linked to for instance the US dollar (Passacantando, 2021). Although the Libra has since been canceled (Murphy & Stacey, 2022), this development did signal that there is a role for central banking organizations such as the ECB in providing a digital currency. More specifically, there remain important issues that the announced digital euro could potentially address, as well as challenges that need to be recognized.

Monetary sovereignty in a national context

The need for a stable digital currency, or "stablecoin", that Libra exposed highlights potential concerns regarding the future of digital currencies. Currently, the digital private sector is dominated by providers that are mostly from outside the European Union (KPMG, 2022). Payment companies from the United States handle a large part of online transactions, which, combined with the significant use of the dollar for international transactions in Europe, could be problematic. Namely, there is a significant risk that the European payments market becomes dominated by non-European solutions and technologies (KPMG, 2022) and that in the near future Europeans will have to for instance use an American-managed cryptocurrency to transact globally with digital money (Mayer, 2019). The international role of the euro could thus be undermined. The digital Euro can provide the solution, as it would ensure the strategic autonomy of European payments and monetary sovereignty. Monetary sovereignty is understood as "the right of a state to issue a national currency, regulate its use within the territory, and use monetary policy to achieve domestic policy objectives" (Murau & Klooster, 2022). It is thus especially important in the case of geopolitical tensions, in which case a European CBDC would provide the eurozone with a fall-back solution (Lagarde & Panetta, 2022).

Public money as the monetary anchor in Europe and its importance as a policy instrument

In line with this is the concern over the trend of payments, in general, undergoing a potentially disruptive transformation, as highlighted in chapter 1, where cash is becoming less and less prevalent. Where the digital euro provides an answer in the national context, it also serves as an important solution within the eurozone. Thus far cryptocurrencies have demonstrated that they have the potential to revolutionize the way payments are processed, but this will only truly be the case if these virtual currencies are used at scale for actual payments. Due to the volatile nature of the value of for instance bitcoin, this has largely not happened yet, but if it does this can pose threats to the stability of the financial system in general if there is no institution that can improve confidence in the event of a panic. (Allen, 2017).

The answer to this problem lies in the “stablecoins”, but the current implementation poses another threat, namely that they are issued by private companies, often big tech (Passacantando, 2021). The belief is that, ultimately, private providers will not be able to truly replicate the role of central bank money and that confusion would potentially arise as to what exactly qualifies as money. In such a situation where private providers in essence take the place of the central bank, the banks' function can be compromised. In the current system, the state has the central bank as its agent to be able to use money as a policy instrument for the management of the economy and a source of funding for the state. Hence the functioning of states in the eurozone would be endangered (Mayer, 2019). Moreover, if the use of cash declines, public money can lose its role as the monetary anchor in Europe (KPMG, 2022). In this case, the faith people have in the ability to always exchange private currency for central bank currency may become compromised, eventually damaging trust in the euro as a whole. The implementation of a digital euro would guarantee that the public can maintain confidence in the monetary anchor behind their digital payments (Lagarde & Panetta, 2022).

Competition and innovation

While the previous use cases of a digital euro mostly revolve around its necessity in the changing economic environment as a solution to potential issues, there are also several fundamental benefits to the implementation of the CBDC. Namely, it would “level the playing

field” by enabling all market participants, whether this is a bank, a non-bank intermediary, fintech, etc. to provide a lower-cost alternative product that allows for immediate payments (Oehler-Şincai, 2022). Digitalization will thus allow for more competition in financial services and between money issuers, fostering innovation and improving the efficiency of payment systems (Lagarde & Panetta, 2022), potentially benefiting both consumers and businesses (Mayer, 2019). This would help avoid market dominance and for instance allow smaller firms to offer more advanced services at competitive prices (Lagarde & Panetta, 2022) and ultimately enable new businesses to come into existence that were not feasible before (Santander, 2021). Cross-border payments would also benefit as “retail remittances and trade finance services for SMEs could greatly benefit from cross-border payments enabled by CBDCs that allow transactions to be performed instantly” (ESBG, 2021).

The effect on financial intermediation

The first challenge that the digital euro faces comes in the form of the current economic structure with intermediary financial structures. It could replace the present means of payment in the financial sector or even the deposits that banks now safeguard. This would be especially true in times of crisis where people are likely to want to hold their money in the central bank. If the digital euro would also be accessible to non-residents this could mean that this effect spreads globally as well (Santander, 2021).

Naturally, commercial banks fear that they will lose customers when such a digital euro is introduced (Mayer, 2019). If the role of banks and deposits to credit institutions decreases this could entail that banks will be less likely to offer loans. Therefore, intermediaries such as credit institutions involved in payment systems will be necessitated to change their business model (N26, 2021). A major challenge thus lies in addressing these parties’ concerns. A possible solution could be the implementation of an indirect distribution system through supervised financial intermediaries as well as limits to the balances held in Digital Euros (Santander, 2021), but these come with their own slew of considerations.

Importance of adoption

Ultimately, the success or failure of the digital euro hinges on the degree of trust that users will have in it and how many users it will actually have (Oehler-Şincai, 2022). It has to become

part of people's everyday lives (Lagarde & Panetta, 2022), and to achieve this it has to provide benefits to the users compared to the existing solutions (KPMG, 2022). The specifics of this are not yet decided upon, the ECB will do this in the investigation stage, as indicated in chapter 1. Nevertheless, it is clear it will have to meet the needs of customers, who are identified as valuing broad acceptance, ease of use, low cost, high speed, security, and consumer protection the most in making their adoption decision. Merchants on the other hand require low cost, ease of use, and integration with the existing systems (KPMG, 2022). Next to this, the security of payment methods is vital (Oehler-Şincai, 2022), as well as the privacy of users.

The latter is a particularly important concern. Physical cash is an anonymous payment method by nature. Some have looked towards the digital euro as a good method to help with anti-money laundering regulations, which could potentially invade the privacy of users. Since privacy is a core value for EU citizens and a central driver of acceptability and trust in money (European Commission, 2022) some restrictions may be necessary (ESBG, 2021). This, however, comes into conflict with other, equally valid, policy objectives of the EU such as the fight against money laundering and tax evasion (finance. Ec). In conclusion, the digital euro has to achieve the optimal trade-off between the expectations of all market actors and the objectives of the Eurosystem (Oehler-Şincai, 2022).

Conclusion

In conclusion, the digital euro presents significant opportunities, namely offering a solution to dominant non-European digital payment providers in the market as well as contributing to the strategic autonomy and monetary sovereignty of the eurozone. The digital euro also has the potential to enhance confidence in the euro itself, and thus the monetary anchor behind digital payments. Additionally, it would provide all market participants with a lower-cost alternative product for immediate payments and allow for more competition in financial services. Combined with easier cross-border payments, this can foster innovation and improve the efficiency of payment systems, benefiting both consumers and businesses. Nevertheless, it is crucial to address the challenges the digital euro may present. Concerns raised by for instance banks will have to be addressed, as the effect of the digital euro on financial intermediation can constitute an overhaul

of this system and the current economic structure. Furthermore, in order to succeed, the CBDC will have to achieve a high degree of adoption. In other words, balancing the interests of all market participants and the euro system itself as decisions will have to be made regarding security, privacy, and regulations. There are thus both significant opportunities and challenges, and both will have to be considered to successfully implement the digital euro.

Conclusion

In conclusion, it is apparent that although the CBDC is only in its investigation phase, it has the potential to significantly impact the future of finance and ways of payment. Moreover, some researchers believe that it is possible that the digital euro may become the dominant form of payment, potentially leading to a completely cashless society. By providing a safe and convenient form of digital money, the digital euro has the potential to address Europe's reliance on non-european digital payment providers, benefit the strategic autonomy and safeguard monetary sovereignty. Furthermore, it can boost confidence in the monetary anchor behind digital payments and benefit all market participants. The latter concerns the ability to provide a low cost immediate payment option in financial services, which, combined with easier cross border payments, stands to intensify competition and foster innovation. Significant challenges do however remain, as the effect on the financial intermediation system poses a potential overhaul of the current economic structure, resulting in concerns from various parties such as the banks. As the digital euro strives for a high degree of adoption, which is necessary for its success, a balance will have to be struck between security, privacy and regulation demands all the while keeping the other market participants interest at heart. Hence, the opportunities are both numerous and significant, but in order to reap the benefits, solutions will have to be found to the key challenges to ensure the digital euro can live up to its promise.

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