

# Digital Euro: When in doubt, abstain (but be prepared)

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*Supporting EU economic governance scrutiny*





# Digital Euro: When in doubt, abstain (but be prepared)

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## **Abstract**

This paper assesses the state of preparation for the possible launch of a digital euro. It focuses on the main relevant aspects: market impact, implications for banks, design and technical issues, monetary policy, financial stability, the role of fintech and Big Techs, international dimensions, privacy, and financial inclusion. On each, brief recommendations for the ECON Committee's work are offered. The concluding judgment is broadly positive on the preparatory work but doubtful on the wisdom of eventually launching a digital euro.

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## LIST OF ABBREVIATIONS

<b>AML</b>	Anti-Money Laundering
<b>BIS</b>	Bank for International Settlements
<b>CBDC</b>	Central bank digital currency
<b>ECB</b>	European Central Bank
<b>EU</b>	European Union
<b>IMF</b>	International Monetary Fund
<b>PBoC</b>	People's Bank of China
<b>KYC</b>	Know Your Customer
<b>PDE</b>	Prospective digital euro
<b>PSP</b>	Payment service provider
<b>UK</b>	United Kingdom
<b>US</b>	United States

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## EXECUTIVE SUMMARY

- The ECB's preparatory work on the prospective digital euro (PDE) is part of a broader line of work by the global central banking community on the possible issuance of central bank digital currencies (CBDCs). The ECB is conducting its preparatory work professionally and timely, in a way consistent with what is being done by other major central banks.
- Launching a digital euro would put the ECB in a new position: that of offering a new payment instrument in competition with banks and other payment service providers (PSPs). It is not clear that there is a market niche for a PDE, nor that a PDE would have a good chance of establishing itself in today's highly diversified, competitive, innovative, and fast-moving retail payment industry.
- Eurozone banks today manage most retail payments and settle them on their deposit accounts; in the new situation, they would compete with the ECB (the PDE would be an alternative to a bank deposit) and also cooperate with it (because they would conduct all front-end functions for the PDE). This generates potentially adverse incentives and warrants a well-designed compensation structure for the services provided by banks. The ECB reports give no information on this.
- The PDE should be sufficiently attractive not to be a market flop, but not overly attractive so that it subtracts a large share of intermediation from the banking sector. Achieving this middle ground is difficult and the schemes envisaged by the ECB (maximum balances, flexible remuneration) offer no guarantee in this respect.
- The remuneration of the PDE may interfere with the ECB interest rate policy, at present conducted by adjusting the rate on the ECB deposit facility; a divergence between the two rates would encourage arbitrage operations which may complicate the independent management of the two rates – one for payment system purposes, the other for monetary policy.
- During banking crises, the PDE would accelerate a bank run because it would offer easy access to a riskless alternative to a bank deposit. The upper limit on PDE balances at 3,000 euros suggested by the ECB may not be sufficient in all circumstances. This risk is compounded by the incompleteness of the banking union, specifically the lack of euro-wide deposit insurance.
- User surveys show that privacy is a widespread public concern; strong privacy solutions would therefore be important to make the PDE attractive.
- The PDE is unlikely to increase financial inclusion in the eurozone but could help solve the long-standing problem of the high costs and delays of cross-border workers' remittances. For this objective, a limited and targeted version of a PDE (i.e., not open to all citizens and enterprises) would be adequate, coupled with interoperability of central banks on a bilateral basis.
- All arguments considered, this author's opinion is that the ECB should continue its exploration, including a testing phase, but in the end not launch a PDE unless new elements emerge strongly supporting such a decision. At the present time, the risks and imponderables of this enterprise are stronger than the arguments in favour of it.

## INTRODUCTION

This paper assesses the state of preparation of the ECB for the possible launch of a digital euro, based on the two progress reports published by the ECB in September 2022 and December 2022 (respectively [First Report](#) and [Second Report](#)) and other ECB documents.

This paper takes as given (i.e., it does not discuss or question) certain features of the prospective digital euro (henceforth PDE) that the ECB has already announced, conditional on the PDE being effectively launched, in particular:

1. The PDE would be made available to all eurozone citizens and firms;
2. PDE balances would be recorded in the balance sheet of the ECB<sup>1</sup>, i.e., they would be liabilities of the central bank;
3. All front-office functions to collect and administer PDE balances would be outsourced to credit institutions or other payment service providers (PSPs).

Likewise, this paper takes no stance on the legal aspects of a PDE, in particular on whether the issuance by the ECB of a digital payment means used for retail commerce by all citizens is compatible with the ECB Statute.

Before starting, one observation is in order. The work conducted by the ECB is a component of a broader line of work carried out by the global central banking community on the possible issuance of Central Bank Digital Currencies (CBDCs)<sup>2</sup>. The ECB started its exploration in July 2021 and is now heading toward a decision in October 2023 to possibly launch a “realisation phase”<sup>3</sup>. This preparatory process is useful, indeed necessary, regardless of the final decision on the launch. It is necessary because, as the world’s second most relevant central bank, the ECB cannot ignore or lag behind in this important line of work conducted by the central banking community. It is useful because the preparatory work helps the ECB maintain a high level of expertise on digital payments, a fast-evolving area where the ECB has statutory responsibilities<sup>4</sup>. Two conclusions from this. First, possible arguments against or doubts regarding the eventual launch of a digital euro are not negative judgments on the usefulness of the preparatory work being conducted. Second, the investment and reputational cost sunk into the preparatory phase should not impinge on the final decision of the launch. That eventual decision must be based solely on a balanced assessment of the pros and cons emerging from the exploratory phase.

This paper is organised into 10 sections, each corresponding to a key issue that needs to be considered. On each issue, an opinion is expressed on why the issue is important, whether it has been sufficiently explored so far, and if not, what needs to be done. Each section concludes with a brief recommendation for the ECON Committee on how to conduct its work and interaction with the ECB, and for the ECB on how to bring the preparation forward before irreversible decisions are made on the effective

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<sup>1</sup> In this document, the term ECB is intended to include also the National Central Banks which are part of the Eurosystem insofar as the reference relates to the ECB’s institutional functions (monetary policy, banking supervision, payment system oversight, banknotes, etc.).

<sup>2</sup> Most other central banks, like the ECB, are still at the exploration stage. More information on central bank work on CBDCs at the global level can be found later in this report as well as [here](#). A case apart from all others seems to be the Swiss National Bank, two Board members of which have recently stated that their institution does not see a need for introducing a retail CBDC in Switzerland at the present time. See [here](#) and [here](#).

<sup>3</sup> During the realisation phase, further and more concrete testing will be performed. The decision on whether to effectively launch a digital euro or not will come later, after the conclusion of the legislative process. The realisation phase could last about three years.

<sup>4</sup> [ECB Statute](#), Article 16 and Article 22.



introduction of a digital euro. A concluding section wraps-up the argument and presents the author's view.

## 1. MARKET ANALYSIS

If it decided to launch a digital euro, the ECB would be offering a new product and new services to a large base of retail customers on a competitive basis. This is a new situation for the ECB, indeed for any central bank. The services central banks provide and have experience with are either offered to people on a monopolistic basis (banknotes) or dedicated to specific intermediaries (clearing and settlement services for banks). A digital euro would put the ECB in a radically new situation, where rejection by the market is possible and the ECB would not be protected by its power as a monopolist. A failure to market the PDE successfully would have negative reputational and cost implications.<sup>5</sup>

Launching new products is a daily practice of private retailers. These companies usually engage in preliminary market analysis, i.e. research to understand if the new product will meet the favour of the market and how best it can be designed for that purpose. Good market analysis is a precondition for successfully launching new retail products. The digital euro is no exception. There exist methodologies and consulting companies specialised in applying them on behalf of clients.

Based on the two progress reports, one does not get the impression that the market case for a PDE has been thoroughly explored and established. Understandably, perhaps, the ECB has concentrated on aspects pertaining to its central banking function, such as how the new product may interact with the conduct of monetary policy and financial stability<sup>6</sup>. But the PDE is a different ball game. The First Report in section 1 mentions use cases but still focuses on policy objectives, such as for example preserving the anchor role of money, or contributing to Europe's strategic autonomy.

A use case analysis should try to answer questions like:

- How would a PDE establish itself in today's highly developed payment ecosystem, and what is the expected client base?
- Would the PDE be attractive vis-à-vis established products like cards, smartphone apps, and online platforms, and why?
- Would most of the substitution take place against cash, bank deposits, or other assets (with quantitative scenario analyses)?

<sup>5</sup> The cases in which central bank digital currencies have already been launched on an experimental basis, in very different contexts (e.g. China and the Bahamas) do not suggest that the public is making much use of them. The Bahamas launched the Sand Dollar in 2021; at end-2022, there were only 300,000 Sand Dollars in circulation, a negligible amount. China launched the e-Yuan in 2020, and in 2022, the transactions on it were negligible compared to its private sector competitors, Alipay and WeChat.

<sup>6</sup> A study by Kantar Public commissioned by the ECB (*Study on New Digital Payment Methods*, March 2022, available [here](#)), based on a survey of some 2,000 European citizens in various countries, suggests that users favour digital payment means that are easy to use, fast and free of charge. People appreciate security in general but do not see a difference between commercial bank money and central bank money in this respect. Some are concerned that digitalisation may lead to the disappearance of cash. Participants in the survey were not immediately presented with the concept of a digital euro. To quote: "Both general public and tech-savvy participants were asked to imagine a future where most payments would be digital. Participants were presented with a new payment option called a digital wallet. The concept of a digital wallet was used to help people to envisage what a new digital payment might look like and to imagine what this experience could mean for them, without expressly mentioning the digital euro. ... In both groups, the overarching feeling was that the availability of wide-ranging options for payment was sufficient to cover their existing needs. Therefore, they struggled to imagine additional features that would convince them to adopt a new payment method." Another quote from the same report: "neither the general public nor the tech-savvy participants could see the difference from what already exists. (...) participants were satisfied with their existing methods and rarely have crucial unmet needs. Participants struggled to see the need for a digital euro, what unmet needs this would satisfy, and how it would fit with existing payment methods".

- Is the current digital payment ecosystem saturated or does it leave space for further growth and entry of new products?

The ECB has assembled a “Market Advisory Group” (see [here](#)) and recently launched a Market Research initiative to overview “options for the technical design of possible digital euro components and services” (see [here](#)). It has also launched a “prototyping” exercise to examine how alternative user interfaces integrate with existing front-end payment solutions. None of these projects focuses directly on the above questions. The purpose of the Market Research is described as follows: “to broaden the Eurosystem’s understanding of the potential design solutions existing in the market, as well as their time to market and related costs.”<sup>7</sup>

**Conclusion and suggestions:** Market success is a key risk factor in the PDE. Market research can help assess and limit this risk. The ECON Committee may wish to discuss with the ECB whether and how the issue is being addressed, and what are the answers to the above questions. An option for the ECB would be to use an independent consultant to analyse specifically the market impact of a PDE.

## 2. COOPERATION AND COMPETITION WITH BANKS

As made clear in the Second Report (section 1), the ECB has decided that all front-end functions of a PDE would be outsourced to private institutions, presumably mainly credit institutions according to EU legislation and to a residual extent other payment providers. Only these intermediaries would have direct contact with the individual account holders, opening their accounts (which includes know-your-customer, KYC, functions), managing the payment instruments, initiating and validating transactions (which includes AML checks), reversing invalid transactions if needed, and settling the balances on the books of the central bank. The ECB would act behind the scenes, managing centralised accounts and cooperating with commercial banks in the settlement function. In this setting, banks would conduct a broad range of operational functions on behalf of the central banks, all time-consuming and costly. Moreover, being the PDE a “public good”, it should be made available to all citizens on an equal basis, including in areas where banks may find it unprofitable to offer their own services.<sup>8</sup>

The relationship between the central bank and commercial banks in the euro area, as elsewhere, is one that combines service provision and regulation. The central bank offers financing, including last resort lending, and in exchange regulates and supervises banks to avoid moral hazard. Incentives in the two elements are carefully balanced. Once banks become front-end administrators of the PDE, the relationship would change: banks would offer services to the central bank and would also compete with the central bank for the collection of deposit funds.

Most credit institutions in the eurozone are retail banks, profit-maximising joint stock companies whose business is to intermediate deposits into credit and whose main source of income is the margin obtained from such intermediation. A PDE would be an alternative deposit instrument that the intermediary would offer in competition with its own deposits. The intermediary would balance two conflicting interests: attracting deposits for its balance sheet vs attracting digital euros, on which presumably the intermediary would earn a fee. This raises two questions: how would banks be compensated for the new service they provide? How would the incentives be balanced in the new situation?

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<sup>7</sup> See ECB, *Digital Euro Market Research*, January 2023, available [here](#).

<sup>8</sup> In some areas, postal services may be involved.

Further down in this paper we will examine what happens when commercial banks move funds from client accounts to digital euros, from a monetary policy and financial stability perspective. Broadly speaking, this substitution reduces the balance sheet of commercial banks and increases the balance sheet of the central bank. Other things equal, bank intermediation decreases, and with it the scope for commercial banks to make a profit. Absent proper compensation, banks would have no incentive to proactively support the diffusion of a digital euro. Both the aforementioned ECB reports hint at a compensation scheme but offer no details. If the compensation were deemed insufficient, banks may expect an implicit compensation in the form of easier financing or a more lenient stance of prudential supervision. In the new relationship between commercial banks and the central bank, the incentive structure would be altered in a way not easy to assess ex-ante.

**Conclusion and suggestions:** *A PDE would change the relationship between the central bank and commercial banks, introducing a new element: competition for deposit funds. Commercial banks would have a powerful instrument in their hands: the front-end services needed for the PDE to succeed. The ECON Committee may wish to discuss with the ECB the extent to which these issues have been discussed and what incentives the new situation may create for banks. In particular, the compensation scheme envisaged for banks could be discussed.*

### 3. RELATION WITH BIG TECH COMPANIES

The adoption of a PDE would bring the ECB in closer contact with Big Tech and more generally with the broader “fintech” universe. Technological companies were a decisive force behind the wave of payment system innovation in the last two decades. A stronger relationship between the central bank and these companies, which are not literally part of the financial sector but are an increasingly indispensable component of it, is promising. It would help the ECB remain at the forefront of digital technology with favourable impacts also outside the area of payments.

The ECB is unlikely to ever become a major source of technological innovation; it will tend to import innovation. Technological advances originating from the Big Tech and fintech industries are typically exploited by the market, but it is important that the ECB does not stay behind. In some cases, it may even happen that Big Tech supplies innovations to the ECB in advance, or even exclusively. Cooperation between the ECB and the technology companies is important to develop potential synergies. One should also consider that public opinions tend to distrust Big Tech inroads in the field of money: they are suspicious of possible malicious use of big data on payment habits. As a trusted public organisation, the ECB is a potentially valuable contributor to a partnership<sup>9</sup>.

Incorporating innovations would help the PDE establish itself and even potentially gain a competitive edge relative to other payment means. For example, potential users have expressed an interest in frontier technologies not yet broadly available today, such as biometric recognition<sup>10</sup>. Interest is also being expressed in the so-called “one-stop shop”, a single platform giving access to multiple payment means. Cooperation between the ECB and Big Tech can become an engine of such innovations.

The Bank for International Settlements (BIS) has been exploring avenues of cooperation between the global central banking community and Big Tech for some time in the context of its Innovation Hub. There seems to exist a corresponding interest on the side of Big Tech to strengthen the relationship

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<sup>9</sup> There may also be reputational risks for the ECB. In particular, if big tech were to end up dominating services around the digital euro and exploiting resulting data in ways not appreciated by civil society.

<sup>10</sup> See, for example, Kantar Public, *Study on New Digital Payment Methods*, March 2022, chapter 1 (available [here](#)),

with central banks<sup>11</sup>. If it decides to move ahead with implementing the PDE, the ECB may use the BIS channel to develop new lines of communication and cooperation.

**Conclusion and suggestions:** *Cooperation between the ECB and Big Tech (including fintech) can help the establishment and success of the PDE, and has potential beneficial effects also beyond the area of payment systems. The ECON Committee may wish to discuss with the ECB the state and the scope of such cooperation and the contribution of the BIS in this context.*

## 4. SCOPE, LIMITATIONS AND REMUNERATION OF THE PDE

A critical and unique feature of the PDE project is that it should be neither *too successful* nor *too little successful*. If it is too successful, it may dislocate an excessive amount of bank intermediation with undesirable and even dangerous consequences for the monetary policy and for financial stability (both are discussed in the next two sections). If it is too little successful, perhaps because the market rejects it as hypothesised earlier, then the ECB will suffer a waste of resources and will be exposed to reputational damage. Attaining the desirable middle ground is a major difficulty and risk factor behind the whole project.

The ECB has mentioned a ballpark objective for the aggregate size of the digital euro: between 500 billion and 1 trillion euro, and it has mentioned two main levers through which its objective can be attained. One is a quantitative limit to the maximum holding of the PDE per deposit, around 3,000 euros. The other is an articulate system of remuneration or penalisation to attract or discourage the holdings of PDEs.

An upper limit to the maximum holdings of PDEs per capita would ensure that the total aggregate effect of the introduction of PDEs would not go beyond a certain level known *ex-ante*, hence limiting the maximum impact on the financial sector. However, the nature of this impact would differ depending on whether individuals and businesses would substitute, in the main, PDEs for paper currency or for bank deposits. If the substitution is (mainly) with cash, it would be a replacement of one form of central bank money for another, with minimal or zero effect on the financial system. This is unlikely to happen though: all information we have suggests that euro area citizens wish to retain their cash holdings; actually, they are concerned that the PDE may be a covert way to abolish cash<sup>12</sup>. More likely is the case that the substitution will be mainly with bank deposits. The real unknown is the extent of such substitution. If the ECB sets the upper limit at 3,000 euros, as mentioned by the ECB<sup>13</sup>, considering one PDE deposit for each individual (eurozone population over 15) and for each enterprise, the maximum amount of PDEs would be just below 1 trillion euros, or about 10% of total overnight bank deposits at euro area banks<sup>14</sup>. A dislocation of bank intermediation of this scale would be very large but it is clearly an overestimate because it assumes that all PDE accounts rise at once from zero

<sup>11</sup> See, for example, some of the discussions conducted during the BIS Innovation Summit 2021 ([here](#)).

<sup>12</sup> Quoting again from the aforementioned Kantar Study (available here; section 6.2.3): *"In general, negative and neutral feelings about the digital euro among the general public are based on the fact that participants saw neither a benefit in nor a necessity for its introduction, given the current environment in which people already use electronic methods for many transactions. The most frequently mentioned drawback was the idea that the digital euro would mean the end of physical cash. This was a concern for participants on a number of grounds. Many worried about elderly and less technologically literate people. The move to a digital currency was seen by many as a further invasion of privacy, giving banks even more access to their personal data and spending habits. There was a concern the digital euro could be used as form of surveillance and control in contrast to physical cash. Empirical evidence of the rising demand for cash for the eurozone is provided by Alejandro Zamora-Pérez, "The paradox of banknotes: understanding the demand for cash beyond transactional use"; ECB Economic Bulletin, 2/2021.*

<sup>13</sup> For example, this threshold was mentioned by the ECB Executive Board Member Fabio Panetta in an interview with Der Spiegel, dated 9 February 2021, available [here](#).

<sup>14</sup> With 292 million eurozone citizens at or above 15 years of age, 20 million enterprises, and 3,000 euros per PDE deposit, the total amount of PDE deposits would be 936bn. euros. Overnight deposits at eurozone banks were equal to 9,788.7 billion euros at end-2022 (see Statistics table 5.1 of the ECB Economic Bulletin, Issue 2, 2023).

to the maximum level of 3,000 euros. The process would certainly be more gradual and limited. Still, movements of this kind could be enough to create problems for individual banks, especially the weakest ones (more on this in the next sections).

Another channel (possibly combined with the previous one) for the ECB to influence the volume of PDE deposits is to act through their remuneration. Applying a remuneration would bring PDEs closer to a portfolio asset, more akin to deposits than to cash. ECB officials have mentioned the possibility of “tiering” the remuneration, i.e. differentiating it depending on the amount held. Lower holdings of PDE deposits, presumably held for transaction purposes, would earn higher interest, whereas higher balances would be penalised by a lower rate. The tiering system may be different for people vs businesses, possibly more favourable for the former. This remuneration structure would move up and down with money market conditions<sup>15</sup>.

Remunerating PDEs would have implications for the ECB’s accounts. Taking the ballpark estimate above of 1 trillion euros for the total amount of PDEs, the annual cost for the ECB would be 10 billion euros assuming an average rate of 1%, or 30 billion euros assuming an average rate of 3%, the present rate applied to the ECB deposit facility. These are large amounts, far greater than the net results attained by the ECB in recent years<sup>16</sup>.

Remunerating PDEs would also have broader quasi-fiscal and possibly legal implications, especially if the remuneration falls below zero. As argued elsewhere by this author<sup>17</sup>, a negative rate would amount to an explicit tax imposed on all citizens and decided directly by the central bank. This may have consequences that need exploring since in the EU the power of taxation is explicitly demanded on member states by the Treaty. In some circumstances, the independence of the ECB in setting that rate may be questioned.

**Conclusion and suggestions:** *Upper bounds to the holdings of PDEs and possible remuneration of PDE balances are crucial design issues on which little is known so far. The ECON Committee may wish to discuss with the ECB the state of discussion on these aspects, possibly requesting scenario analyses and an examination also of the accounting and legal implications of the various hypotheses.*

## 5. IMPLICATIONS FOR MONETARY POLICY

From now on, it will be assumed that most of the substitution takes place between PDEs and bank deposits. This is the most likely event, as argued before. If instead, PDEs were to replace physical cash, the monetary implications would be minimal: the ECB would simply end up ceasing to issue a corresponding amount of cash<sup>18</sup>.

A substitution of PDEs for bank deposits would imply, euro for euro, a decline in the balance sheet of the bank and an increase in the balance sheet of the ECB. Part of the saving intermediation in the economy would migrate from the commercial banking system to the ECB. On the impact, the liquidity of the commercial bank would decrease. This effect is, other things equal, contractionary: banks would be less inclined to lend out to households and businesses. The amount involved (potentially 1 trillion euros) is macro-economically relevant. However, the central bank can always compensate for this effect

<sup>15</sup> The remuneration of PDEs and various forms of tiering are discussed by U. Bindseil, “Tiered CBDCs and the financial system”, ECB Working paper series n. 2351, January 2020 (available [here](#)). See also ECB, FAQs on the digital euro, available [here](#).

<sup>16</sup> Recent data can be found [here](#).

<sup>17</sup> See I. Angeloni, “Some unwanted consequences of a digital euro”, VoxEU December 2020, available [here](#).

<sup>18</sup> Outstanding euro cash today is around 4,300 euros per eurozone citizen on average. If all holders of PDEs were to substitute entirely PDEs for cash, assuming 3,000 PDEs per person, about 30% of euro cash would still remain outstanding.



with refinancing operations. Moreover, with today's large amount of bank liquidity outstanding (some 4 trillion euros) the effect should be easily reabsorbed.

Complications may arise in connection with the remuneration of PDEs. Today's interest rate control framework of the ECB hinges on the rate of the ECB's deposit facility. Because of the large amount of liquidity created in the years 2014-2022 with the so-called Quantitative Easing policy, short-term market interest rates tend to coincide with the rate on the ECB deposit facility, which effectively sets the lower bound for interest rates at short maturity. The ECB needs to move the deposit rate to influence market rates. That rate is today at 3%. If the remuneration on PDEs were to be set at a different (presumably lower) level, arbitrage opportunities would arise: for example, banks could offer clients fixed-term deposit swap operations in order to jointly profit from that margin. The ECB could try to inhibit such operations. But to the extent that market pressure exists for the two rates to converge, complications would arise because the two rates are supposed to serve different objectives – one for monetary policy, the other for payment system considerations.

It may be mentioned, since the point has been raised in some debates,<sup>19</sup> that there is one hypothetical case in which the introduction of a PDE would greatly facilitate the conduct of monetary policy: the eventuality in which the ECB wanted to perform "helicopter money" operations. Helicopter money is an unconventional, mixed fiscal-monetary measure consisting in creating money and putting it directly in the pocket of the people. It was originally hypothesised by the American economist Milton Friedman as a theoretical case to demonstrate the effect of money on prices. After the financial crisis, the concept was revived but never implemented. The difference between helicopter money and Quantitative Easing is that helicopter money is created and handed out, not exchanged against collateral. This would be easy to do using PDE accounts. However, helicopter money operations are very unlikely to occur and are probably incompatible with the EU Treaty.

In the two aforementioned ECB reports it is sometimes implied that a digital euro is necessary to preserve a monetary anchor in the digital age. This idea is misleading. "Monetary anchor" is normally intended to be a constraint on the real value of money<sup>20</sup>. Such a constraint depends on the monetary policy regime, not on the specific form (physical or digital) cash takes. If instead by "monetary anchor" one means the sense of security individuals derive from the possibility of converting their bank holdings into a safe asset at par, then at present no instrument performs this function better than tangible cash.<sup>21</sup>

**Conclusion and suggestions:** *The implications of the adoption of a PDE for the conduct of monetary policy are a central issue to be clarified ex-ante. The ECON Committee may wish to discuss with the ECB these implications, under various conditions, in particular different hypotheses regarding the design of the PDE (remuneration, limits) and alternative operational frameworks of monetary policy that the ECB may adopt in the future.*

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<sup>19</sup> See for example Eswar Prasad, "The case for Central Bank Digital Currencies", Mimeo 2021, available [here](#).

<sup>20</sup> See for example F. Mishkin, 'International experiences with different monetary policy regimes', *Journal of Monetary Economics* 43.3, June 1999.

<sup>21</sup> No evidence suggests that the demand for cash in the eurozone is declining, or that finding cash has become more difficult, although cash is being replaced by digital means for certain purposes. For evidence see the report "Study on the payment attitudes of consumers in the euro area (SPACE)", ECB, December 2022. But for the sake of the argument, and contrary to the ECB's promise that "Cash will continue to be available in the euro area" (see "FAQs on the digital euro", Question 1, available [here](#)), let's suppose that banknotes become difficult to use and to find. This would mean that people have gained full trust in the digital instruments offered by banks and other PSPs. Such a system would continue to be stable because "anchored" and controlled by the supply of base money by the ECB. Base money consists already now largely of bank deposits with the ECB which are, effectively, "digital euros".

## 6. IMPLICATIONS FOR FINANCIAL STABILITY

As noted in section 1, according to a survey commissioned by the ECB, most eurozone citizens do not understand the difference between commercial bank money and central bank money. In particular they do not seem to appreciate the fact that commercial bank deposits are risky at least to some extent, meaning that there is a risk, albeit minimal, that the investor may incur losses, whereas ECB deposits are riskless because the central bank can always print money to reimburse its debts.

This fundamental difference may stay hidden in normal conditions but becomes crucial in a banking crisis if depositors think their bank may fail. In the EU, bank deposits are insured by national guarantee schemes up to 100,000 euros per depositor per institution. Beyond that, deposits are generally at risk of losses unless banks have other specific insurance arrangements. Experience shows that in a banking crisis, depositors become quickly and keenly aware of the risk and tend to “run” away from risky deposits. In that eventuality, they would surely understand the difference between bank deposits and PDEs and would want to run on the former in favour of the latter. PDEs are not the only potentially available alternative. For example, during the crisis of the Spanish bank Banco Popular Español in 2017, before the ECB declared the bank failing or likely to fail and blocked the outflows, deposit transfers were observed towards other banks perceived as safe<sup>22</sup>. Recent market intelligence following the demise of the US lender Silicon Valley Bank as well as econometric analyses suggests that online banking applications may have accelerated the mobility of deposits, hence the risk of disruptive bank runs.<sup>23</sup> The PDE would not create the problem but would magnify it, offering a risk-free online alternative to bank deposits. The risk is compounded in the eurozone by the incompleteness of the banking union, specifically the lack of area-wide deposit insurance.

This problem is a strong argument for introducing an upper limit to PDE holdings. As mentioned already, with a 3,000 euro limit the maximum outflow in the aggregate would be 10% of overnight deposits. For individual banks, however, that percentage could be bigger, depending on the funding structure of the bank. The risk of a run is relevant for individual banks, not in the aggregate. Once a bank is at risk, contagion effects may propagate the crisis to others. Therefore, an upper limit of 3,000 euros may not be sufficient to prevent a damaging outflow of liquidity in all circumstances.

In case of a run on a bank, the ECB may come under pressure to relax the upper limit on PDE deposits. A banking crisis is a painful event, politically sensitive because it puts individual savings at risk. After its assumption of supervisory tasks in 2014, the ECB is institutionally responsible for “contributing to the safety and soundness of credit institutions and the stability of the financial system within the Union and each Member State”<sup>24</sup>. Nothing of this implies that the central bank is supposed to accept individual deposits in its balance sheet in order to bail out depositors in a crisis; and until deposits do not exist, nobody is ever likely to make such a suggestion. But once PDE deposits existed, that idea may get political traction and pressure on the ECB may step up.

**Conclusion and suggestions:** *The risks to financial stability are mentioned regularly in discussions regarding the issuance of central bank digital currencies, in Europe and elsewhere. Those risks are real: the ECB is well aware of them and is studying ways to minimise them. Nonetheless, the ECON Committee may*

<sup>22</sup> The deposit outflows of BPE are mentioned in the ECB’s “Failing or Likely to Fail” Assessment of Banco Popular Español, available [here](#).

<sup>23</sup> See for example [here](#). Econometric estimates by Naz Koon, Tano Santos and Luigi Zingales, “Destabilizing digital “bank walks””, Chicago Booth New Working Paper Series n. 328, April 2023 (available [here](#)), suggest that banks offering digital payment apps (an increasing share of the banking sector) are characterised by a higher deposit outflow speed.

<sup>24</sup> Article 1 of the Single Supervisory Mechanism Regulation, EU 1024/2013, available [here](#).

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*ask the central bank to elaborate on the mitigants that may be adopted, perhaps with numerical calculations based on experiences of banking crises that occurred in the past.*

## 7. INTERNATIONAL DIMENSIONS

As mentioned already, the PDE project is part of a broader work line at the global level, regarding the possible introduction of central bank digital currencies. Most central banks are engaged in the exploration, some at a more advanced stage than others and some more convinced than others of the advisability of making the final step. Some information on the state of preparations in different countries can be found on the website of the Atlantic Council, a US-based forum of discussion and research on global economic and political affairs (see [here](#)).

The US authorities are still “sitting on the fence”, researching the issue and consulting on it. The Treasury has recently established an interagency CBDC Working Group to assess whether a CBDC is in the national interest and what its features may be. This work will be long and no deadline has been announced. The recent official announcements do not give the impression that Treasury and the other federal agencies involved are in a hurry to proceed (see [here](#)). Time ago a member of the Federal Reserve Board published a speech with an eloquent – and oft-quoted – title: “CBDC: A Solution in Search of a Problem?” (see [here](#)).

The UK seems to be at a similar stage. A Treasury-led committee is at work. Treasury and the Bank of England have published a consultation paper on the “digital pound” (see [here](#)), and answers are expected by 7 June 2023.<sup>25</sup> No official deadline has been set for more advanced stages or for final adoption. The consultation indicates that a decision to proceed to a “build phase” will be taken around 2025, with a view of enabling the possible issuance of a digital pound by the second half of the decade.

The Bank of Japan is more advanced than the aforementioned institutions, perhaps because its stance may be more influenced by what happens in China. A “concept study” has been completed and a “pilot” has been announced to start in April 2023 (see description [here](#)). From what one can see, this pilot should be similar to what the ECB calls its “realisation phase”, to be started possibly in October. It consists of experiments in which all the functionalities will be tested and the relevant stakeholders and contributing parties consulted. No deadline for the end of the pilot phase has been announced.

The Swiss National Bank has been actively researching the subject, but very recently two of its Board members have stated on record that they do not see a need for a digital Swiss franc. The extent to which those views commit their affiliating institution in a definitive way is at the moment unclear.

Among large central banks, the People’s Bank of China (PBoC) is the only one that has already moved to implementation. Research on an e-Yuan started already in 2014. Accounts were first opened in 2020 in a few regions and extended in 2021 in other provinces and major cities. Several types of accounts are available, each with different limits to balance and number of transactions; all in all, the Chinese model seems more complex than the one generally envisaged in the West. The PBoC is not transparent in releasing information regarding the uptake of the new instruments. From the few numbers available it seems that in spite of the powerful campaign conducted by the authorities to promote the instrument, the e-Yuan is not very popular: as of end-2022, less than 20% of the Chinese population had downloaded the smartphone app, and the number of transactions per year had been little over one per person. By contrast, Alipay alone counts 1.2 billion users and processes over 2,000 transactions every second.

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<sup>25</sup> The ECB has already conducted a public consultation at an early stage (between 12 October 2020 and 12 January 2020).



Further information on the preparations of CBDCs in the Asia-Pacific region is provided by the IMF [here](#).

In sum, the stage of preparation differs widely around the world, depending on local conditions and policy priorities. It is often mentioned that the key motive for China going ahead is one of control, and the timing was triggered essentially by the market success achieved by the private platforms – Alipay, WeChat, and others (see data on their market penetration [here](#)). The decision by each central bank to move ahead is likely to be influenced by, and to influence in turn, the decision of others. There is probably an inherent group dynamic in this process. A Federal Reserve staff research paper has examined this issue and concluded that there should be no “first-mover advantage” for a country in launching a CBDC (see [here](#)). Still, the decision will not be made on economic consideration alone. Political and strategic considerations are likely to be important. The adoption of a CBDC is unlikely to have a significant effect on the relative attractiveness of currencies as invoicing or reserve instruments<sup>26</sup>. In any case, some liaison among central banks seems advisable to avoid possible distortions and beggar-thy-neighbour effects – meaning, attempts to gain a “first mover advantage” by introducing a CBDC before other central banks. The BIS would be a natural coordination forum.<sup>27</sup>

**Conclusion and suggestions:** *Further steps towards the adoption of PDE should take into consideration, together with other factors, the progress made by the global central banking community towards the possible adoption of central bank digital currencies (CBDCs) in other regions of the world. The ECON Committee may wish to engage the ECB in discussions about what is the state of preparation elsewhere, and how this relates to the work done in the ECB, as well as the scope and the fore of cooperation and coordination.*

## 8. PRIVACY

Virtually all payment surveys reveal that most people want to preserve some degree of privacy over their expenditure habits. But there are different types of privacy concerns.

Some are particularly suspicious about private misuse of payments information. They see a risk that PSPs, whether banks or non-bank entities, opaquely use that information for their own business purposes – for example, to facilitate marketing techniques which distort consumer demand for certain products. Concerns of this nature were expressed most vocally in 2020, when Facebook (today Meta) launched its project Libra (subsequently renamed Diem, sold out and effectively never launched). The broadly shared sense that Facebook could not be trusted as a custodian of individual payments data was a decisive factor behind the eventual failure of Libra.

Other categories of users are more suspicious of the public sector’s use of that information. Part of this concern is ideological, stemming from libertarian notions and aprioristic concern that governments

<sup>26</sup> Some regard CBDCs as “monetary weapons” which can be used to promote the international role of currencies or to defend smaller countries against the overwhelming power of the large countries’ currencies (see for example Maria Demertzis, “Central bank digital currencies as weapons of finance?”; Bruegel, December 2022). Accordingly, CBDCs are seen at times as instruments to defend monetary sovereignty. These ideas are probably overstated. Most analyses suggest that the cross-border use of currencies depends on other aspects, such as the stability of the currency itself and the breadth of the underlying banking systems and financial markets. On currency competition, with special reference to sterling and the dollar, see Barry Eichengreen, (2005) *Sterling’s Past, Dollar’s Future: Historical Perspectives on Reserve Currency Competition*. NBER Working Paper No. 11336. Cambridge, MA: National Bureau of Economic Research.

<sup>27</sup> The PDE “would be a European public good which all citizens and firms should be able to access and use without barriers” (quote from “The euro, our money wherever and whenever we need it”; Introductory statement by Fabio Panetta, Member of the Executive Board of the ECB, at the Committee on Economic and Monetary Affairs of the European Parliament, 23 January 2023, available [here](#)). From this statement, it is not clear if the PDE would be made available to eurozone citizens only, to non-eurozone EU citizens as well, or even beyond that. Different choices could affect currency substitution: if the PDE was available beyond the eurozone, it could contribute to enhancing the use of the euro beyond the borders of the euro area.

want to manage payment mechanisms in order to control citizens. Some of the worry is rational but malicious, driven by the desire to hide illegal transactions or motives.

Which of these concerns dominates is unclear, and distinguishing legitimate from illegitimate concerns is difficult. The aforementioned Kantar survey reveals that a fair share of the eurozone population like “medium privacy” solutions: arrangements in which payments data are normally protected from private use, but can be accessed by public authorities for a certain number of well-defined reasons, such as anti-money laundering, anti-terrorism, drug traffic control and similar. In any case, past experience suggests that financial data that official authorities need for security reasons are eventually released, regardless of whether they are in private or public hands<sup>28</sup>.

A first and virtually certain conclusion from the above considerations is that cash will not disappear. No matter how attractive new digital solutions may be, there will always be citizens who for one reason or another – privacy being surely one of them – demand the unique service provided by cash. Cash is the simplest instrument to use and the one giving the strongest guarantee that a given transaction will not be disclosed. Not a full guarantee admittedly, because banknotes can be traced, but this rarely happens. Some privacy motives behind the popularity of cash are malicious, but not all of them are.

The ECB has recently suggested that its preferred solution, in a framework in which front-end functions are outsourced out to PSPs, is one in which the ECB will not have access to personal data<sup>29</sup>. There are pros and cons to this choice. Conceivably, this may not be the preferred one by the citizens who like the “medium privacy” solutions.

**Conclusion and suggestions:** *Privacy – the extent of it, how it is protected, etc. – is a key aspect of any payment system. The European Parliament as a co-legislator has a special interest in it. The ECON Committee may wish to engage the ECB in further discussions regarding their proposed solution, mentioned in the recent Panetta’s testimony in ECON<sup>30</sup>, but eventually will have to form its own stance because this is principally a political rather than a technical matter.*

## 9. FINANCIAL INCLUSION

A motivation occasionally mentioned in global discussions on the prospect of introducing digital cash by central banks is to foster financial inclusion – namely, the access of the “unbanked” part of the population to the financial sector. The ECB has occasionally mentioned this motivation as well, though not as one of the most important reasons.

It is unlikely that a PDE may reduce the share of the “unbanked” population in the eurozone. The citizens in question use cash either because they are technologically unsophisticated, or because they are wary of the formalities and complexities needed to open a bank account. It is not reasonable to expect that a PDE, a digital instrument that requires access to a bank or another PSP to be obtained, would change the attitude of those citizens.

<sup>28</sup> For example, part of the confidential data possessed by SWIFT, a private company, was obtained by the US authorities after the September 11 attacks.

<sup>29</sup> See “The euro, our money wherever and whenever we need it”; Introductory statement by Fabio Panetta, Member of the Executive Board of the ECB, at the Committee on Economic and Monetary Affairs of the European Parliament, 23 January 2023 (available [here](#)).

<sup>30</sup> See the previous footnote.

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But financial inclusion has another angle, of great relevance for the global economy and the eurozone itself: that of workers' remittances. Cross-border workers often face extraordinary delays and costs in making money transfers in favour of their families at home. It is estimated that over 5% of workers in the EU are non-EU citizens<sup>31</sup>. Facilitating money transfers for those workers is a valuable service from an economic and social perspective. It is also probably an unprofitable task, hence one which may not be efficiently provided by the private financial sector. An active role of central banks in this area is therefore justified.

A dedicated "PDE for immigrant workers" (not for all citizen and enterprises) would be one solution to this problem. It would require a degree of interoperability between digital central bank currencies issued by different countries (notably, the countries of origin), hence bilateral cooperation ties with the central banks concerned. There are other possibilities to help immigrant workers with their remittances as well, for example by facilitating and subsidising private solutions enacted by banks or PSPs.

**Conclusion and suggestions:** *The ECON Committee may discuss with the ECB the issue of financial inclusion, specifically with reference to the money flows of immigrant workers, and the pros and cons of alternative solutions involving the PDE or the private sector.*

## 10. TESTING

As mentioned, the ECB will make a decision in October 2023 on whether to move to the "realisation phase". This phase differs from the preparation phase in that concrete testing will take place. Presumably, the tests will regard all relevant aspects: the digital systems, the functions performed by the banks and other PSPs to onboard customers, the relation between the functionalities of the PSPs and the ECB, the enhancement of the ECB balance sheet to record PDE balances, etc.

It is not inconceivable that the testing phase may include also "controlled experiments" involving actual users. Controlled experiments are a branch of analysis developed recently, as part of experimental economics, involving actual people immersed in an artificial but realistic environment. In this case, the environment may include PDEs together with other payment options. Those experiments may shed light on how users will react and what elements will influence their choices in the new environment.

Tests will need to take place in controlled conditions to protect in-use digital applications and ensure that the outside environment is unaffected. The tech industry and the digital finance supervisory community have developed "sandbox" techniques, ring-fenced testing environments where software applications or certain regulatory practices can be tested in a realistic setting, in complete isolation from the outside.

**Conclusion and suggestions:** *The testing phase which may start after October 2023 is an eminently technical process for which the ECB will be in the driving seat and bear exclusive responsibility. Nonetheless, the ECON Committee may be interested in obtaining early information on how it will develop, which techniques will be employed, etc.*

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<sup>31</sup> Eurostat data, see for example [here](#).

## 11. CONCLUSIONS

For what it is worth, the opinion of this author is that the ECB ought to continue its exploration and perhaps also launch the testing phase in October, but should not actually launch a PDE unless new elements emerge in the future, different from those available today, in favour of such step. All aspects considered, risks and imponderables of the enterprise appear to be stronger than the arguments which are cited to support it. The “solution” that a digital euro promises to represent does not have a well-identified “problem” behind it – in terms of inefficiencies or dangers of the status quo, to use the rhetorical formula coined by the aforementioned Federal Reserve official.

Finally, in forming its judgement the ECON Committee may wish to take note of a number of opinions raised recently not specifically against a PDE but on the general idea of central banks digital currencies. The general themes raised include the following: The payment system is already efficient and constantly progressing; there are no “market failures” suggesting central banks should be directly involved; CBDCs will not succeed because central banks lack the necessary expertise to win the market; CBDCs may put financial stability at risk; CBDC would distort and discourage private investment and innovation.

A short list of these contributions includes:

- Huw van Steenis, “Five hurdles to minting a CBDC”, Financial Times, 9.2.2023, see [here](#);
- Tony Yates, “Why central banks should not push ahead with CBDCs”, Financial Times, 16.1.2023, see [here](#);
- Peter Bofinger, “The digital euro: a flawed concept doomed to flop”, IPS 19.12.2022, see [here](#);
- Christopher Waller, “CBDCs: a solution in search of a problem?”, St Louis Fed, 6.8.2021, see [here](#).

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This paper assesses the state of preparation for the possible launch of a digital euro. It focuses on the main relevant aspects: market impact, implications for banks, design and technical issues, monetary policy, financial stability, the role of fintech and Big Techs, international dimensions, privacy, and financial inclusion. On each, brief recommendations for the ECON Committee's work are offered. The concluding judgment is broadly positive on the preparatory work but doubtful on the wisdom of eventually launching a digital euro.

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