The Prospect of a Digital Euro: Incentives, Design, and Legal Effects

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Introduction

Following trialling by the European Central Bank (ECB), the indications are that a legislative proposal will be formulated by early 2023 to facilitate the introduction of a digital euro currency.[1] In view of the relentless digitalisation of financial services, it may seem unsurprising that the adoption of a digital currency is set to occur on a grander (and perhaps more legitimately reliable) scale than various forms of cryptocurrencies. However, could a digital euro offer something truly new for users and, indeed, for financial institutions? In legal terms, the development of a digital euro and other central bank digital currencies (CBDCs) can generate uncertainty as to how fiat currency, as legal tender, will be recognised in future. Protection of users' rights will be a significant aspect of any legal framework for a digital euro.

AsSince the implementation of a digital euro and its legal framework will directly affect Ireland as one of the 19a eurozone states, this article focuses on the motives for introducing a digital euro, the options for its design or format, and the probable legal impact. By describing the factors involved in the introduction of a digital euro, the article distinguishes the issues which arise for CBDCs at a time when numerous jurisdictions and central banking authorities globally are embarking on projects to test digital currencies.

The article commences by portraying the genesis of a digital euro, by explaining the policy rationale for its introduction, and by identifying the outcomes of the latest trialling by the ECB. The article reflects on the altered complexion of the payments landscape within the eurozone, especially since the outbreak of the COVID-19 pandemic. For a digital euro to function as a payment option, there are choices to make as to whether the digital euro should be designed as

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[1] For updates on the development of the digital euro, see the ECB website at: *https://www.ecb.europa.eu/paym/digital_euro/html/index.en.html* (accessed 2 August 2022). The anticipated 2023 release of a legislative proposal by the European Commission is expressly referred to in the 14 June 2022 letter from Fabio Panetta (Executive Board of the ECB) to the European Parliament's Committee on Economic and Monetary Affairs (ECON) (L/FP/22/25), available at: *https://www.ecb.europa.eu/pub/pdf/other/ecb.mepletter220615_Tinagli~9b163e0f75.en.pdf?f9a122048e96855758ead143db3a9ba9* (accessed 2 August 2022).

a wholesale currency for institutional users, rather than as a retail currency for general public use. Even if there are practical catalysts for a digital euro, there are legal repercussions which should warrant the drafting of dedicated legislation.

The article concludes by considering the trade-off that must be struck when seeking to implement a digital euro. If there are doubts about how significant the public demand is for a digital euro, the policy objectives for introducing the digital euro would have to be markedly compelling to outweigh the legal complexities associated with the initiative.

Trials and Tribulations

The progress towards the putative launch of a digital euro has been relatively quick, but the concept of a CBDC is not necessarily a recent one. The need to bolster the integrity of the euro currency and the need to guarantee financial stability across the eurozone are key drivers for finding ways to enhance the use of the euro in payment services. The policy rationale has also been influenced by contemporary events relating to cryptocurrencies' volatility. Even though the idea seems robust from a policy viewpoint, the initial results of trialling reveal the ambiguities to be resolved for a digital euro to operate in practice.

The Policy Rationale for a Digital Euro

The existence of a digital euro has been linked with boosting the status of the euro currency, especially within a payments world that is increasingly dominated by online transactions and by cross-border payments. Beyond the marketing-style language, the exact nature of a correlation between the introduction of a digital euro and the sustained health of the currency is rarely elaborated upon at length in official documents from the digital euro's proponents. Nonetheless, as articulated as recently as July 2022 in the ECB's "Case for a Digital Euro", the convertibility of a digital euro to public money would signify "an anchor that maintains a well-functioning payment system, preserving financial stability and trust in the currency."[2] The ECB's original report on the digital euro in October 2020 presented the main findings of a designated High-Level Task Force on Central Bank Digital Currency. The ECB's 2020 report

[2] ECB, *The Case for a Digital Euro: Key Objectives and Design Considerations* (July 2022), available at: *https://www.ecb.europa.eu/pub/pdf/other/key_objectives_digital_euro~f11592d6fb.en.pdf?c8e830557da716fd7a77dd7c52111d30* (accessed 2 August 2022).

emphasised how the euro's fortunes can be strengthened by an ECB-backed digital version, assuming that there is a continued trend towards further use of cashless modes of payment.[3]

Within the 2020 report, a digital euro is defined as "a liability of the Eurosystem recorded in digital form as a complement to cash and central bank deposits."[4] As a prominent "scenario" related to core central bank functions, the report finds that a digital euro can be justified in benefiting the digitalisation and independence of the European economy.[5] As an example of a scenario related to the broader objectives of the EU, the report concludes that a digital euro would result in the international role of the euro gaining relevance.[6]

As more thought and discussion is directed towards an actual rollout, the impact on the financial stability of the eurozone economy is referred to as a foremost concern by the ECB. The bearing on financial stability is recognised through the questions being raised concerning the imposition of limits on holdings of issued digital euro. As an instance of a digital euro proving to be "too successful",[7] a widespread substitution of cash and central bank money holdings with digital euro would, in turn, affect future monetary policies. It is intimated by Fabio Panetta (member of the Executive Board of the ECB) that digital euro holdings could be limited to between €1 trillion and €1.5 trillion, which would correspond to average holdings of between €3,000 and €4,000 per capita of the population of the eurozone area.[8] Apprehension about the effects for financial stability of a digitalised form of real-world fiat currency is not a uniquely modern issue. The possibilities for digital, central bank-backed currency have been postulated by economists since the 1980s.[9]

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[3] At the time of writing, the reversal of a decision by a leading Irish bank to have cashless-only services at 70 of its national branches following objections suggests that rumours of cash's demise could be rather premature, if not exaggerated.

[4] ECB, *Report on a Digital Euro* (October 2020), p.6.

[5] ECB, *Report on a Digital Euro* (October 2020), Scenario 1, p.9.

[6] ECB, *Report on a Digital Euro* (October 2020), Scenario 6, p.14.

[7] See introductory statement by Fabio Panetta to the European Parliament's ECON Committee, "A Digital Euro That Serves the Needs of the Public: Striking the Right Balance" (30 March 2022), available at: *https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp220330_1~f9fa9a6137.en.html* (accessed 2 August 2022).

[8] Introductory statement by Fabio Panetta to the ECON Committee, "The Digital Euro and the Evolution of the Financial System" (15 June 2022), available at: *https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp220615~0b859eb8bc.en.html* (accessed 2 August 2022).

[9] See J. Tobin, "Financial Innovation and Deregulation in Perspective" (1985) 3(2) *Bank of Japan: Monetary and Economic Studies* 19.

The flourishing of cross-border payments is a comparably more modern phenomenon. For a digital euro to achieve a foothold and to assist with the ECB's vision of the euro's international relevance, transfers of digital euro would need to be facilitated within coordinated frameworks, as accepted by central banking authorities globally. The ECB's 2020 report acknowledged that the "international implications" of a CBDC should "warrant open dialogue" with international counterparts.[10] As of yet, much of the collaborative groundwork on platforms enabling multiple CBDCs (mCBDCs) has been accomplished through projects supported by the Bank for~~of~~ International Settlements' (BIS) Innovation Hub.[11] The signs for the future development of common standards are promising when viewing such pioneering examples of collaboration between central banks. It cannot yet be confidently asserted that a digital euro is close to being trialled within an mCBDC~~n multiple CBDC~~ project.

By providing users with a reliable ECB-backed currency, a digital euro can conceivably act as a bulwark against cryptocurrencies, their inherent price volatility, and the absence of safeguards for consumers. Although the emergence of Bitcoin and other cryptocurrencies is not regularly specified as being a direct motive for a digital euro, the pitfalls of cryptocurrencies—as compared to the relative security afforded by a CBDC—are frequently identified by the ECB.[12] The dramatic fluctuations in cryptocurrency valuations over the past year attest to the benefits of a steady alternative, and the sharp variations in cryptocurrency prices should profoundly dent public confidence in these forms of digital currency.[13] At EU level, the European Commission's proposed Regulation on Markets in Crypto-Assets (MiCA)[14] represents an unequivocal intention to provide legal clarity and protections for users of categorisations of crypto-assets.[15]

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[10] ECB, *Report on a Digital Euro* (October 2020), p.46.

[11] For a summary of the ongoing projects, see the BIS Innovation Hub website at: *https://www.bis.org/about/bisih/about.htm?m=3099* (accessed 2 August 2022).

[12] See speech by Fabio Panetta, "For a Few Cryptos More: the Wild West of Crypto Finance" (25 April 2022), available at: *https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp220425~6436006db0.en.html* (accessed 2 August 2022).

[13] For example, see the changes recorded in Bitcoin prices over the course of 2022 alone at: *https://www.coinbase.com/price/bitcoin* (accessed 2 August 2022).

[14] Proposal for a Regulation of the European Parliament and of the Council on Markets in Crypto-Assets, and amending Directive (EU) 2019/1937 (COM(2020) 593 final).

[15] As previously explained in an article for this journal: F. Murphy, "Digital Financial Services, Crypto-assets, Cybersecurity and Regulation" (2022) 29(4) *Commercial Law Practitioner* 59. See also, J. Breslin, D. Sweetman and C. Wegmann, "Crypto-Assets – Regulation and Common Law: Where Are We Now and What Is the Direction of Travel?" (2022) 37(6) *Journal of International Banking Law and Regulation* 231.

The short- to medium-term likelihood of global "stablecoins" (digital currencies which are "pegged", or tied, to fiat reserves, thereby helping to stabilise their value) has diminished, following the collapse of the Facebook-led Libra (later renamed as Diem) proposal.[16] A digital currency used by a customer base of billions across a worldwide platform, such as Meta, can emphatically threaten financial stability if there are extensive runs by users to redeem their stablecoins (held as deposits in conventional financial institutions).[17] The regulatory fears are assuaged not only by the withdrawal of the Meta proposal, but also by the presence of provisions to address "significant" asset-referenced tokens within the proposed MiCA Regulation and by the formulation of recommendations, or guiding principles, by international agencies for the regulation of global stablecoin arrangements.[18] Public faith in a digital euro could arguably be reduced by a limited trust in the ability of regulatory authorities, such as the ECB, to fully address concerns surrounding cryptocurrencies and stablecoins.[19] Nonetheless, there are other factors which are presently underpinning the trialling of the digital euro.

Initial Results

The ECB's 2020 report appraised that introducing a digital euro "is a policy decision and not just a technical one."[20] In light of the variety of overlapping—and occasionally vague—policy reasons stated by the ECB, the technical features of a digital euro take on a greater importance, simply in determining the feasibility of the idea. The main source to date on testing outcomes is the July 2021 ECB report on the scope and key learnings of the experimentation.[21] The parameters for the testing were set by the original 2020 report and the experimentation required participation of experts from national central banks.

The trials were oriented towards four central work streams: creating a digital euro ledger; guaranteeing privacy and compliance with anti-money laundering requirements; ascertaining

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[16] See: *https://www.cnbc.com/2022/07/01/the-last-remnant-of-facebooks-crypto-project-shuts-down-september-1.html* (accessed 2 August 2022).
[17] See D. Zetzsche, R. Buckley and D. Arner, "Regulating Libra" (2021) 41(1) *Oxford Journal of Legal Studies* 80; R. Buckley, D. Arner, D. Zetzsche and A. Didenko, "Sovereign Digital Currencies: Reshaping the Design of Money and Payments Systems" (2021) 15(1) *Journal of Payments Strategy & Systems* 7.
[18] For example, the Financial Stability Board's *Regulation, Supervision and Oversight of "Global Stablecoin" Arrangements. Final Report and High-Level Recommendations* (October 2020).
[19] See further, J. McCarthy, "Cryptocurrencies, Digital Money and Regulatory Damage" (2022) 37(8) *Journal of International Banking Law and Regulation* 282.
[20] ECB, *Report on a Digital Euro* (October 2020), p.45.
[21] ECB, *Digital Euro Experimentation: Scope and Key Learnings* (July 2021).

the appropriate limits on the circulation of a digital euro; and aiding end-user accessibility. As a basic starting point, the experimentation sought to ascertain if a digital euro system could be built from the existing TARGET Instant Payment Settlement (TIPS) framework. As it transpired, the technical outcomes of the testing can be analysed on two principal aspects: firstly, the kind of (blockchain-based) technology which could be utilised; and, secondly, the viability of having supervised network intermediaries rather than a centralised system of accounts held with the ECB.

For the first aspect, the advantages of blockchain and distributed ledger technology (DLT) in producing cost savings and efficient recording of large quantities of complex transactions have long been advocated by enthusiasts of FinTech (financial technology). As essentially an application of blockchain technology, DLT enables automated and encrypted entries within networks of connected participants. The entries represent transactions which are approved and verified through the peer-to-peer, or decentralised, network structures. DLT's utility is hindered by an array of legal questions, especially relating to proprietary rights, anonymity, cybersecurity, and liability for tort claims.[22] Nonetheless, the credibility of DLT as a mechanism for facilitating securities transactions is promoted by the entry into force of the EU Regulation for a DLT pilot regime for financial market infrastructures (FMIs).[23] The benefits of DLT were practically borne out during the ECB's digital euro trialling. It was found that blockchain or DLT solutions could be scaled to process retail payments of up to approximately 325,000 transactions per second, compared to a maximum of 40,000 per second under the TIPS platform.[24]

The second main aspect of the technical outcomes revolves around a distinct choice of either to allow supervised and licensed intermediaries to oversee the digital euro's operation, or to maintain a centralised account-based system whereby digital euro holdings are kept with the ECB or central banks. A DLT architecture should be conducive to having intermediaries, wallet

[22] See particularly, D. Zetzsche, R. Buckley, and D. Arner, "The Distributed Liability of Distributed Ledgers: Legal Risks of Blockchain" (2018) 4 *University of Illinois Law Review* 1361, and, for a more sceptical perspective, K. Low and E. Mik, "Pause the Blockchain Legal Revolution" (2020) 69(1) *International & Comparative Law Quarterly* 135.

[23] Regulation (EU) 2022/858 of the European Parliament and of the Council of 30 May 2022 on a pilot regime for market infrastructures based on distributed ledger technology and amending Regulations (EU) No 600/2014 and (EU) No 909/2014 and Directive 2014/65/EU [2022] OJ L151/1. The author's summary of the legislative proposal and evaluation of the wider repercussions of a DLT pilot regime is provided in J. McCarthy, "Distributed Ledger Technology and Financial Market Infrastructures: an EU Pilot Regulatory Regime" (2022) 17(3) *Capital Markets Law Journal* 288.

[24] ECB, *Digital Euro Experimentation: Scope and Key Learnings* (July 2021), p.4.

services and tokenised digital euros for users and retailers. It would be consistent with the 2020 ECB report's aspiration to have "features which are at the technological frontier."[25] However, there are understandable concerns regarding privacy and anonymity, even if users were to have digital identification (e-IDAS) certificates. DLT provides for authoritative traceability of all transactions on a network. Members of the public may not be entirely willing to relinquish their anonymity when accessing wallets of digital euro holdings within networks which are dominated by designated intermediaries acting on behalf of central banks. As outlined by the experimentation report, intermediaries would "have access to dedicated accounts in the first tier where they can exchange the digital euro issued and distribute them via a variety of platforms (DLT and non-DLT) to end users."[26]

For users who have qualms about privacy, transactions involving digital euros inevitably cannot be completely conducted offline and "offline devices will at some point need to resynchronise with the online ledger."[27] If there are reservations from~~among~~ the public about using these types of DLT platforms, the participation of retailers could equally be in doubt. As the alternative, a centralised system of central bank accounts may place a significant burden on central banks, thus rendering the system inefficient and impractical from the very outset. As the technical features of a digital euro remain to be settled, an examination of current patterns of eurozone payment methods may proffer insights as to the demand among potential users and financial institutions.

Payments in Practice

For a digital euro to be widely accepted, the narrative around modern payment habits within the eurozone should be that cash has dwindled, that the public is ever eager to adopt new methods of payment, and that there is a discernible public demand for secure alternatives to the increased appeal of cryptocurrencies and stablecoins. The reality is that there are manifest variations in usage of payment methods between jurisdictions and between age groups. Moreover, empirical surveys disclose that there is a noticeable degree of confusion about the functions of a digital euro. The public response to a digital euro could ultimately influence the

[25] ECB, *Report on a Digital Euro* (October 2020), Requirement 3 (Competitive Features), p.12.
[26] ECB, *Digital Euro Experimentation: Scope and Key Learnings* (July 2021), p.2.
[27] ECB, *Digital Euro Experimentation: Scope and Key Learnings* (July 2021), p.5.

type of digital currency to be unveiled, including whether it is for wholesale purposes only, or for retail application among the general public.

Trends in Eurozone Payment Methods

The reduced use of cash as a payment method is commonly identified as a prime reason for the emergence of novel forms of digital money generally.[28] Cash's pre-eminence may no longer be assured, but it seems to be a hasty proposition that a digital euro or CBDC could soon replace cash. The development of "hybrid" models of CBDCs could be the more prudent option.[29] Instances of "currency substitution" are more probable in relatively turbulent circumstances of precarious domestic macroeconomic policies, a lack of trust in public authorities, or rampant inflation.[30] Prior to COVID-19, empirical research revealed the extent of the differences between European jurisdictions in cash usage, while a generational gap was also apparent as card- and phone-based payment modes were conspicuously prevalent among younger adults.[31] The European Commission's 2020 Retail Payments Strategy noted findings that cash continued to be the predominant means of payment in the euro area (used in some 78% of all transactions) and Ireland was specified as being one of the countries with a preference for cash.[32] On the other hand, the thriving of certain payment app services in the Irish market demonstrates an erosion in cash's traditional standing.[33]

Since the pandemic, the most comprehensive survey of payment habits within the eurozone is an ECB-commissioned study which was published in March 2022.[34] The research fieldwork

[28] For example, see G. Claeys and M. Demertzis, *The Next Generation of Digital Currencies: In Search of Stability* (Monetary Dialogue Paper, December 2019, as requested by the European Parliament's ECON Committee), which refers particularly to the sharp decline in cash usage in countries such as Sweden.
[29] R. Buckley, D. Arner, D. Zetzsche and A. Didenko, "Sovereign Digital Currencies: Reshaping the Design of Money and Payments Systems" (2021) 15(1) *Journal of Payments Strategy & Systems* 7.
[30] IMF Policy Paper, *Digital Money across Borders – Macro-Financial Implications* (October 2020), para.17, p.13.
[31] See the findings presented in L. Demmou and Q. Sagot, *Central Bank Digital Currencies and Payments: a Review of Domestic and International Implications* (OECD Economics Department Working Paper No. 1655, February 2021).
[32] European Commission, *A Retail Payments Strategy for the EU* (COM(2020) 592 final), p.13.
[33] As of July 2022, Revolut had just under 2 million Irish customers (from over 20 million in total): *https://www.rte.ie/news/business/2022/0714/1310255-revolut-tops-20m-customers-on-7th-anniversary/* (accessed 2 August 2022). See also the rapid growth of buy-now-pay-later app services among Irish users: *https://www.businesspost.ie/tech/payments-firm-klarna-clocks-up-500000-users-in-ireland-in-six-months/* (accessed 2 August 2022).
[34] Kantar Public, "Study on New Digital Payment Methods" (March 2022), available at: *https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.pr220330~309dbc7098.en.html* (accessed 2 August 2022).

was undertaken between October and December 2021, and just under 3,000 participants engaged in the survey. The findings show widespread use of mobile payments in "technologically mature" markets, of which Ireland is pinpointed as an example. The rise in banking apps is an obvious trend in the growing digitalisation of payment services, but the research signals a clear tendency among older respondents to avail of more traditional payment methods such as cash. For its relevance to this article, a striking aspect of the research is the level of misgivings and confusion about a digital euro.

The ECB research reports that few participants from the general public or the "tech-savvy" had even heard of the digital euro. The most spontaneous reaction among this category of participants was that a digital euro must be akin to Bitcoin or another cryptocurrency.[35] For merchants who participated in the research, there was very little awareness or knowledge of a digital euro. Furthermore, participants questioned how a digital euro could be any different to the use of euros in digital form for online transactions.[36] When information was provided to respondents, the findings inferred strong scepticism about attempts to replace cash with a digital euro that is perceived to be effectively under state control.[37] In the findings specific to Ireland, participants similarly exhibited a lack of awareness and understanding of the nature of a digital euro, with added doubts expressed by unbanked/underbanked/offline participants about fees and charges.[38]

A Wholesale or Retail CBDC?

From the latest empirical findings, there appears to be underwhelming public appetite for, or familiarity with, a digital euro. Previously, in April 2021, the ECB published a report on the outcomes of a public consultation on the digital euro (held between October 2020 and January 2021) in which concerns were voiced particularly about the design of the CBDC and its compatibility with users' rights.[39] It connotes that considerable thought should not only be directed towards the kind of digital euro being proposed, but also to how its purposes are communicated to the public and to retailers. As observed in International Monetary Fund (IMF) research on the design of CBDCs, "[p]ublic confidence in economic and financial stability, in

[35] Kantar Public, *Study on New Digital Payment Methods* (March 2022), p.8.
[36] Kantar Public, *Study on New Digital Payment Methods* (March 2022), p.11.
[37] Kantar Public, *Study on New Digital Payment Methods* (March 2022), p.55.
[38] Kantar Public, *Study on New Digital Payment Methods* (March 2022), p.131.
[39] ECB, *Eurosystem Report on the Public Consultation on a Digital Euro* (April 2021).

the value of the digital currency, and the central bank itself is essential."[40] A CBDC cannot be an expedient panacea for an undermining of public confidence in a currency or a central bank, and what is instead required is "a mix of different macro-economic policy measures and adjustments."[41] Although it cannot be implied that there is a weakening of public faith currently in the euro currency, it is worth contemplating whether a digital euro is supposed to be a practical remedy for any specific problems regarding euro payments, or whether there are particular users for whom a digital euro could be most effective.

In its update on the experimentation with cross-border use of CBDCs, the BIS Innovation Hub states that nine out of ten central banks are exploring CBDC projects.[42] Almost all of the completed projects, or proofs-of-concept, through the BIS Hub are related to wholesale CBDC design. A wholesale CBDC is concentrated on institutional purposes as the CBDC can be utilised in settlements and transactions involving central banks and commercial banks with reserve deposits. Despite the convenience of testing a CBDC within wholesale settings, central banks are setting their sights towards more expansive targets. Surveys of central banks over the past year show that just under 60 central banks globally have published research on wholesale and retail CBDCs, and that the majority of testing is aimed towards developing retail CBDCs in conjunction with wholesale use.[43]

A retail CBDC is designed for general use by members of the public. Notwithstanding the scale of the ambition of the ECB and central banks globally for retail CBDCs, it should be acknowledged that needs and exigencies will differ from jurisdiction to jurisdiction. While it may suffice to claim that it could be too soon for a retail CBDC to be warranted within the eurozone, other commentators have reasoned that there is "no universal case for CBDC adoption as of yet."[44] For a retail digital euro to hold genuine prospects of gaining traction, it would have to achieve substantive acceptance among the public and retailers.

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[40] IMF Working Paper, *A Survey of Research on Retail Central Bank Digital Currency* (WP/20/104) (2020), p.20.
[41] IMF Working Paper, *A Survey of Research on Retail Central Bank Digital Currency* (WP/20/104) (2020), p.20.
[42] BIS Innovation Hub, *Using CBDCs across Borders: Lessons from Practical Experiments* (June 2022).
[43] R. Auer, J. Frost, L. Gambacorta, C. Monnet, T. Rice and H. Song Shin, *Central Bank Digital Currencies: Motives, Economic Implications and the Research Frontier* (BIS Working Paper No. 976, November 2021). For an overview of proposals to test combined retail and wholesale CBDCs, see also BIS Paper No. 123, *CBDCs in Emerging Market Economies* (April 2022).
[44] T. Mancini-Griffoli, M. Soledad Martinez Peria, I. Agur, A. Ari, J. Kiff, A. Popescu, and C. Rochon, "Casting Light on Central Bank Digital Currency" in C. Brummer (ed.), *Cryptoassets: Legal, Regulatory and Monetary Perspectives* (Oxford: Oxford University Press, 2019), p.331.

Whether it requires intermediaries or not, the technical platform for a digital euro should be capable of instilling trust, without leading to a systemic risk of dependence on the digital euro or a "crowding out" of orthodox central bank money. As acknowledged by the ECB, the preference could be:

> "… where a large portion of the population uses CBDC on a regular basis for a small fraction of their payments rather than a situation where a minority of the population relies on CBDC for the overwhelming majority of their day-to-day transactions."[45]

As much from a practical perspective as from a legal perspective, the digital euro project would benefit from an incremental and knowledge-building approach, by first focusing on trialling the CBDC for wholesale use across the eurozone. It may appear a more hesitant step than the great leap towards immediately legislating for a retail digital euro. Yet, it could prove to be the more tactful stance, considering the legal uncertainties associated with a CBDC.

But Can It Legally Work?

When taking into account the policy, technical, practical and design issues for a digital euro, it could be argued that the law is just another hurdle to be surpassed. The plans for a legislative proposal next year for a CBDC within the eurozone show how far the concept of digital currencies has travelled over the past decade or more. There are two chief difficulties which the draft legislation will be expected to tackle: firstly, how to reconcile a digital euro within the meaning of fiat currency, in its status as legal tender, for the Treaty on the Functioning of the European Union (TFEU);[46] and, secondly, how to protect the rights and interests of users of a digital euro.

A Redefined Concept of Fiat Currency

Within art.128(1) of the TFEU, it is stated that the ECB retains the "exclusive right to authorise the issue of banknotes" within the EU. As recognised sources of legal tender, euro banknotes may be issued by the ECB and by national central banks. For a digital euro to be legally classified as possessing the status of legal tender, much depends on how literal an interpretation

[45] U. Bindseil, F. Panetta and I. Terol, *Central Bank Digital Currency: Functional Scope, Pricing and Controls* (ECB Occasional Paper No. 286, December 2021), p.18.
[46] Consolidated version of the Treaty on the Functioning of the European Union (7 June 2016) [2016] OJ C202/47.

is given to "banknotes". The conundrum is mitigated somewhat by the express power of authorisation granted to the ECB. Indeed, as the institution carrying the prevailing discretion for authorisation, the ECB has appropriately highlighted the possible definitional obstacle presented by a digital euro in its 2020 report.[47] In addition to the discretion of the ECB, art.133 of the TFEU allows for secondary legislation (through the EU's ordinary legislative procedure) to lay down "the measures necessary for the use of the euro as a single currency", which can be adopted following consultation with the ECB.

By enacting legislation, the definition of euro "banknotes" could be elucidated to encompass a digital euro in what would be as pragmatically straightforward a move as could be expected. In handling risks to financial stability, the imposition of limits on holdings and caps on circulation can be enabled by art.128(2) of the TFEU. In art.128(2), after a Commission proposal and consultation with the European Parliament and the ECB, the Council "may adopt measures to harmonise the denominations and technical specifications of all coins intended for circulation to the extent necessary to permit their smooth circulation" within the EU. From a viewpoint of effecting legislative clarity as seamlessly as necessary, the TFEU therefore already contains the means of bringing a digital euro within the scope of legal tender. However, there is another aspect to the definitional issue.

If real-world, fiat currency can denote legal tender, is there even a satisfactory meaning of a CBDC? It has been contended that no widely accepted definition has yet materialised, other than the fact that CBDCs must be digital in format.[48] Currencies could be construed as "electronic money" (including within the ambit of the EU's second E-Money Directive[49]), if privately issued.[50] Even when currencies are to be issued by central banks, IMF research demonstrates that, among 171 central banks of IMF membership, the laws applicable to 61% of those surveyed are limiting the authority to issuance of banknotes and coins.[51] There can be specific provisions within jurisdictions which vindicate the trialling and introduction of

[47] ECB, *Report on a Digital Euro* (October 2020), pp.24–25.
[48] IMF Working Paper (W. Bossu, M. Itatani, C. Margulis, A. Rossi, H. Weenink and A. Yoshinaga), *Legal Aspects of Central Bank Digital Currency: Central Bank and Monetary Law Considerations* (WP/20/254) (2020), para.6.
[49] Directive 2009/110/EC of the European Parliament and of the Council of 16 September 2009 on the taking up, pursuit and prudential supervision of the business of electronic money institutions amending Directives 2005/60/EC and 2006/48/EC and repealing Directive 2000/46/EC [2009] OJ L267/7.
[50] IMF Working Paper, *Legal Aspects of Central Bank Digital Currency: Central Bank and Monetary Law Considerations* (WP/20/254) (2020), para.7.
[51] IMF Working Paper, *Legal Aspects of Central Bank Digital Currency: Central Bank and Monetary Law Considerations* (WP/20/254) (2020), para.39.

CBDCs, such as provisions empowering central banks to promote technological innovation.[52] Otherwise, the ECB is not alone in having to resort to secondary legislation to clarify whether a digital euro can be regarded as fiat currency and legal tender.

Of all the issues arising from a digital euro, perhaps the status of a CBDC is not a major difficulty at all. When concentrating on the public demand, the use of forms of "money" is inherently a broader concept than that of "currency".[53] If something is publicly accepted as a unit of account, a medium of exchange, and a store of value, then money can be subject to a flexible interpretation at law. As evinced by the ECB's 2022 study on digital payments and by the 2021 report on the digital euro public consultation, participants' responses were more preoccupied with the implications of the digital euro's design for users, rather than whether a digital euro could be established as legal tender or not.[54]

Safeguarding Users' Rights

Irrespective of how the digital euro is legally created, it is envisaged that the impact of CBDCs on extant legal frameworks will require reforms to, inter alia, monetary, central bank, financial, property, insolvency and taxation laws.[55] From the perspective of the likely users of a digital euro, respondents in the public consultation expressed their unease about how a digital euro could undercut privacy rights, while security was another significant concern (especially among professionals).[56] The effects for privacy and cybersecurity could be decisively shaped by the digital euro's design, particularly if it is going to be a tokenised DLT-type system.

A single-tier account-based model would necessitate users' holdings of digital euro being maintained by the ECB or by national central banks. As characterised in the IMF's studies, an account-based digital euro would essentially be book money in digital form, which is a very

[52] The example of Mexico is specified in the IMF research at para.48.
[53] An analysis which is also reinforced in IMF Working Paper, *A Survey of Research on Retail Central Bank Digital Currency* (WP/20/104) (2020), p.38.
[54] For example, see Kantar Public, *Study on New Digital Payment Methods* (March 2022), p.73, which includes the following quote from an Irish member of the merchants' focus group when offering her view on the digital euro: "I will accept it, I don't understand the point of it but if the central bank says it's necessary then I will offer it, I will have to …".
[55] See IMF Policy Paper, *Digital Money across Borders – Macro-Financial Implications* (October 2020), para.65, p.31.
[56] ECB, *Eurosystem Report on the Public Consultation on a Digital Euro* (April 2021), p.17.

different concept to a token-based CBDC.[57] A DLT platform would have hybrid features, in that the ECB occupies a central hierarchical role, but network intermediaries are responsible for facilitating users' access to digital euro holdings. The holdings would be represented as tokenised entries on the online system. There are evident questions about the status of intermediaries—even where licensed or where the intermediaries are national central banks—as "issuers" of digital euro, as legal tender, for the purposes of the TFEU. These are questions which should ideally be clarified by any forthcoming legislative proposal, and to accordingly clarify where liability lies in the event of loss or theft of users' digital euros.

The digital euro public consultation sought to distinguish between options of anonymity, selective privacy, full privacy and full transparency in CBDC design.[58] The probability for infringements of users' privacy rights, or for state access to users' data, can adversely affect uptake for CBDCs, as exemplified by the Chinese endeavours to revive usage of the digital yuan.[59] By scaling up a CBDC and broadening the user base, it is vital that there is interoperability with portable devices and that there is leveraging of other technologies and applications. Interoperability is necessary for caps on digital euros to be adhered to. As illustrated in the ECB's experimentation report, account spending or transaction limits could only be monitored when users are connecting at intervals with an online ledger system.[60] By the same measure, integration with other devices and technologies can exacerbate problems with processing and retention of users' data.

The magnitude of a digital euro, or any CBDC, for accumulating data would make a central bank-administered online platform a veritable honeypot for cyber-attacks.[61] Vulnerability of tokenised systems to hacking and cyber-threats could dissuade users from availing of a digital euro. In the absence of legislative guidance, the liability for users' loss would persist as a moot point. Furthermore, there would have to be definitive assurance that the requirements of the Commission's proposed Regulation on digital operational resilience for the financial sector

[57] IMF Working Paper, *Legal Aspects of Central Bank Digital Currency: Central Bank and Monetary Law Considerations* (WP/20/254) (2020), para.94. See also, IMF Working Paper, *A Survey of Research on Retail Central Bank Digital Currency* (WP/20/104) (2020), p.47.

[58] ECB, *Eurosystem Report on the Public Consultation on a Digital Euro* (April 2021), pp.18–19.

[59] For instances of recent efforts to reassure users of the e-CNY, see: *https://www.reuters.com/world/china/china-vows-privacy-information-protection-using-digital-yuan-2022-07-25/* and *https://www.bloomberg.com/news/articles/2022-07-24/pboc-official-vows-to-protect-user-privacy-in-digital-yuan-push* (both sites accessed 2 August 2022).

[60] See ECB, *Digital Euro Experimentation. Scope and Key Learnings* (July 2021), p.7.

[61] R. Auer, J. Frost, L. Gambacorta, C. Monnet, T. Rice and H. Song Shin, *Central Bank Digital Currencies: Motives, Economic Implications and the Research Frontier* (BIS Working Paper No. 976, November 2021), p.14.

(the proposed Digital Operational Resilience Act (DORA)) will apply to the ECB and to national central banks in the administrative system for a digital euro.[62] As a bare minimum for strengthening cybersecurity and ameliorating users' concerns, compliance with operational standards should be an intrinsic component of the legislation which will be required to bring a digital euro into being.

If the DORA proposal is set to be a parallel legislative initiative to a digital euro proposal, there is also work to be done in ensuring that the digital euro is commensurate with existing legislative requirements, notably for anti-money laundering and anti-terrorist financing measures. A DLT model which is envisioned to apply to the digital euro platform should be "permissioned" in that it could be confined to the ECB, central banks, supervised intermediaries and users (including retailers). To fulfil reporting requirements under the fifth Anti-Money Laundering Directive,[63] should Irish authorities such as the Revenue Commissioners be permitted to access data concerning digital euro users, which may only be accessible through online ledgers? If additional network participants are to be onboarded (either by approval of the ECB itself or by the intermediaries), should all digital euro users be furnished with information disclosing how their data may be inspected by Revenue or other authorities in the interests of law enforcement?

Similar issues pertaining to "external" participants can appear across numerous areas of law, such as the distribution of funds in insolvency cases where the proceeds could be in digital euro. The problems go beyond the ambit of the humble insolvency practitioner who is tasked with distribution in these proceedings and who would need to access what is, in effect, a digitised insolvent estate. Creditors will have their own grievances if funds are to be allocated on the basis of digital representations. In situations involving DLT or blockchain, the legitimacy of proprietary or contractual interests in tokens, or entries on ledgers, could be readily disputed.[64] As with many of the layered policy and technical quandaries of the digital

[62] Proposal for a Regulation of the European Parliament and of the Council on digital operational resilience for the financial sector and amending Regulations (EC) No 1060/2009, (EU) No 648/2012, (EU) No 600/2014 and (EU) No 909/2014 (COM(2020) 595 final). The DORA proposal was also previously synopsised by F. Murphy, "Digital Financial Services, Crypto-assets, Cybersecurity and Regulation" (2022) 29(4) *Commercial Law Practitioner* 59.

[63] Directive (EU) 2015/849 of the European Parliament and of the Council of 20 May 2015 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing, amending Regulation (EU) No 648/2012 of the European Parliament and of the Council, and repealing Directive 2005/60/EC of the European Parliament and of the Council and Commission Directive 2006/70/EC [2015] OJ L141/73.

[64] See R. Mangano, "Blockchain Securities, Insolvency Law and the Sandbox Approach" (2018) 19(4) *European Business Organization Law Review* 715.

euro, the more complexities begin to appear once the most blatant legal challenges arising from CBDCs are explored.

Conclusion: an Answer to an Unasked Question?

The features of a legislative proposal for a digital euro will not be revealed until the first quarter of 2023 at the very earliest. There are pressing reasons for a dedicated legislative instrument to enable a digital euro. A digital euro should be accompanied by an expanded definition of legal tender, specifications of the system's design, and statements of users' rights in provisions which are capable of interacting with existing requirements in EU law. A token-based DLT platform would make legislative foundations for the digital euro all the more crucial.[65]

For Ireland and other eurozone states, the prospect of a digital euro could be an exhilarating pinnacle of the advances made in digitalisation of payments and financial services. However, amidst similar initiatives internationally, the development of CBDCs can have a bandwagon-like quality. There is more than a substantial element of inter-jurisdictional competition at stake.[66] Looking behind a veneer of embracing innovation for innovation's sake, there are very different strands of digitalisation and technological applications which are being constantly moulded in modern finance. Any application, process or business model thrives on demand. As of now, it is indeterminate how much of a public demand there will be for a digital euro, as epitomised by the empirical results showing outright confusion as to what a digital euro would mean for users.

Until the advent of draft legislative measures, commentators can only surmise as to how the digital euro will steer towards implementation. Legislation is fundamental to its establishment and to users' rights. However, in weighing the practical choices, it could be queried as to why the digital euro was not originally tested solely and intensively within a wholesale phase. By initially investigating the merits of a digital euro for wholesale purposes, it could gradually

[65] See IMF Working Paper, *Legal Aspects of Central Bank Digital Currency: Central Bank and Monetary Law Considerations* (WP/20/254) (2020), para.78.
[66] See S. Cecchetti and K. Schoenholtz, "Central Bank Digital Currency: the Battle for the Soul of the Financial System" (VoxEU, 8 July 2021), available at: *https://voxeu.org/article/central-bank-digital-currency-battle-soul-financial-system* (accessed 2 August 2022).

have been broadened towards a retail launch. By that time, the ECB and central banks would be equipped with better insights as to the legal consequences of the choices made.