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The digital euro: A precautionary device, not a deus-ex-machina*

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Abstract

There is much discussion today about a possible digital euro (PDE). Is this attention exaggerated? Are "central bank digital currencies" (CBDCs) "a solution in search of a problem", as some have argued? This article summarizes the main facts about the PDE and concludes that, if the decision on adoption had to be taken today, the arguments against would outweigh those in favor. However, there may be future circumstances in which having a CBDC ready for use can indeed be useful. Therefore, preparing is a good thing, even if the odds of its usefulness in normal conditions are slim.

I. What purpose could a digital euro serve?

There is much talk today about a possible digital euro (PDE), while Europe – indeed, the whole world – is ridden by apparently more serious problems: inflation, war, climate change, health risks, and more. Is that attention exaggerated? Are "central bank digital currencies" (CBDCs) "a solution in search of a problem", as some have argued[1]? Perhaps we should see this from a different angle. CBDCs can be useful, indeed crucially important, not in spite of but *precisely because* there are those risks. The digital euro is not, as some contend, a sort of *deus-ex-machina*[2] that will solve flaws of today's payment system and shape its future, but a precautionary device for adverse circumstances. Our current market-based payment system does not need salvaging or reshaping because it fundamentally works, although, like everything else, could be improved. But it is fragile: the more so because it is becoming increasingly complex, digital, and online. Complexity enhances risk. Guarding against such risk is an area where CBDCs can really help.

*SAFE policy papers represent the authors' personal opinions and do not necessarily reflect the views of the Leibniz Institute for Financial Research SAFE or its staff. This paper has simultaneously been published as SUERF Policy Brief No 588.

[1] Christopher Waller, member of the Board of Governors of the Federal Reserve System, "CBDCs: a solution in search of a problem?"; speech at the American Enterprise Institute, Washington DC, 5 August 2021. The text is available here.

[2] In the ancient Greek theater, a *deus-ex-machina* (Latin expression translated from Greek) was a godly intervention that managed to solve a complicated situation that humans had gotten into and were unable to solve.

In this article,[3] I summarize the main facts about the PDE and argue that, if the decision on adoption had to be taken today, the arguments against would outweigh those in favor. Next to that, I note that there may be circumstances – admittedly unlikely and adverse ones, but not impossible – in which having a CBDC ready for use can indeed be useful. Therefore, preparing is a good thing, even if the odds of its usefulness in normal conditions are slim.

II. A substitute for bank deposits

One way to start is to observe that, in spite of its purported kinship with banknotes and coins, the introduction of a digital euro is actually likely to result mainly in a substitution away from traditional bank deposits, leaving the demand for cash essentially unchanged.

Multiple reasons lead to this conclusion.

Banknotes have unique characteristics – simplicity, absolute privacy, and – I dare say – tangibility as well – that are highly valued and that the digital euro will never have. Multiple survey analyses demonstrate that people value those characteristics highly. This is likely to be a key reason why cash, far from disappearing everywhere as some argue, is very popular everywhere in the world – with minor exceptions[4]. A few data illustrate this. In the 21 years of their existence, euro banknotes have increased sevenfold in value, up to 1.6 tn. euros; this amounts to a compounded increase of about 10% per annum. The equivalent figure for the US dollar is 6.5%, for the British pound 5.2%, for the Swiss franc, 4.4%. Were we to judge by this metric alone, we would conclude not only that cash reigns everywhere, but also that the euro is the world's most popular currency.

Some argue that the popularity of cash reflects growing illegal activities, but this is unlikely to explain most of the phenomenon. The increase of the euros in circulation during that period was very steady year by year; indicators of criminal activity do not have such a smooth profile. And the increase in euro coins shows more or less the same pattern. It is unlikely that criminals and tax evaders make extensive use of coins. A more relevant explanation is that people *actually like* to hold euro banknotes, in spite of the fact that for many retail purposes, cash is replaced by more convenient digital means – online platforms, payment cards, smartphone applications, and the like.

[3] This paper builds on and develops further the line of argument put forth in two recent contributions: Ignazio Angeloni, "Digital euro: when in doubt, abstain (but be prepared)", April 2023, paper prepared for the European Parliament, available here; and Ignazio Angeloni, "Digital euro: what we know and what we don't", keynote address at the OMFIF Symposium on Central Bank Digital Currencies held in London on 9 May 2023, available here.

[4] Cash-to-GDP ratios have been declining in recent decades in Norway and Sweden.

Another fact suggesting a high substitutability between digital euros and traditional bank deposits is that they would look very similar to one another. According to current ECB plans, PDE accounts will mainly be offered by banks (and to a lesser extent, by other payment service providers, PSPs). All front-end functions will be carried out by them. They will be responsible for onboarding and offboarding, KYC and AML checks, and as well as providing to users all services normally associated with deposits – online banking, payment cards, apps, etc. There will be strong synergies between opening a bank deposit and a digital euro deposit – same process, same information, same forms to fill. From a user perspective, there will be no difference between opening a PDE or a normal deposit at a bank.

The substitution between digital euros and bank deposits would probably be both *structural* and *cyclical*. The structural part would take place at the start, as the new instrument is introduced and asset holders make room for it. The cyclical component would be ongoing, as the demand for PDEs would move up and down as a result of economic factors, such as interest rate fluctuations or risk aversion cycles. Interest rate movements would be an obvious determinant since it is unlikely that any remuneration of the digital euro (administratively set) would move in sync with that of bank deposits (market-determined).

III. Monetary policy and financial stability issues

Reallocations between bank deposits and digital euro would affect both monetary policy and financial stability.

The effect on monetary policy derives from the fact that those movements impact the banking sector's balance sheets, in particular its liquidity buffers. These movements would probably be negligible in comparison to the very large amount of bank liquidity outstanding today. But in the future, should the central bank return to a limited-reserves monetary control framework, they would be significant and could disturb monetary control.

The ECB monetary control framework today hinges on the rate of the ECB's deposit facility. The ECB must move that rate in order to influence money market rates. If the remuneration on PDEs were to be set at a different level, probably a lower one, or even at zero, arbitrage opportunities would arise: banks could offer fixed-term deposit swaps to profit from that margin. The ECB may try to inhibit such operations, but as long as 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, and the other for payment system considerations.

Financial stability implications stem from the fact that the PDE would offer a completely risk-free online alternative to bank deposits, hence a natural channel to "run" on bank deposits when there are doubts

about the bank's solvency. Deposit insurance does not eliminate this risk entirely; the European banking union lacks area-wide insurance, and national schemes differ in their provisions, business practices, and balance sheets. Concern for bank runs has increased recently after the recent bank instability episodes in the United States, due to the fact that technological and structural factors seem to have increased the mobility of bank deposits[5].

The ECB intends to set a limit to the maximum holding of PDE, perhaps at 3,000 euros. This puts a ceiling to the maximum aggregate outflow, at around 10% of overnight deposits. For individual banks, however, that percentage could be bigger, depending on the bank's funding structure. The risk of a run is relevant for individual banks, not in the aggregate only. Once a bank is at risk, contagion effects may propagate the crisis to others.

There may be political complications as well. In case of a bank run, the ECB may come under pressure to relax the upper limit on PDE deposits. A banking crisis is a painful and politically sensitive event because it puts individual savings at risk. As banking supervisor, the ECB is responsible for financial stability. It is not required to bail out depositors in a crisis, but once PDE deposits existed, that idea may get political traction, and pressure on the ECB may result.

VI. Can the digital euro be a catalyst for payment system innovation?

Some have argued that CBDCs will be an essential feature of tomorrow's monetary systems, a sort of top-down catalyst of innovation and progress. For example, in an influential chapter of its 2022 annual report, the Basel-based Bank for International Settlements (BIS) argues that "… retail CBDCs constitute another core feature of the future monetary system"[6]. The BIS envisages a prospect in which central banks could enhance their network of deposit accounts, today reserved mainly to credit institutions connected through centralized ledgers, in multiple directions: for example, adopting 24/7 instant payments, augmenting the range of financial and non-financial counterparties (including individual users), adopting distributed-ledger technologies (DLT) for certain purposes, and perhaps even adding facilities like programmable money and smart contracts. According to that vision, those developments represent a "canopy" that rests on a solid "trunk" of stability represented by the presence of central bank money at its base.

[5] See the recent report of the U.S. Federal Deposit Insurance Corporation, "Options for deposit insurance reform", available here, where alternative options for extending the coverage of deposit insurance are presented to deal with that risk.

[6] Bank for International Settlements, Annual Economic Report 2022, chapter III, "The Future Monetary System"; available here. See also a related presentation given on 30 June 2022 by Hyun Song Shin, Economic Adviser and Head of Research of the Bank for International Settlements, available here.

The stability-enhancing role of central bank money at the base of the payment system is unquestionable: in fact, this is precisely what happens in today's arrangement, where all market-based digital facilities like cards, wallets, apps, and digital platforms eventually settle on central bank money. What is unclear in that vision, though, is why the "canopy" needs a CBDC to develop, thrive and innovate. If anything, recent experience demonstrates the opposite, namely that a diversified and efficient market-based digital payment system can develop and prosper in the absence of CBDCs. Inroads of the public sector in that territory by central banks directly managing retail CBDCs risks stifling innovation, not promoting it.

V. Issues arising when "marketing" the digital euro

Relatedly, a significant risk inherent in the project is how the PDE may be received by the market. Already today, European users have access to a multiplicity of different digital means, including powerful incumbents ones like ApplePay and GooglePay. Convincing them to use another one, which would also require opening an additional account at the bank, would be challenging. Rejection by the market is therefore a possible outcome. A failure to market the PDE successfully would have negative reputational and cost implications. Countries that have already launched a CBDC on an experimental basis, like China and the Bahamas, have not been very successful. 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.

VI. Conclusions: the digital euro as a precautionary device

The above arguments lead to the conclusion that, based on today's information, the balance of the arguments does not favor the launch of a digital euro *if that decision had to be made now*. The risks and the imponderables of the enterprise are stronger than the arguments in favor of it.

However, in the future, there could be circumstances making the introduction of a digital euro useful, even necessary. It may be worthwhile to think in advance of examples where that may be.

We could witness, for example, an unexpected collapse in the availability of banknotes or sudden switches in consumer preferences towards payment instruments which current infrastructures cannot easily handle with the available technologies. Or we could experience phases of financial instability requiring the ECB to back up the private sector in order to preserve the functionality of the payment system. Or, there could be strategic security conditions necessitating more state-driven payment

infrastructures. All these are unlikely scenarios, but not impossible ones, which would lead to the need for central banks to step in, perhaps in a short time.

A recent instance helps illustrate the point. In a little-known episode of the euro crisis, in June 2013 the UK government faced an urgent need to provide euro means of payment to its military personnel stationed in the Akrotiri air base on the southern shore of Cyprus. At that time, Cypriot banks were undergoing a banking crisis[7]. While the crisis unfolded, there was a material risk of Cypriot banks being unable to provide the 3000-strong Royal Air Force personnel with means for their immediate payment needs. On 19 June, while an internationally-funded rescue deal was still being finalized, the UK Department of Defense arranged for a military plane loaded with 1 mn. euro banknotes to be shipped over[8]. Absent a capability by the Central Bank of Cyprus, a member of the Eurosystem, to provide for central bank money through alternative means, shipping cash by air seemed to be the only remedy. Clearly, had a digital euro facility been available, that military flight would have been unnecessary. At the same time, the arguments discussed earlier make equally clear that the presence of a digital option to withdraw central bank money while a bank run was in progress, if not managed very carefully, could have contributed to the crisis itself.

This is admittedly an extreme and very specific example, but not a unique one. Earlier on, similar "rescue flights" full of banknotes, for much bigger amounts, had to be arranged to manage the banking crisis in Greece[9]. As in the case of Cyprus the Greek example illustrates the possible conflicting effect that a retail central bank digital money can have. It may help manage an ongoing banking crisis, but can also contribute to triggering one if handled improperly. A risk that can be contained only through regulation strictly limiting the availability of retail CBDCs in normal times.

In conclusion, while future payment systems are unlikely to be shaped by CBDCs, a reasonable case can be made that having in place digital payment infrastructures at the central bank, potentially accessible by a very large user base, may help overcome adverse contingencies. The related operational and legal infrastructures require a long preparatory phase. Preparing in advance can therefore be useful, even though the eventual use may appear uncertain or even unlikely.

[7] For an authoritative and compelling account of the Cyprus crisis, see P. Demetriades, *A Diary of the Euro Crisis in Cyprus*, Palgrave Macmillan; 2017.

[8] The episode was reported by multiple press sources; see for example the Huffington Post, "Cyprus Bailout: One Million Euros Heading To Island For British Military Personnel", available here.

[9] See for example Reuter News, "Cash airlift helped avert bank run during debt crisis", 3 March 2013, available here.

From today's perspective, the best advice one can give to the ECB, and to other central banks, is therefore: Continue to prepare, otherwise wait and see.