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Legal Design of the Digital Euro: Is it a Threat or a Driver for Economy?

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Abstract

This paper aims at evaluating benefits as weighted against risks of introduction of digital euro within the territory of European Union as a respond to rapid evolution of digital finance. Proposed EU legal framework for CBDC is analyzed from the perspective of regulatory role and mitigation of possible risks of infrastructure shocks enabled by invasion of central bank money into democratic economy, as of October 2024.

Keywords: *CBDC, Digital euro, Digital currency, Digital asset, Cryptocurrencies, Blockchain, Distributed ledger technology, Private international law, Fintech*

1. Introduction

Everyone's life would be affected by the Central Bank Digital Currencies (the "CBDCs"), which would change the financial relationships between all banks, corporations, small businesses and ordinary people. There could be positive or negative outcomes, and knowledge from other nations that have already adopted digital currencies could be helpful. This paper seeks to explore advantages and disadvantages (or concerns) of implementing a new financial model, as well as the underlying regulatory landscape (excluding technological elements).

The first to deal with the new currency would be the banks, since they are the inevitable intermediaries (in terms of payment and know-your-customer services) between the end user (individuals, companies) and the ultimate issuer (the central bank). In order to adapt their current activities to the reality of the new digital currency, banks would have to undertake a great deal of work in the areas of information technology ("IT") and law. In the future, banks might also provide new financial services and products like conditional payments, smart contracts, and digital currency exchange transactions with a 'widely accepted, cheap, secure and resilient form of public money'[1] in the euro area.

[1] European Commission, 'Digital Euro Package'. *European Commission*. <https://finance.ec.europa.eu/publications/digital-euro-package_en> accessed 30 April 2024.

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The popularity of cryptocurrencies today has grown to the point where government authorities have been faced with the problem of combating it and regaining control over the monetary mass, preventing unreported and fraudulent financial transactions. Due to new technologies and the introduction of crypto assets, governments have lost much of their control over cash flows and thus the power to effectively manage state monetary policy and regulate national economies with a potential risk to financial stability.[2]

The only way to get control back is the creation of an official and government-regulated rival—a digital currency, the so-called Central Bank Digital Currency ("CBDC")[3] with a legal status (tender). Mere prohibition of use of cryptocurrencies is no longer a solution taking into account how large the crypto-world has become since 2009 when the first Bitcoin has been created by Satoshi Nikamoto.[4] Estimated capitalization of crypto turnover is more than 1 trillion US Dollars globally and it involves too many players,[5] including also governments (like El Salvador with Bitcoin as a legal tender)[6] and big corporations (e.g., Tesla owing 184 million US Dollars net in digital assets).[7] In a situation where some of the players have already legalized crypto, simply abolishing it would not have the effect of excluding them, and that is why there is a need for a competitor—a more attractive financial solution.

However Eurozone is probably the trickiest place in the Earth to regulate a stately-backed digital currency due to its essential characteristics of united Member States sharing common rules and regulation with a European Central Bank (the "ECB") in the core of its monetary policy and banking supervision as opposed to 27 individual legal systems and authorities in each of the Member States[8], and 7 countries[9] that still did not introduced euro as national currency (non-euro area). The process now looks much like launch of euro for the Eurozone in 2002 but on a next level of technological and legal complexity calling for cooperation of not only central banks and governments, but also commercial banks and IT specialists in respect of cybersecurity and smooth provision of digital services.

The European Union is now faced with a problem of multi-level regulation within its territory and the need to introduce new legislation at two levels: for euro and non-euro countries (Member States, whose currency is not the euro, require a separate regulation). How this challenge is tackled and what are the benefits and corresponding concerns of the proposed digital euro is the subject of following research.

In addition, the issue is not just legal but also economic and political: the EU must determine how national central banks and ECB, which will oversee and issue the new currency, will work together on issues related to the accounting, storage, security, reporting, updating and regulation of digital assets. The political challenges are further compounded by the disparities in income among the Member States[10] and the opportunities to

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2 According to Hilary J. Allen, Bitcoin's ability to effect payments quickly and reduce transaction costs, to some extent, limits the role of national governments and central banks in the money supply. The externalities that can be created by virtual currencies is very important yet largely missing element. It is a threat that a widely used virtual currency could pose to the stability of the financial system as a whole and to the economy more broadly. Hilary J. Allen, '$=Euro=Bitcoin?' (2017) 76 *Md L Rev.*, 877 P, p.879.

3 Hereinafter Central Bank Digital Currencies would be acronymic by the author of this paper as 'CBDC' (as a definition) although some sources also refer to them as 'CBDCs' when multiple.

4 Wikipedia, 'Bitcoin' (*Wikipedia*) <https://en.wikipedia.org/wiki/Bitcoin> accessed 30 April 2024.

5 It is reported that in 2023 total capitalization of cryptocurrencies went above 1 trillion USD, with 420 million crypto users worldwide, and 20k types of currencies, source: Coinweb, 'How Many Crypto Users Are There in 2024? (Updated Statistics)' (*Coinweb*, 11 March 2024) <https://coinweb.com/trends/how-many-crypto-users-are-there/> accessed 30 April 2024.

6 Wikipedia, 'Bitcoin in El Salvador'. *Wikipedia*. <https://en.wikipedia.org/wiki/Bitcoin_in_El_Salvador> accessed 30 April 2024.

7 Estimated as approx. 745m USD market value, data as of Q1 2024 from Tesla balance sheet, see for example: Kevin Helms, 'Tesla Maintains Bitcoin Holdings — Balance Sheet Shows $184 Million in Digital Assets' (*Bitcoin*, 24 April 24 2024) <https://news.bitcoin.com/tesla-maintains-bitcoin-holdings-balance-sheet-shows-184-million-in-digital-assets/> accessed 30 April 2024.

8 'Facts and Figures, EU Set-up | European Union'. *European Union*. <https://european-union.europa.eu/principles-countries-history/key-facts-and-figures/structure_en#header_countries_list> accessed 30 April 2024.

9 Currently the euro is the official currency of 20 out of 27 EU member countries which together constitute the Eurozone, officially called the euro area, see for example: 'Countries Using the Euro | European Union'. *European Union*. <https://european-union.europa.eu/institutions-law-budget/euro/countries-using-euro_en> accessed 30 April 2024.

10 From 1k EUR average salary in Bulgaria to 6k EUR in Denmark. Wikipedia, 'List of European Countries by Average Wage'. Wikipedia, 30 April 2024. <https://en.wikipedia.org/wiki/List_of_European_countries_by_average_wage> accessed 30 April 2024.

provide equal technical supervision for the new currency, absorption of local currency liquidity and competition of national currencies against centralized euro also add to political bucket of the problems.

On the other hand, CBDC is an inevitable step of digital and financial progress that have to be faced the sooner the better. Political and economic rivals like China and Russia have already implemented CBDC into practice[11] and are actively testing it with real economy players. So, protraction could cost a lot. But the decision has to be balanced in its legal regulation in order not to ruin financial balance of all the Member States, to ensure individuals' right for privacy and safety of funds, bank secrecy, currency exchange rules and AML compliance, the EU macroeconomic impact.

Some say that digital euro is a threat to economy, private life and data privacy, and besides digital money can be easily hacked or stolen entailing massive disruption of the whole EU market.[12] But the real problem is a huge monetary mass of crypto (eMoney and digital assets) that were generally unregulated until recently and were issued by uncontrolled and uncertificated private parties (prior to MiCA enactment) and are currently circulating globally threatening the global economy,[13] and CBDC seems to be the only way of mitigating this threat, by putting the financial masses back into trusted and regulated harbor.

2. Regulatory Landscape Overview

2.1. Proposed Legal Framework

Currently within the euro area only euro has the status of legal tender. Article 128 of the Treaty on the Functioning of the European Union (the "TFEU")[14] lays down the legal tender status of euro banknotes: it outlines provisions related to euro banknotes and coins providing the ECB with the exclusive right to authorize the issuance of euro banknotes (to be actually issued by the ECB and the national central banks) which are the only notes with the status of legal tender within the Union. In addition, the Council Regulation (EC) No 974/98[15] enacted on May 3, 1998, outlines the introduction of the euro, banknotes and coins, as the official currency in participating EU Member States. The proposal to grant legal tender status to the future digital form of the single currency is based on Article 133 TFEU which provides for the adoption of measures necessary for the use of the euro as the single currency.[16]

Other relevant provisions that should be mentioned in addition are Articles 3(1)(c) and 127 to 133 TFEU, providing for the EU sole authority to make decisions regarding its monetary policy for countries that have

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[11] Alisha Chhangani, 'Snapshot: Which Countries Have Made the Most Progress on CBDCs so Far in 2023'. *Atlantic Council*, 24 October 2023. <https://www.atlanticcouncil.org/blogs/econographics/which-countries-have-made-the-most-progress-in-cbdcs-so-far-in-2023/> accessed 30 April 2024.

[12] For example, popular YouTube channels contain much of critique about CBDC, to name a few:

(1) Nomad Capitalist with 799k subscribers: Nomad Capitalist, 'Europe Lied about CBDCs'. 28 December 2023. <https://www.youtube.com/watch?v=tPTEItdNIZo> accessed 30 April 2024;

(2) CoinBureau with 2,4m subscribers: Coin Bureau, 'CBDCs Are Imminent!! Digital Euro Update You Can't Miss!!'. 26 October 2023. <https://www.youtube.com/watch?v=0wxY1sojA6A> accessed 30 April 2024;

(3) Money&Macro with 356k subscribers: Money & Macro, 'Why Central Banks Are Launching Digital Currencies'. 8 October 2023. <https://www.youtube.com/watch?v=Dpu6G_UlSdM> accessed 30 April 2024;

(4) Erick Stakelbeck on TBN with 921k subscribers, discussing WEF 2030 official prediction "You'll own nothing and be happy" and cashless society: Erick Stakelbeck on TBN, 'The Great Reset: Global Government & Digital Currency by 2030? | Kwak Brothers | Watchman Newscast'. 19 May 2023. <https://www.youtube.com/watch?v=9JsldnQkk_g> accessed 30 April 2024;

(5) Wealthy Expat with 162k subscribers, available at: Wealthy Expat, 'Digital IDs and CBDCs: How to Escape the Trap'. 23 December 2023. <https://www.youtube.com/watch?v=x4P84TWR8BY> accessed 30 April 2024,

and so many more analogous videos widely disseminating fears about CBDC and total control of the states.

[13] Jenn Selby, 'Crypto Assets Market Poses Threat to Global Financial Stability'. *The Guardian*, 17 February 2022. <https://www.theguardian.com/technology/2022/feb/16/crypto-assets-market-global-financial-stability-board-report> accessed 30 April 2024.

[14] Treaty on the Functioning of the European Union [2016] OJ C 202, 7.6.2016, p. 103. Digital version is available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A12016E128>

[15] Council Regulation (EC) No 974/98, enacted on 3 May 1998, focuses on the introduction of the euro within the European Union. Council Regulation (EC) No 974/98 of 3 May 1998 on the introduction of the euro [1998] OJ L 139. Digital version is available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31998R0974>

[16] Article 133 TFEU says that 'Without prejudice to the powers of the European Central Bank, the European Parliament and the Council, acting in accordance with the ordinary legislative procedure, shall lay down the measures necessary for the use of the euro as the single currency. Such measures shall be adopted after consultation of the European Central Bank.'

adopted the euro as their currency, the mandate and primary objectives of the ECB, cooperation with the national central banks, which are important political provisions taking into account necessity to adopt the digital form within non-euro area. We shall also take into account the Commission Recommendation of 22 March 2010 on the scope and effects of legal tender of euro banknotes and coins.[17] It provides common definition of legal tender with three characteristics: (i) mandatory acceptance, (ii) ability to be accepted at a full face value (1 euro), and (iii) power to discharge from payment obligations.[18] At the level of European law, the abovementioned three acts constitute the current legal framework for the euro currency. And the following three new legislative proposals, all adopted as a package on 28 June 2023 in Brussels, are proposed and forthcoming.

First, in order to set up a legal tender for digital euro a Proposal for a Regulation of the European Parliament and of the Council on the legal tender of euro banknotes and coins (the "Proposal on legal tender")[19] was introduced. Its aim is to ensure mandatory acceptance of payments in euro all around the Eurozone, so that such payments are not undermined by widespread refusals. Behind the scenes, its main purpose is probably to make acceptance of the euro compulsory for non-euro area countries. In the text of the proposal we can find the obligation of the acceptance of euro banknotes and coins tendered as means of payment (meaning euros shall not be refused).[20] Euros, also the digital ones, can be exceptionally refused if the refusal is made in good faith, based on legitimate grounds and concrete circumstances.

The central document introducing digital euro is a Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro adopted in Brussels on 28 June 2023 (the "Proposal on digital euro").[21] It sets up main features of the new CBDC, rules of its circulation, technical aspects and principles of cooperation of central banks, intermediaries and end users, which would be discovered in more details later. The pecularity about digital euro legal framework is that it consists of two documents—the one made for countries using euro and the second one for those who does not use euro as official curerency on its terriroty for various reasons.[22]

The second document for non-euro countries has a very diplomatic name as a Proposal for a Regulation of the European Parliament and of the Council on the provision of digital euro services by payment services providers incorporated in Member States whose currency is not the euro and amending Regulation (EU) 2021/1230 of the European Parliament and the Council (the "Proposal for non-euro countries"),[23] with a stress that it only concerns 'provision of digital euro services', and not the euro itself, on which we would elaborate in more details later.

2.2. *Timeline and Status of the Proposals*

The package is still 'in preparation' stage as of October 2024[24] after having collected many of the commentaries

[17] Commission Recommendation of 22 March 2010 on the scope and effects of legal tender of euro banknotes and coins (2010/191/EU) [2010] OJ L 83/70. Digital version is available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32010H0191>

[18] The concept of legal tender as interpreted by the European Court of Justice (ECJ) implies that (i) accepting euro cash is mandatory, (ii) at full face value and (iii) with the effect of discharging payment obligations. The regulation codifies a ruling of the ECJ (C-422/19 and C-423/19) that it must be possible, as a general rule, and in accordance with the concept of cash as legal tender, to be able to pay in cash for services and goods across the Eurozone. European Parliament, 'Scope and Effects of Legal Tender of Euro Banknotes and Coins | Legislative Train Schedule'. *European Parliament*. <https://www.europarl.europa.eu/legislative-train/theme-an-economy-that-works-for-people/file-legal-tender-of-euro-banknotes-and-coins> accessed 30 April 2024.

[19] Proposal for a Regulation of the European Parliament and of the Council on the legal tender of euro banknotes and coins [2023] COM/2023/364 final. Digital version is available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52023PC0364> accessed 30 April 2024.

[20] Articles 4 and 5 of the Proposal on legal tender.

[21] Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro [2023] COM/2023/369 final. Digital version is available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52023PC0369> accessed 30 April 2024.

[22] The total package and documents on the proposal are available at: European Commission, 'Digital Euro Package'. *European Commission*. <https://finance.ec.europa.eu/publications/digital-euro-package_en> accessed 30 April 2024.

[23] Proposal for a Regulation of the European Parliament and of the Council on the provision of digital euro services by payment services providers incorporated in Member States whose currency is not the euro and amending Regulation (EU) 2021/1230 of the European Parliament and the Council [2023] COM/2023/368 final. Digital version is available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52023PC0368> accessed 30 April 2024.

[24] See the timeline of the project at: European Commission, 'European Commission - Have Your Say'. *European Commission*. <https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13392-A-digital-euro-for-the-EU_en> accessed 07 October 2024.

of the public and commercial banks, reports and assessment of risks during year 2023, and as of today there is no final decision as to launch of digital euro and proposals had not been enacted. It is important to stress out that the regulation is not in force, it's in a preparatory phase. The main reason why so much time is needed is that CBDC, if not properly designed, could prompt financial stability risks and affect the structure and scale of bank intermediation.[25] Work on the digital euro has been going on for 4 years already and there is still no official timetable for its launch,[26] but some believe it would be implemented in 2027.[27]

Moreover, within the EU territory the new proposals need to coincide with 27 countries, a number of governmental and legislative, regulatory bodies, all of which makes the launch process not straightforward and time consuming. Another concern is the double regulation with a different legal regime for countries that do not use the euro, and the political tensions associated with this, with the need to regulate currency conversion and mandatory acceptance of the euro currency. So, from legal perspective the proposed regulations are quite stand-out.

3. Exploring the Benefits of Digital Euro

3.1. Functions of Money

Having reviewed the current legal framework, we now need to focus on the purposes of money. Traditional money has four purposes: (1) medium of exchange, (2) a store of wealth, (3) measure of value and (4) deferred payment.[28] Centralized digital money, as currently proposed, would implement 3 of 4 functions, with exclusion of saving and investment function: interests and deposits in digital euro are expressly prohibited by Art. 16.8 of the Proposal on digital euro.[29] Chapter V of the Proposal on digital euro expressly names usage of the digital euro as a store of value and as a means of payment.

In all other aspects, ECB says, digital euro would be like cash.[30] A retail CBDC would be traditional money, as an official form of central bank money directly accessible to the general public.[31] Its aim is simply to adapt traditional currency to up-to-date technological development,[32] so that the euro can be used as a single currency, in a uniform and effective manner across the euro area. Besides, it is desirable to decrease cash turnover within EU area by supporting more efficient European retail payments and digital finance sector. As per recent SPACE 2022 report[33] as high as 72% of cash were used by Europeans in 2019 and approximately 59% in

25 Claudia Lambert, Cosimo Pancaro and Antonella Pellicani, 'A Digital Euro: Gauging the Financial Stability Implications'. *European Central Bank*, 22 November 2023. <https://www.ecb.europa.eu/press/financial-stability-publications/fsr/focus/2023/html/ecb.fsrbox202311_04~5f8d06f0d2.en.html> accessed 30 April 2024.

26 On the official portal of the digital euro the last status as of October 18, 2023 states that 'Eurogroup welcomes the decision of the ECB to launch the next phase of the digital euro project' and no deadline is provided. European Council, 'Timeline – Digital Euro'. *European Council*. <https://www.consilium.europa.eu/en/policies/digital-euro/timeline/> accessed 30 April 2024.

27 Gaby Thesing, 'Forum Agenda: EU Unveils Plans for Digital Euro, Promising Complete Privacy'. *Weforum*, 1 August 2023. < https://www.weforum.org/agenda/2023/08/digital-euro-is-coming-privacy/> accessed 30 April 2024.

28 CFI, 'Functions of Money'. *Corporate Finance Institute*, 22 November 2023. <https://corporatefinanceinstitute.com/resources/economics/functions-of-money/> accessed 30 April 2024.

29 No saving function as per Art.16.8 of the Proposal on digital euro is proposed: 'within the framework of this Regulation, the digital euro shall not bear interest'.

30 European Commission, 'Frequently Asked Questions on the Digital Euro and the Legal Tender of Cash'. *European Commission*. <https://finance.ec.europa.eu/digital-finance/digital-euro/frequently-asked-questions-digital-euro-and-legal-tender-cash_en> accessed 30 April 2024.

31 Although there existed an alternative point of view, expressed by Mr. Per Callesen, Governor of the National Bank of Denmark, at the Europa Think Tank's webinar on the digital euro, discussing the problem of digital euro as serving a simple retail CBDC as a direct obligation of the central bank: "I won't be using the expression "digital euro", as it doesn't capture the essence of the issue. Private individuals and corporations hold digital deposit accounts at private banks. Private banks in the euro area all hold digital deposit accounts at the European Central Bank, ECB. In other words, deposits and the payment system are already highly digitalised. So, the ECB issues large volumes of digital currencies, if that is what you prefer to call deposit accounts. What's new is not the digital aspect, but rather whether private individuals and non-financial corporations should have a deposit account—or something resembling a deposit account—with a direct claim on the central bank. The most correct expression would be "retail CBDC", that is: a central bank digital currency for retail customers." Per Callesen, 'Should the EU Launch a Digital Euro?'. *Per Callesen*, 12 May 2021. <https://www.bis.org/review/r210512f.htm> accessed 30 April 2024.

32 Paragraph 4 of the 'Context of the Proposal' Section of Explanatory Memorandum to the Proposal on digital euro

33 European Central Bank, 'Study on the Payment Attitudes of Consumers in the Euro Area (SPACE) – 2022'. *European Central Bank*, 20 December 2022. <https://www.ecb.europa.eu/stats/ecb_surveys/space/html/ecb.spacereport202212~783ffdf46e.en.html> accessed 30 April 2024.

2022,[34] which is certainly quite a high figure for an economy that aims to become digital. The digital economy offers a state-of-the-art and cost-efficient payment means, with digital euro facilitating the development of interoperable retail payment solutions, maintaining financial stability and promoting accessibility and financial inclusion.

Why the digital euro could not be used as a means of saving on a theoretical scale could be explained by referring to the recent WEF Insight report on wholesale CBDCs[35] which puts clear demarcation line between (a) central bank money and (b) commercial bank money. Central bank money, in wholesale context, exist in the form of reserves held at a central bank on behalf of institutions and are accessed through an electronic system. M0 money[36] include central bank money and are the ultimate and final form of settlement because it is virtually free of credit risk, except for sovereign credit risk (e.g., a government could be unable or unwilling to meet its credit obligations, which impacts the value of its currency).

Commercial banks in its turn use central bank money to facilitate settlements. While commercial bank money has a different legal nature and is used as an asset. These monies constitute a significant portion of the global money supply and form private money when providing loans. So if private money (for the purposes of deposits and savings by average consumers or businesses) were to be replaced by central bank money, the money supply would be reduced by that amount, leading to potential liquidity risks and recession in the economy, as part of the money would be settled against itself leaving a zero in the balance.

The other factor is the amount of such money that would tend to be converted from private to public: if consumers all around EU would understand that central bank money are exempted from risks (especially from nonpayment risk) and do not depend on bank's ability to pay (soundness) they would highly likely replace all their savings from private to central bank money (from deposits in commercial bank money to deposits in central bank money) leading economy to crash at a large and uncontrolled scale.[37] This is why the saving function of digital euro is not simply prohibited at the moment, it has not been planned to be introduced at all, as it would significantly deteriorate the economy. It might be possible to talk about the savings features of the digital euro if new technologies could be developed to convert the digital euro into private or commercial bank funds at the time of deposit repayment, transferring the risks back to the commercial banking organization.

3.2. Speed and Cost Advantages

We all know life is becoming more rapid, and digital economy is all about speed. Digital euro would provide for faster transactions, literary, for seconds, a distinct rapid speed due to distributed ledger technology (the "DLT"), as opposed to currently used consequential technology, where all the payments are following one after another, so that there is one queue for the payments and a need for waiting of execution of a prior payment before executing the next one,[38] which impacts the speed in a bad way. The reason why the speed of the transaction is important is the prompt and secure receipt of funds with the possibility to use or invest them immediately, without the need for financial planning of cash shortage for 3-5 working days. There would be

34 *Ibid*. Cash was used for 59% of point-of-sale transactions in 2022, down from 72% in 2019. A majority (60%) also consider it important to have cash as a payment option. Consumers perceive cash as helpful to remain aware of their expenditures, to protect their privacy and to allow transactions to be settled immediately.

35 World Economic Forum, 'Insight Report Modernizing Financial Markets with Wholesale Central Bank Digital Currency (wCBDC)'. *Weforum*, April 2024. <https://www3.weforum.org/docs/WEF_Modernizing_Financial_Markets_with_Wholesale_Central_Bank_Digital_Currency_2024.pdf> accessed 30 April 2024.

36 M0 money captures the total supply of currency in circulation along with the stored reserves held by commercial banks at the central bank, and serves as the foundation for broader measures of money supply, such as M1, M2, and M3. See van Evan Tarver, 'Monetary Aggregates: Definition and Example'. *Investopedia*, 1 March 2024. <https://www.investopedia.com/terms/m/monetary-aggregates.asp> accessed 30 April 2024.

37 Banks' vulnerability and interdependence on its clients is demonstrated by Chiu and Hofman, they say: 'a significant change in banks' sources of funding is linked to banks' retreat from traditional relationship-based lending. Banks typically fund their relationship-based lending by deposit-taking.' Iris H-Y Chiu and Christian Hofmann, (2022) 'Unlimited Central Bank Digital Currency: The Case for a Public Good in the Euro-Area and Its Regulatory (and Deregulatory) Implications for Modern Finance'. 48, *NC J Int'l L* 1, p.14.

38 It is the so-called sequential or queue-based approach: customers initiate payment requests for different transactions and the bank places these payment requests in a queue. Each request waits its turn to be processed. After completing a payment, the bank moves on to the next request in the queue and repeats the process. See for example Tomohiro Ota, (2016). 'Sequential Payments and Optimal Pricing in Payment Systems'. 12, *Annals of Finance*, 441. Digital version is available at <https://link.springer.com/article/10.1007/s10436-016-0287-3> accessed 30 April 2024.

no need to plan for deferred payments, and the funds would be immediately available, which is definitely a boost to the regional economy.

The other advantage of the digital euro is the low cost of payments, which means savings for businesses and more money available for investment. As the transactions would be carried out in an automated system using new processing technologies (distributed ledger), transaction costs would be reduced, but there is no practical evidence of today's costs, as CBDC has not yet been introduced. To avoid the temptation for commercial banks to charge high commissions, the digital euro proposal explicitly relies on low-cost commissions for intermediaries,[39] so that high costs do not deter businesses and average citizens from trying out the new innovation. And it would be free for individual persons to use.

To sum up, digital euro transactions, with their high speed and low cost, would contribute to increasing the use of electronic payments (instead of cash payments), in line with the EU's digital transformation policy.

3.3. Coverage of Rural Territories with Financial Technologies

As mentioned in the Summary report of the ECB on the investigation phase and outlook on the next phase of digital euro, it is important to note that the groups of people vulnerable to digital financial exclusion are diverse and numerous.[40] Making sure that individuals, companies, and government organizations always have access to a publicly-backed digital currency that can be used for transactions at any time and wherever in the euro area—rather than depending solely on private solutions—is one of the goals of digital euro introduction. It is beneficial to inclusivity in the sense that no one would have to travel to the nearest bank or convenience store, as access to money would be immediate, even for people who live in remote or unusual places or who are offline. Money would be available in every region so that businesses and individuals would be able to use the digital euro to make payments anywhere in the euro area at any time, with further online settlement (if the payer was offline at the time of payment).

All commercial banks offering payment account services would have to provide the most basic digital euro payment services upon request. In addition, customers who do not wish to register for a digital euro account linked to a bank or other payment service provider will be able to obtain the digital euro from post offices. The digital euro would be straightforward and easy to use via usual smartphone, including elderly people and those with disabilities, functional limits, or low digital skills which is in line with the Directive (EU) 2019/882 (the "European Accessibility Act").[41]

People and companies in the EU would generally get digital euro through banks and other payment service providers, who would be in charge of KYC and identification matters. All businesses in the euro region would have to accept the digital euro, due to proposed regulation on legal tender, with the exception of very small businesses (households), who would have right to refuse digital payments due to the disproportionately high cost of setting up new infrastructure to handle digital euro payments.[42]

As stated in the Summary report of the ECB of 18 October 2023, the Euro system would seek to design a digital euro application in a way that is mindful of the needs of vulnerable population. Smartphone applications would be translated into all official EU languages and be compliant with the European Accessibility Act. A digital euro payment card would be available for those who are vulnerable to digital financial exclusion and prefer a physical card to an application in smartphone. Option of funding and defunding via cash is also available.[43]

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39 Article 17 of the Proposal on digital euro prescribes no charge of fees from natural persons (Art.17.1) and lowest relevant costs incurred by payment service providers (Art.17.2) for merchants.

40 European Central Bank, 'A Stocktake on the Digital Euro: Summary Report of the ECB on the Investigation Phase and Outlook on the Next Phase'. *European Central Bank*, 18 October 2023, pp. 7 and 34. <https://www.ecb.europa.eu/euro/digital_euro/timeline/profuse/shared/pdf//ecb.dedocs231018.en.pdf> accessed 30 April 2024.

41 Directive (EU) 2019/882 of the European Parliament and of the Council of 17 April 2019 on the accessibility requirements for products and services [2019] OJ L 151. Digital version is available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019L0882> accessed 30 April 2024.

42 Article 5 'Exceptions to the principle of mandatory acceptance of euro banknotes and coins' of the Proposal on legal tender: by way of derogation refusal can be made in a good faith and where such refusal is based on legitimate and temporary grounds in line with the principle of proportionality in view of concrete circumstances beyond the control of the payee.

43 European Central Bank, 'A Stocktake on the Digital Euro: Summary Report of the ECB on the Investigation Phase and Outlook on the Next Phase'. *European Central Bank*, 18 October 2023, p. 34.

3.4. Innovations Available with Digital Euro

Transactions in the digital euro promise to be secure and error-free, as the process is highly automated and backed up by multiple verifiers (not the one route where errors can occur). Its technology excludes the human element per se and is purely automated, and there is no need for a bank manager to decide on a 'go' or 'no-go' for transaction. It adds more security and certainty for the parties to the transactions, as they are no longer dependent on bank managers and their availability, mistakes, delays or additional compliance, the only requirement being the availability of funds.

The digital euro thus represents a significant financial innovation with the potential to reshape the banking industry. Some other of the potential areas of innovation are briefly mentioned below, but these benefits are accompanied by deep concerns.

The blockchain technology, which lies in the ground of the CBDC and is presented at a secure national level, enables. conditional payments, delivery versus payment instruments in project finance. Smart contracts used on the blockchain (which would also be available with the digital euro) allow parties to set the terms of their transactions in advance, and complete their execution automatically once all conditions precedent are met. This gives counterparties more certainty that the other party's obligations will be met, brings more certainty to the economics of businesses, and speeds up transactions and payments.

Financial instruments such as bank guarantees, standby letters of credit and other trade or project finance instruments, which are widely used in international trade, would go to the next level in terms of time and quality. The usual time is 5 business days (or longer in situations where multiple banks are involved, such as the issuing, confirming and advising banks) and can be reduced to as little as 1 minute if all the required conditions can be met and verified automatically through smart contract systems.

Introduction of digital euro may popularize also PvP (payment versus payment) transactions, like currency exchanges, hedge and swap agreements, repo transactions, where the obligations of one party are dependent on the concurrent performance of the obligations of another party. If the parties are not sure of mutual commitment to perform future actions (i.e., to deliver a certain amount of euro against a certain amount of another currency), there is a possibility to write this condition and to automate its execution: this would not be a programmability but a conditional transaction (to assure the parties that there is no room for abuse of programmability, all conditions are set at the beginning of the transaction and cannot be changed by either party—the immutability trait).

Apart from other countries, in EU there were certain concerns during discussions of a proposal of programmable money.[44] As a result, ECB has rejected idea of programmable money because it possibly undermines sovereign publicly available currency. Programmable payments have been introduced instead of programmable money, as a separate but adjacent concept, when automatic payments are made when certain conditions are met. This is not to be conflated with purpose-bound money, an idea introduced by the Monetary Authority of Singapore and not adopted in EU. It is a concept that enables money to be directed towards a specific purpose without requiring the money to be programmed (smart contracts).

The Proposal on digital euro, in its Definitions' Section 2.17, defines 'conditional digital euro payment transaction' as a digital euro payment transaction which is instructed automatically upon fulfilment of pre-defined conditions agreed by the payer and by the payee. Previously, both parties had to entrust the execution to a trusted and disinterested party (such as bank or escrow service provider), which would decide independently whether or not the terms of the transaction matched, in return for a certain commission. With

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44 See page 2 of the Explanatory Memorandum to Proposal on digital euro, Section 1 'Context of the proposal', paragraph 6 of subsection 'Consistency with other Union policies': "The digital euro would not be programmable money and could therefore not be used to limits its spending to or direct it at specific goods or services: as a digital form of the single currency, it should be fully fungible." See also Recitals (55) and Article 24.2 of the Proposal on digital euro.

On the contrary, WEF Report considers several benefits of programmable CBDC and, particularly, states that 'wCBDC could also support programmable payments and be designed to upgrade while operational.' See World Economic Forum, 'Insight Report 'Modernizing Financial Markets with Wholesale Central Bank Digital Currency (wCBDC)'' (*Weforum*, April 2024), pages 27, 40 and 60. <https://www3.weforum.org/docs/WEF_Modernizing_Financial_Markets_with_Wholesale_Central_Bank_Digital_Currency_2024.pdf> accessed 30 April 2024.

the introduction of a digital euro and smart contracts, it would be delegated to machine processing, promising faster, cheaper and safer transactions.

3.5. URDTT and Related Digital Legal Frameworks

These innovative applications of the future digital euro have already been underpinned by related digital legal frameworks developed by several institutions. For example, ICC Banking Commission has already created electronic rules to advance the digitization of trade finance practices,[45] releasing electronic supplements to the existing Uniform Rules for Collections ("URC 522") and Uniform Customs and Practice for Documentary Credits ("UCP 600") rules—eURC 522[46] and eUCP.[47] The new eURC and eUCP establish rules for electronic records associated with existing well-established trade finance products. However, these rules are currently not fully digitized as they continue to rely on manual reconciliation processes in the absence of CBDC. But the Uniform Rules for Digital Trade Transactions ("URDTT")[48] on the other hand envisage transactions that are evidenced in a manner that is totally digitized.

The URDTT should be seen as an overarching, global and universal technical rulebook under which other rules (eUCP, eURC) can co-exist and the trade transaction can be documented.[49] URDTT forms an important part of international soft law (or quasi law), as it is not a legal rule in the strict sense. It fully meets the needs of universal regulation of the new era of digital transactions between all countries in the world, each having its own set of legal rules: in this sense it can also be classified as a digital legal framework.

Returning back to traditional UCP 600, it was first published almost 100 years ago[50] and was originally intended to eliminate misinterpretations and misunderstandings in different countries and laws, as explained by Pradeep Taneja, ICC Bahrain Board Member.[51] In some sense it was a predecessor of URDTT and relevant rules, as it was answering the contemporary issues of that time with the need to create a global and universal, in fact technical, regulation. It was created not to change local laws or agreements of the parties, but to provide a clear framework of definitions, required actions, unified and universal understanding in order to avoid misunderstandings in international trade, exchange of documents and conditions for payment. The new era of digitization of the economy raises the same question, but at a higher technological level. Although URDTT are not widely used today, it is believed that they will become more popular in the next few years, when several large CBDC will be introduced.

With the introduction of UCP600, a single set of rules that could have been applied universally, different countries began to adhere to the rules as a binding framework for reasons of its convenience, from EU to China, which has a very different legal system. This historical experience shows that once a clear and unambiguous legal framework has been created that can be applied globally, it gives a boost to its further application in practice and to the development of trade, finance and the economy. Perhaps digital euro should follow the same path to have a universal legal framework and applicability rather than a patchwork of regulations for

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45 Trade finance practices are rather *Trade Tech* than *Fin Tech* solutions. For exact classification criteria please refer to whitepaper on Trade Tech. Trade Finance Global, 'TradeTech 2023 | The Tech Megatrends in Trade Finance'. *Trade Finance Global*, 13 March 2024. <https://www.tradefinanceglobal.com/tradetech/> accessed 30 April 2024.

46 Inevitably digital trade finance will start to enter the mix as we move towards open banking, interoperability and the digitalisation of trade according to ICC. Trade Finance Global, 'URC 522 and eURC Explained'. *Trade Finance Global*, 20 March 2024. <https://www.tradefinanceglobal.com/letters-of-credit/urc-522-eurc/> accessed 30 April 2024.

47 To encourage the digitalisation of trade finance practices, the ICC has issued new electronic rules. Trade Finance Global, 'eUCP Explained'. *Trade Finance Global*, 20 March 2024. <https://www.tradefinanceglobal.com/letters-of-credit/eucp/> accessed 30 April 2024.

48 The text of URDTT in digital form is available at 'Uniform Rules for Digital Trade Transactions (URDTT) Version 1.0'. *International Chamber of Commerce*. <https://2go.iccwbo.org/explore-our-products/uniform-rules-for-digital-trade-transactions-urdtt-version-1.html> accessed 30 April 2024. More explanations on URDTT and its role are available in video format at: Trade Advisory Network, 'URDTT – Uniform Rules for Digital Trade Transactions – Free Training Video Series'. *Trade Advisory Network*, 23 February 2022. <https://trade-advisory.com/urdtt-free-training-video-series/> accessed 30 April 2024.

49 It recognizes the prior existence of industry terms and conditions, proprietary rulebooks pertaining to individual service providers, as well as the existence of rulebooks developed in conjunction with distributed ledger projects.

50 UCP first version was published in 1933.

51 Trade Finance Global, 'UCP 600 and Letters of Credit | TFG 2024 Guide'. *Trade Finance Global*, 20 March 2024. <https://www.tradefinanceglobal.com/letters-of-credit/ucp-600/> accessed 30 April 2024.

different regions and countries, especially considering that once the digital US Dollar is in place, its turnover would have a significant impact on other financial systems.

On the other hand, a particular feature of digital currencies is that they are mostly dependent on technological rather than legal aspects. Would different countries (taking into account the current state of the art, security policies and national interests) be willing to interoperate their own CBDC systems, to integrate transactions and clearing processes in order to make the global payment system based on one and the same set of rules? Probably, no, taking into account sovereignty issues and access to central depository settlements. Therefore, in order to avoid politicizing of the rules and putting one's own national interests before those of others, an independent reputable organization should take steps to create a common place for the settlement of digital transactions using central bank (rather than private) money. It could be, for example, the United Nations Commission on International Trade Law (UNCITRAL)[52] or the International Chamber of Commerce (ICC)[53], which already have experience in adapting legal and global rules to digitalization, and have played an important role in the globalization of the economy for many years. In terms of technical means of performance it could be an independent and trustworthy organization accredited by a majority of the countries (the position the Bank for International Settlements, or BIS,[54] is currently trying to take).

URDTT rules could become a gold standard as it is neutral with regard to technology and messaging standards and is also appropriate for non-bank providers of financial services. Besides it is designed with reference to UNCITRAL model laws on Electronic Commerce: UNCITRAL Model Law on Electronic Commerce 1996 ('MLEC')[55], UNCITRAL Model Law on Electronic Signatures 2001 ('MLES')[56] and UNCITRAL Model Law on Electronic Transferable Records 2017 ('MLETR').[57] So, basically, what we see from the perspective of global digital legal framework required for performance of global transactions with CBDC, it is already drafted and ready for use (complementary MLEC, MLES, MLETR frameworks from UNCITRAL and URDTT from ICC). Its special status does not allow us to call it an international legislation enacted for digital transactions and regulating legal aspects of international business law, since its application depends entirely on the practice and acceptance by each of the sovereign states in the world, so if it would be effective and usable rules, only time will show.[58] Existence of mentioned rules does not mean that private international law would not be used and applied, but since it is rather complicated, biased and contradictory,[59] and often requires the intervention of expensive legal advisors, its role should be significantly reduced if the participants in the transactions would rely on new digital rules and entrust the regulation of the transaction to them.

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52 Official website of the United Nations Commission on International Trade Law <https://uncitral.un.org/>

53 Official website of the International Chamber of Commerce <https://iccwbo.org/>

54 Official website of the Bank for International Settlements <https://www.bis.org/> accessed 30 April 2024.

55 UNCITRAL Model Law on Electronic Commerce 1996, digital version is accessable at <https://uncitral.un.org/sites/uncitral.un.org/files/media-documents/uncitral/en/19-04970_ebook.pdf> accessed 30 April 2024.

56 UNCITRAL Model Law on Electronic Signatures 2001, digital version is accessable at <https://uncitral.un.org/sites/uncitral.un.org/files/media-documents/uncitral/en/ml-elecsig-e.pdf> accessed 30 April 2024.

57 UNCITRAL Model Law on Electronic Transferable Records 2017, digital version is accessable at <https://uncitral.un.org/sites/uncitral.un.org/files/media-documents/uncitral/en/mletr_ebook_e.pdf> accessed 30 April 2024.

58 As reported by John Dunlop, 'in order to appreciate the true value of the URDTT we need to think beyond traditional instruments; think beyond traditional rule-making; think beyond existing ways of doing business. The URDTT is not just a set of rules for banks; the rules extend into the corporate world and to the growing community of non-bank service providers as well. The URDTT are intended to govern across a digital landscape, taking into account recent developments, not only in distributed ledger technology but also the use of artificial intelligence, natural language processing, machine learning, data analytics, smart contracts, smart objects and the Internet of Things, all of which will have a material impact on the ways in which we do business in future.' John Dunlop, 'What is the URDTT and Why is it so Important?'. *Trade Finance Global*, 22 April 2024. <https://www.tradefinanceglobal.com/posts/what-is-urdtt-why-is-it-so-important/> accessed 30 April 2024.

59 On the application of private international law to blockchain and DLT digital transactions, see in particular the work of Y.R. Burchu. Shortly, he points out that 'For private international law purposes, … the asset digitally recorded on it [*DLT - author*] being artificially ascribed to …location of the ledger or blockchain and of the asset respectively for the determination of the applicable law. The second point is that, due to pseudonymity in the systems, true identities of participants are not disclosed or known. For private international law purposes, this can pose certain difficulties with the identification of participants and their locations in the application of private international law rules requiring such identification for the determination of the applicable law.' Yüksel Ripley Burcu, 'The Law Applicable to (Digital) Transfer of Digital Assets: The Transfer of Cryptocurrencies via Blockchains'. 31 July 2023. Fogt, M.M. (Ed.), 'Private International Law in an Era of Change'. Edward Elgar, Forthcoming, currently available at SSRN <https://ssrn.com/abstract=4613821> accessed 30 April 2024.

With the digital euro, and if URDTT were to be widely integrated, so that it could be used without the involvement of banks (i.e., by non-bank service providers or even by corporates without any financial intermediaries, for which purpose URDTT is also suitable), it would be a real revolution in the financial world, and it could happen within 2-3 years. But this would be an inevitable threat to commercial banks, which have always maintained their monopoly (and large revenues) on intermediary financial services. If they were no longer needed in the chain, companies could do business peer-to-peer (a more cost- and time-efficient way).

The last thing to be discussed is an additional feature of the MLETR, which is intended to enable the legal use of electronic transferable documents both within a country and across borders.[60] Transferable documents and instruments are essential commercial tools. Their availability in electronic form may be greatly beneficial for facilitating electronic commerce by, for example, improving speed and security of transmission for account of no need to transfer the original paper documents through post services worldwide (that takes time and costs), permitting the reuse of data and automating certain transactions through smart contracts. Electronic records may be particularly useful in transport, logistics and finance. Moreover, this type of records puts into a paperless trade environment, which may make an important contribution to trade facilitation.

3.6. Improving Financial Sovereignty

It was important to give a preliminary overview of the innovation opportunities of the digital euro in order to underline the economic trap that could be set for the regional economy if the digital euro is not adopted, and here we come to the reason why this task force has become a matter of financial sovereignty.

One of the official objectives of the digital euro is to support Europe's open strategic autonomy and strengthen the international role of the euro. As mentioned by the ECB, stable coins and other crypto-assets not denominated in euro, if widely used for payments, could also undermine the stability of the EU's monetary system. It is therefore important to establish a digital form of the euro to ensure financial stability.[61] So, the political object is monetary sovereignty.[62] And there might be a space for discussion that the late introduction (or non-launch) of digital euro could become a strategic mistake of European monetary policy in case other fully convertible currencies[63] will be introduced faster, e.g., digital US Dollar as the leading (60%) world convertible currency[64] (see statistics in Appendix 6). As reported by IMF, while the global usage of currencies other than the U.S. dollar and the euro for cross-border payments remains limited, rapid technological (e.g., digital money) or geopolitical changes could accelerate a regime shift into a multipolar or more fragmented international monetary system.[65]

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60 Transferable records are functionally equivalent to transferable documents or instruments. Transferable documents or instruments are paper-based documents or instruments that entitle the holder to claim the performance of the obligation indicated therein and that allow the transfer of the claim to that performance by transferring possession of the document or instrument. Transferable documents or instruments typically include bills of lading, bills of exchange, promissory notes and warehouse receipts, see: UNCITRAL, 'UNCITRAL Model Law on Electronic Transferable Records (2017) | United Nations Commission on International Trade Law'. *UNCITRAL*, 13 July 2017. <https://uncitral.un.org/en/texts/ecommerce/modellaw/electronic_transferable_records> accessed 30 April 2024.

61 As mentioned by Mark Warren, 'payment system autonomy is increasingly recognized as a matter of national security', and digital euro introductions 'may serve the long-term economic interests of the EU, payment system autonomy could offer the most convincing rationale for the digital euro.' Mark Warren, (2023). 'Let the Digital Euro Circulate: Introducing a Retail C.B.D.C. in the Eurozone with Unlimited Holdings by Users'. 8, *U Bologna L Rev.*, 1, pp. 39-40.

62 According to I.M. Oehler-Sincai, non-EU payment providers handle around 70% of European card payment transactions, it potentially raises serious questions about payment autonomy. At the same time, use of crypto is growing, and the digital euro should ensure European monetary, political and financial sovereignty, which are at risk taking into account; total value of crypto-assets, foreign operators dominating euro-payments, significant economic power of BigTech [*being non-EU companies – author*]. Iulia Monica Oehler-Sincai, (2022). 'The Digital Euro Project. A Preliminary Assessment'. 22, *Romanian J Eur Aff*, 50, p. 57.

63 A convertible currency is a legal tender that can be easily bought or sold on the foreign exchange market worldwide, with little to no restrictions: U.S. dollar, Euro, Japanese Yen, British pound, see: Lucas Downey, 'Convertible Currency: Meaning, Overview, Types'. *Investopedia*, 12 May 2021. <https://www.investopedia.com/terms/c/convertible-currency.asp> accessed 30 April 2024.

64 As seen from the statistics of SWIFT international payments as of March 2024, 59% share of global turnover belongs to USD, only 12% (second place) to EUR, 5.9% to JPY and 4.7% to GBP. Information available at Statista, 'Monthly International Payments Currency Share in SWIFT 2019-2024'. *Statista*, 26 April 2024. <https://www.statista.com/statistics/1189498/share-of-global-payments-by-currency/> accessed 30 April 2024.

65 Hector Perez-Saiz Longmei Zhang Iyer Roshan, 'Currency Usage for Cross Border Payments'. *IMF*, 24 March 2023. <https://www.imf.org/en/Publications/WP/Issues/2023/03/24/Currency-Usage-for-Cross-Border-Payments-531324> accessed 30 April 2024.

As stated by the EU Commission officially, 'the wide availability and use of digital central bank money would also be important for the EU's monetary sovereignty-particularly if other central banks around the world start developing digital currencies.'[66] So if we imagine a situation where the USD, JPY and GBP have a digital form of existence and are circulating globally in international payments (allowing additional options for traders, investors and banks), while Europe has not yet introduced its digital currency, there would be a critical risk to its sovereignty and a massive outflow of euro currency, leading to a decline in the European economy. As of the date of this paper, April 2024, Japan has already piloted its digital JPY,[67] USA[68] and Great Britain[69] are actively exploring digital currency. Considering the WEF, IMF and other important organizations involved in the global discussions on CBDC, it is hard to believe that digital central bank money will not be introduced. If this happens and the digital euro is abolished, the EU would find itself at a different level of technological and economic development.

In this realities, introduction of a digital euro seems not only a question of strategy, but of survival.[70] Apart from international rivals there is a need to keep an eye on internal policy as well: providing a digital form of central bank money may reduce the systemic risk associated with commercial digital currencies, especially crypto-currency.

Taking into account the analyses presented, we can say with confidence that the digital euro would be adopted (although official sources still maintain that the issue has not been definitively resolved and is still under consideration). To add one more thing, it is also a question of financial sovereignty, how quickly this regulation would be introduced and the CBDC would be launched, because a delay could also represent a threat to sovereignty.[71] To explain why, it is necessary to take a global perspective, which is the subject of the following section.

3.7. Global Opportunities of Cooperation

As stated by WEF, over 98% of the global economy's central banks are researching, piloting or deploying central bank digital currency.[72] This is even more evident when we look at the world map (see Appendices 1-5), which is almost entirely colored to indicate the different stages of exploration or implementation of CBDCs, with only a few countries not exploring these possibilities.[73]

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66 European Commission, 'Questions and Answers on the Single Currency Package'. *European Commission*, 28 June 2023. <https://ec.europa.eu/commission/presscorner/detail/en/qanda_23_3502> accessed 30 April 2024.

67 Bank of Japan, 'Central Bank Digital Currency: Bank of Japan'. *Bank of Japan*. <https://www.boj.or.jp/en/paym/digital/index.htm> accessed 30 April 2024.

68 On March 28, 2022 the Electronic Currency and Secure Hardware (ECASH) Act, which would develop an electronic version of the U.S. Dollar for use by the American public, has been introduced as a bill, see: 'Rep. Lynch Introduces Legislation to Develop Electronic Version of U.S. Dollar'. *Congressman Stephen Lynch*, 28 March 2022. <https://lynch.house.gov/press-releases?ID=5A0DA9DE-8884-4E06-AC0A-BCA08850F05E> accessed 30 April 2024. See also official portal of eUSD: <https://www.federalreserve.gov/central-bank-digital-currency.htm> accessed 30 April 2024.

69 The Bank of England and HM Treasury jointly created a Central Bank Digital Currency (CBDC) Taskforce in April 2021: Bank of England, 'Bank of England Statement on Central Bank Digital Currency'. *Bank of England*, 24 May 2024. <https://www.bankofengland.co.uk/news/2021/april/bank-of-england-statement-on-central-bank-digital-currency> accessed 24 May 2024.

The digital pound is in its design phase, progress tracking is available at official portal of eGBP: Bank of England, 'The Digital Pound'. *Bank of England*, 16 May 2024. <https://www.bankofengland.co.uk/the-digital-pound> accessed 16 May 2024.

70 As mentioned by ECB, digital euro 'introduction would support Europe's strategic autonomy and monetary sovereignty, making the payments landscape more competitive and resilient against non-European payment providers, such as electronic payment services set up outside of eurozone control and making business on cash transfers and collecting commissions.' See: European Commission, 'Questions and Answers on the Single Currency Package'. *European Commission*, 28 June 2023. <https://ec.europa.eu/commission/presscorner/detail/en/qanda_23_3502> accessed 30 April 2024.

71 Number of sources calls upon soonest launch of digital currencies and says that 'the time for central banks to act is now. CBDCs would offer new scope and possibilities for secure and instantaneous settlement, through consumer banks and trusted payment intermediaries.' Ousmène Jacques Mandeng, 'CBDC for Retail, Wholesale and International Payments'. *Accenture*, 1 May 2022. <https://bankingblog.accenture.com/cbdc-retail-wholesale-international-payments> accessed 30 April 2024.

72 WEF 'Modernizing Financial Markets with Wholesale Central Bank Digital Currency (wCBDC) 2024'. *World Economic Forum*, 16 April 2024. <https://www.weforum.org/publications/modernizing-financial-markets-with-wcbdc/> accessed 30 April 2024.

73 See current status on 'Central Bank Digital Currency (CBDC) Tracker'. *CBDC Tracker*. <https://cbdctracker.org/> accessed 30 April 2024.

The ECB plans to make the digital euro global in the sense that it would be available to non-residents. The ECB proposed to make the digital euro available initially to natural and legal persons residing or established in the euro area and to visitors, but possibly to non-euro area Member States and third countries at a later stage. The condition for such an expansion would be based on agreements and arrangements with the ECB to mitigate risks to financial stability and monetary sovereignty, both of the Euro system and of countries outside the euro area.[74]

Article 19 of the Proposal on digital euro states that the distribution of the digital euro is subject to certain conditions, the first of which is a prior signed agreement: the Council, acting on a recommendation from the Commission and after consulting the ECB, shall decide on the arrangements and the conclusion of the agreement. This is subject to the foreign national central bank (national competent authority) complying with any rules, guidelines, instructions or requests issued by the ECB in relation to the digital euro. Additional pre-conditions are: provision of information on the use of digital euro to ECB and adoption by the third country of all the national legislations necessary to ensure respect of the rules and standards laid down in the EU regulation on euro. At last, the third country shall ensure that intermediaries distributing digital euro are subject to supervisory and regulatory requirements equivalent to those applied to payment service providers established in the Union. Put in this way, the global euro would only exist on paper, as its actual distribution and turnover would depend on additional agreements and requirements approved by the ECB, and the most difficult condition would be compliance with EU regulations by a third country with its own legal system, in some cases quite different from the European one. Even though this legal exclusion is necessary on the one hand to maintain the stability of the financial system and to protect monetary policy, on the other hand it prevents the euro from going global. While its global circulation would bring many benefits, for instance, instant global euro payments (and usage of euro as payment transaction means).

Since non-resident banks are unable to open accounts at the host central bank, the current arrangements suggest that the foreign currency can only be handled by a correspondent bank making the process long and complicated. In other words, traditional ('old') system of payments each bank has to establish correspondent[75] relationship with the other commercial bank in another country in order to be able to transfer the payments to that country (or use international correspondent banks, like JP Morgan Chase or Citibank for USD transactions, Deutsche Bank for EUR transaction, etc., which in its turn would have its own net of correspondents, please refer to Appendix 7).

This chain of several banks creates a step-by-step system of subsequent payments, which takes a lot of time, involves numerous compliance and other checks, risks of blocking funds, resulting in 3-5 days of completion of international payments with far-distant countries. Once the ledger is distributed (DLT), and not a consequence register, and not dependent on multiple participating banks in multiple countries, each with its own policies and commissions, payments would be much faster, more efficient and less costly. Some of the potential of global platforms has already been explored in research and development, particularly by the BIS, such as BIS projects mBridge, Helvetia and Nexus.

According to BIS, with Project mBridge[76], the number of steps can be significantly reduced by allowing direct, bilateral connectivity between the payee's and payer's local banks supported by interoperability with participants' domestic payment systems. As such, cross-border payments on the new platform could be faster (settlement within seconds), safer (settlement asset- central bank money), accessible (direct bilateral connectivity between any two banks on the platform), cheaper (less overall costs) and compliant (banks ensuring compliance with each jurisdiction's KYC/AML/CFT). In fact, this is a replacement for the traditional correspondent

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74 Commission' Staff Working Document: Executive Summary of the Impact Assessment Report, Brussels, 28.06.2023, SWD (2023) 234 final, page 2.

75 At present, cross-border payments are settled using the correspondent banking model, which involves a large number of intermediaries, making settlement a time-consuming and costly process. See more details on: Banque De France, 'Wholesale Central Bank Digital Currency | Banque de France'. *Banque De France*. <https://www.banque-france.fr/en/financial-stability/financial-stability-mandate/supporting-digital-transformation-financial-sector/wholesale-mnbc> accessed 30 April 2024.

76 BIS Innovation Hub, Brochure, 'Project mBridge Update'. *BIS Innovation Hub*, October 2023. <https://www.bis.org/innovation_hub/projects/mbridge_brochure_2311.pdf> accessed 30 April 2024.

banking system as payments are sent directly from one commercial bank to another. But this possibility is only available with the introduction of CBDC money or, alternatively, mBridge system shall be accepted by the relevant national central bank (which is more complicated in terms of legal framework, technological and cybersecurity issues—the need to set up mBridge backend API to ECB system). So, this great technological opportunity has already been created and is available, but cannot be used due to legal restrictions (which could be eliminated once CBDC is launched).

Project Helvetia[77], as reported by BIS, started a multi-phase investigation stage by the BIS Innovation Hub, the Swiss National Bank (SNB) and the financial infrastructure operator SIX. The project explored how central banks could offer settlement in central bank money in a future with more tokenized financial assets based on distributed ledger technology (DLT), focusing on operational, legal and policy questions.

Nexus project of BIS[78]: more than 60 countries already have instant (or 'fast') payment systems (EU TIPS operated by the Bank of Italy, Malaysian RPP operated by PayNet, Singaporean FAST operated by BCS) that allow people to send money to each other within seconds. However, sending money abroad is often still slow and expensive. Connecting these domestic payment systems internationally to one platform could improve the speed, cost and transparency of cross-border payments. Nexus is designed to standardize the way that these systems connect to each other.[79]

So there are a lot of opportunities and innovations in the field of digital finance that the European economy could take advantage of, especially after the introduction of a digital euro.

4. Concerns about Digital Euro: Regulatory Role in Risks Mitigation

4.1. Wholesale CBDC and Bank Exposure

Although the digital euro has many benefits and opportunities, there are still risks that cannot be ignored. One of them address division of CBDC for retail and wholesale[80] money (the so-called 'rCBDC' and 'wCBDC'). A retail CBDC is planned to be used by the general public, while a wholesale CBDC are destined for transactions between banks and other financial institutions.[81] So, wholesale currencies would not be available for public or business at the moment, it can only be used by the special institutes connected to the central bank of the relevant country.[82]

Firstly, there is a common misperception that wholesale CBDC is still nonexistent. As mentioned in speech of the Member of the Executive Board of the ECB on demystifying wholesale currency, in fact, central bank money has been available in digital form for wholesale transactions between banks for decades,[83] it is akin to electronic central banks reserves. In the euro area, the Euro system offers banks the possibility of settling wholesale digital transactions through its TARGET Services using a centralized ledger. So, with the new technological shift it would just be replaced with a de-centralized ledger.

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77 BIS, 'Project Helvetia: A Multi-Phase Investigation on the Settlement of Tokenised Assets in Central Bank Money'. *BIS*, 13 January 2022. <https://www.bis.org/about/bisih/topics/cbdc/helvetia.htm> accessed 30 April 2024.

78 BIS, 'Project Nexus: Enabling Instant Cross-Border Payments'. *BIS*, 23 March 2023. <https://www.bis.org/about/bisih/topics/fmis/nexus.htm> accessed 30 April 2024.

79 BIS, 'Nexus: Enabling Instant Cross-Border Payments'. *BIS*, 23 March 2023. <https://www.bis.org/publ/othp62.htm> accessed 30 April 2024.

80 World Economic Forum, 'CBDCs Come in Two Forms: Retail and Wholesale. What's the Difference?'. *World Economic Forum*, 15 April 2024. <https://www.weforum.org/agenda/2024/02/wholesale-retail-cbdcs-difference/> accessed 30 April 2024.

81 The WEF recently published an important report that also sheds light on the nature, risks and opportunities of wCBDC. According to the report, there are three basic levels of access to central bank money: (1) access to reserves, (2) access to reserves with monetary facilities (lending capacity), and (3) access to the system or network as a service provider. WEF 'Insight Report 'Modernizing Financial Markets with Wholesale Central Bank Digital Currency (wCBDC)'. *Weforum*, April 2024. <https://www3.weforum.org/docs/WEF_Modernizing_Financial_Markets_with_Wholesale_Central_Bank_Digital_Currency_2024.pdf> accessed 30 April 2024.

82 For example, the Bank of France is promoting an experiment with wholesale CBDC from 2020, including credit institutions, and has recently published a report on its findings. Banque de France, 'Wholesale Central Bank Digital Currency Experiments with the Banque de France. New Insights and Key Takeaways'. *Banque de France*, July 2023. <https://www.banque-france.fr/system/files/2023-08/Banque_de_France_stabilite_financiere_rapport_mnbc_2023.pdf> accessed 30 April 2024.

83 Particularly, Fabio Panetta said 'when central banks talk about wholesale CBDCs, we are not debating whether to introduce them. We are discussing how to improve and modernise services that we already offer today.' European Central Bank, 'Demystifying Wholesale Central Bank Digital Currency'. *European Central Bank*, 26 September 2022. <https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp220926~5f9b85685a.en.html> accessed 30 April 2024.

Secondly, wholesale CBDC is occasionally thought of as a retail CBDC replacement. However, in practice, they work well together because they meet the various needs of various users. In the wholesale market, central banks provide financial institutions with the final means of payment, thereby mitigating systemic risks. The conversion of private forms of money into risk-free central bank money at par enables the provision of highly convenient and secure payment methods to the public on the retail side, thereby contributing to the maintenance of monetary confidence.

Work on wholesale CBDC, meanwhile, means a potential for instantaneous, round-the-clock settlement of transactions in a larger range of assets and with a wider range of participants—as DLT allows this advantage. And basically, nothing new has been introduced with the wholesale euro, this is a mere technological shift in ways of processing payments entailing no new risks.

As opposed to wholesale money, retail money (rCBDC) would be distributed by the banking system to public and held in electronic wallets of end-users. This would allow payments for consumer-to-consumer, consumer-to-business and business-to-business payments.[84] While wholesale CBDC would be used by credit institutions (including central banks) for settling the balances. So, since there is no full replacement of retail money by wholesale money, exposure to banks is mitigated: it still would be in the possession of private (or commercial) money.

It shall be noted however that legal settlement is distinct from the technical evidence of settlement. The latter is typically recorded as ledger entries in financial systems. Legal settlement occurs when agreed upon obligations are met, often involving contractual commitments. It is crucial to align the technical aspects of new systems with legal requirements. While smart contracts are discussed as providing legally enforceable settlements, it should be highlighted that they do not fully replace traditional legal contracts yet. To address this, industry leaders should develop rulebooks that codify procedures to achieve mutual agreement in new systems.

4.2. Combating Illegal Payments (AML/CFT) with Digital Euro

In accordance with the Regulation (EU) 2015/847 of the European Parliament and of the Council of 20 May 2015 on information accompanying transfers of funds and repealing Regulation (EC) No 1781/2006 (the "Regulation 2015/847"),[85] in order to check whether the required information on the payer and the payee accompanies transfers of funds, and to help identify suspicious transactions, the payment service provider of the payee and the intermediary payment service provider should have effective procedures in place in order to detect whether information on the payer and the payee is missing or incomplete.[86] With the digital euro having privacy in its code and anonymity as its inevitable trait compliance with the abovementioned Regulation on the underpinned information on the payer, payee and details of their transactions, would become an undecidable problem. The commercial banks processing transactions on the distributed ledger technology do not have access to the mentioned information, but only to the 'nickname' of the transferor or its 'ID'. So, the Proposal on digital euro has to introduce relevant amendments to the Regulation (EU) 2015/847 on transparency balancing between privacy and the need for fraud combating, that is yet to come.

As per Regulation 2015/847 the procedures on surveillance of suspicious transactions should include ex-post monitoring or real-time monitoring where appropriate: with digital transfers only ex-post control is available which is much less effective in terms of financial crimes combating. In the event that a significant sum of money has been transferred, the likelihood of preventing a crime is reduced. Consequently, the subsequent measures are limited to closing the accounts and initiating lengthy and complex procedures for apprehending the criminals. Given the technical impossibility of preventing or controlling this, the only viable solution is to impose limits on the amounts that can be transferred, which has been selected by the legislator

[84] Ousmène Jacques Mandeng, 'CBDC for Retail, Wholesale and International Payments'. *Accenture*, 1 May 2022. <https://bankingblog.accenture.com/cbdc-retail-wholesale-international-payments> accessed 30 April 2024.

[85] Regulation (EU) 2015/847 of the European Parliament and of the Council of 20 May 2015 on information accompanying transfers of funds and repealing Regulation (EC) No 1781/2006 [2015] OJ L 141. Digital version is available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32015R0847> accessed 30 April 2024.

[86] Recital (22) of Regulation 2015/847.

with a threshold of 3,000 EUR as a compromise. As criminals are more likely interested in transferring large amounts of money, transferring 3,000 EUR should simply be not their field of interest.

So, on the one hand, limitation of the sum seems to be a smart decision, on the other hand, it limits applicability of digital finance and transfers of a large scale, leaving digital euro only the narrow section of routine consumer-related payments, like groceries, household payments, etc., as business needs usually goes beyond those limits. If this is the case, it is likely that the business sector, which contributes the majority of turnover to the economy, will not be interested in the extensive use of digital euro instead of traditional wire cash (for transactions above the 3k limit). This could result in the digital currency being exploited by consumers only contradicting the aim of digitalization of the whole European economy. This is a topic that requires further research and development, with its roots going deeply into the traditional two-sided problem of privacy vs transparency.[87]

Historically, this problem is not new and has been already a concern. In the past, national regulators, politicians, and commercial banks collaborated to find a solution that would satisfy all parties involved. It is not surprising that the decision was made to restrict the amount of money that can be transferred via wire transfers, with more attention required for transactions involving above threshold amounts. There is no technical availability for the payment intermediaries (banks) to put strong verifying procedures to each and every transaction made, thus the threshold had been put.

Basically, the legislative focus on financial traceability lies with combating of: (1) terrorist financing as defined in Article 1(5),[88] and (2) money laundering referred to in Article 1(3) and (4)[89] of 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 ("AML Directive").[90]

In the Recital (4) of the AML Directive it is specifically pointed out that money laundering and terrorist financing are frequently carried out in an international context. Measures adopted solely at national or even at Union level, without taking into account international coordination and cooperation, would have very limited effect, and therefore there is a need for international fora to be included in the combating activities. However, within the frame of digital euro there is a concern that technical tracing would not be possible once the money flies out the boundaries of the EU, or comes outside EU, transforming out of (or in the) traditional wire cash.

Further, the international cooperation would be possible only where all (or at least majority of countries) would be willing to share financial data with each other.[91] In addition, they would have to have technical

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87 More intricacy, the 22nd paragraph of the Preamble mentions also the obligation of competent authorities to ensure traceabililty of information throughout the payment chain, not only the one operation, which brings more complicacy to tracing, as digital currencies may surplus or be deleted by other chains and still carry the tainted information in itself. Given the potential threat of money laundering and terrorist financing presented by anonymous transfers, it is appropriate to require payment service providers to request information on the payer and the payee. In line with the risk-based approach developed by FATF, it is appropriate to identify areas of higher and lower risk, with a view to better targeting the risk of money laundering and terrorist financing. Accordingly, the payment service provider of the payee and the intermediary payment service provider should have effective risk-based procedures that apply where a transfer of funds lacks the required information on the payer or the payee, in order to allow them to decide whether to execute, reject or suspend that transfer and to determine the appropriate follow-up action to take.

88 For the purposes of Directive 2015/849, 'terrorist financing' means the provision or collection of funds, by any means, directly or indirectly, with the intention that they be used or in the knowledge that they are to be used, in full or in part, in order to carry out any of the offences within the meaning of Articles 1 to 4 of Council Framework Decision 2002/475/JHA

89 For the purposes of Directive 2015/849 the following conduct, when committed intentionally, shall be regarded as money laundering: the conversion or transfer of property, knowing that such property is derived from criminal activity or from an act of participation in such activity, for the purpose of concealing or disguising the illicit origin of the property or of assisting any person who is involved in the commission of such an activity to evade the legal consequences of that person's action, the concealment or disguise of the true nature, source, location, disposition, movement, rights with respect to, or ownership of, property, etc.

90 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 L*, 141. Digital text of AML Directive can be accessed at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32015L0849> accessed 30 April 2024.

91 This is still not the case in 2024, and in the author's opinion this goal is not achievable in the near future.

availability to do so, on the level of central banks, to transmit the required transcriptions of the blocks in the blockchain, that would have to be un-encrypted for further use by humans for investigation purposes. It would be a more difficult task then just transferring information on payees, amounts and time of transactions in human-readable form, instantly understandable by interested parties, as this is a task for technical integrations of the systems of different institutions.

Still it is believed that with CBDC, when it would be thoroughly tested with professional players, it would be less space for criminal and illegal transactions. Transactions would not be hidden within the doors of a shell bank,[92] or secured with international barriers and inability to get through foreign bank secrecy. With CBDC immutable information on transaction and on the parties would be recorded with several blocks (blockchain) and with several participants, including the central bank, which decreases possibility to hide, delete or alter the data. In this sense digital transformation and immutable character of blockchain may bring additional traceability and therefore combat terrorist financing and money laundering at another level.[93]

The Proposal on digital euro says that the standard anti-money laundry and counter fighting of terrorist rules (AML/CFT) would be applied by respecting a risk-based approach and by excluding full anonymity.[94] The AML and CFT rules as addressed above have been established long ago and its application to new, virtual,[95] assets have been introduced by recent monumental amendemnt of the whole AML regulation (an "AML package")[96] highligted by establishment of a new responsible body-AMLA.[97] The whole AML sector is going right now under a major reformation, also taking into account introduction of crypto and other virtual assets, and possible future introduction of digital euro, so that the legislation is currently in a patchwork style, but aims to cover systematic changes in economy with a VI AML package.[98]

So AML and CFT rules continue to be applied to all tranasactions no matter in what currency-cash, digital, crypto or wire cash. The principal rule prohibiting laundering have not been changed and is not influenced by

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92 Shell bank means a credit institution incorporated in a jurisdiction in which it has no physical presence involving meaningful mind and management as per Article 3(17) of AML Directive.

93 The crypto assets that boasted privacy and full confidentiality (as against to government-traceable CBDC), and therefore were frequently used in terrorist financing and money laundering, shall become less popular as their traceability is an issue of several months: the EU adopting new rules under which crypto asset service providers would be obliged to collect and make accessible certain information about the sender and beneficiary of the transfers of crypto assets they operate, regardless of the amount of crypto assets being transacted. This would ensure traceability of crypto-asset transfers in order to better identify possible suspicious transactions and block them. Elisabeth Svantesson, Minister for Finance of Sweden, announced 'Today's decision is bad news for those who have misused crypto-assets for their illegal activities, to circumvent EU sanctions or to finance terrorism and war. Doing so will no longer be possible in Europe without exposure – it is an important step forward in the fight against money laundering'. European Council, 'Anti-Money Laundering: Council Adopts Rules Which Will Make Crypto-Asset Transfers Traceable' (*European Council*, 16 May 2023) <https://www.consilium.europa.eu/en/press/press-releases/2023/05/16/anti-money-laundering-council-adopts-rules-which-will-make-crypto-asset-transfers-traceable/> accessed 30 April 2024.

94 See paragraph 3 of subsection 'Consistency with other Union policies' of Section 1 'Context of the proposal' of the Explanatory Memorandum to the Proposal on digital euro.

95 Proposal for a Regulation of the European Parliament and of the Council on information accompanying transfers of funds and certain crypto-assets [2021] COM/2021/422 final. Recital (3) of it provides that 'it is appropriate to extend the scope in order to also cover transfer of virtual assets', digital version of the proposal is available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021PC0422> accessed 30 April 2024.

96 As of the date of this paper, April 2024, the latest V AML Directive (a version of Directive (EU) 2015/849) is in action, which is proposed to be amended by the VI AML Directive.

97 A separate body responsible for combating AML and CFT – the AMLA will soon be established in Frankfurt, as reported by latest updates of 24th of April 2024, after EU Parliament has voted for adoption of VI AML Directive. European Commission, 'Questions and Answers: The new EU Anti-Money Laundering Authority (AMLA)'. *European Commission*, 24 April 2024. <https://finance.ec.europa.eu/document/download/61cf5a0d-0e5d-43e2-876a-8e68e45c7f1f_en?filename=240424-anti-money-laundering-faqs_en_0.pdf> accessed 30 April 2024.

98 European Commission 'Anti-Money Laundering and Countering the Financing of Terrorism at EU Level' (*European Commission*) <https://finance.ec.europa.eu/financial-crime/anti-money-laundering-and-countering-financing-terrorism-eu-level_en> accessed 30 April 2024. New AML regulation has been adopted with 513 votes in favour, 25 against, and 33 abstentions on 24 April 2024 by EU Parliament, though the laws still need to be formally adopted by the Council. European Parliament, 'New EU Rules to Combat Money-Laundering Adopted'. *European Parliament*. <https://www.europarl.europa.eu/news/en/press-room/20240419IPR20586/new-eu-rules-to-combat-money-laundering-adopted> accessed 30 April 2024. The content of the new regulation proposed could be accessed at European Commission, 'Latest Update on Anti-Money Laundering and Countering the Financing of Terrorism Legislative Package'. *European Commission*, 24 April 2024. <https://finance.ec.europa.eu/news/latest-update-anti-money-laundering-and-countering-financing-terrorism-legislative-package-2024-04-24_en> accessed 30 April 2024. The Proposal on digital euro is said to be consistent with the objectives of the new AML package.

creation of a new technological type of currency, though legal loopholes exist due to rapidly changing scenery, and is corrected by patchwork amendments.[99] Commercial banks as intermediaries in financial transactions have always been in position to detect suspicious transactions and to report on it. Consequently, nothing new has been created with the digital euro, the regulatory framework has just need to be updated to new technological regime.

4.3. Privacy with Central Bank Money

Has the privacy[100] been sacrificed[101] by ECB in order to combat illegal payments, is the debated question. But there should be no speculations of common public in this respect as the legal approach taken within the Proposal on digital euro is very balanced indeed and in full compliance with the regulatory regime of personal data protection. The Summary Report of ECB from 18 October 2023[102] acknowledges that the right to privacy and personal data protection are fundamental rights of individuals and therefore they are crucial objectives of a digital euro and the digital euro does respect privacy.[103] However, privacy rights need to be balanced with other public policy objectives, anti-money laundering and combating the financing of terrorism (AML/CFT), combating tax evasion,[104] for which reasons anonymity has been excluded.[105]

But some say[106] that privacy of data would be compromised once the central bank (or a state) assumes control over the funds of the people, as it would have access to information on the exact amount owned by each individual and the transactions they have performed. Currently bank secrecy is the milestone of financial policy that precludes the government (or a state) from having a knowledge on exact savings of persons (or transactions of corporates). It is necessary to have a judicial order or other legal ground in place in order to receive access to bank accounts. With the CBDC it, probably, would not have to be required. Moreover, if the state policy would go further it may automatically deprive persons from its funds on the grounds of unfair court decisions to pay debts, taxes or penalties, other mandatory payments. If not properly regulated, the over-controlling role of the central bank may urge people to take back the money from banks and store it in cash at home, that would certainly detriment economy instead of moving it forward.

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99 See proposed alterations to regulation on information accompanying transfers in a Proposal for a Regulation of the European Parliament and of the Council on information accompanying transfers of funds and certain crypto-assets. Besides, Article 32 of the Proposal on digital euro explicitly addresses combating of tax fraud and evasion, fraud actions and preventive measures, but the mechanism are not settled up and are delegated for the ECB for further development. Article 1 says the ECB may facilitate the fraud detection and prevention tasks that payment service providers shall perform under Directive 2015/2366 by establishing a general fraud detection and prevention mechanism for online digital euro transactions to ensure the smooth and efficient functioning of the digital euro.

100 Right to privacy and personal data protection are enshrined in Articles 7 and 8 of the Charter of Fundamental Rights of the European Union.

101 See previous reference to exclusion of full anonymity in paragraph 3 of subsection 'Consistency with other Union policies' of Section 1 'Context of the proposal' of the Explanatory Memorandum to Proposal on digital euro. Social media debates on youtube promotes a view that ECB will espionage everyone. See, for example, Coin Bureau, 'CBDCs Are Imminent!! Digital Euro Update You Can't Miss!!'. 26 October 2023. <https://www.youtube.com/watch?v=0wxY1sojA6A> accessed 30 April 2024; Money and Macro, 'Why Central Banks are Launching Digital Currencies'. 8 October 2023. <https://www.youtube.com/watch?v=Dpu6G_UlSdM> accessed 30 April 2024; Erick Stakelbeck on TBN, 'The Great Reset: Global Government & Digital Currency by 2030? | Kwak Brothers | Watchman Newscast'. 19 May 2023. <https://www.youtube.com/watch?v=9JsldnQkk_g> accessed 30 April 2024; Wealthy Expat, 'Digital IDs and CBDCs: How to Escape the Trap' (23 December 2023) <https://www.youtube.com/watch?v=x4P84TWR8BY> accessed 30 April 2024.

102 European Central Bank, 'A Stocktake on the Digital Euro: Summary Report of the ECB on the Investigation Phase and Outlook on the Next Phase'. *European Central Bank*, 18 October 2023, pp. 37-39.

103 *Ibid*, paragraph 56: 'Ensuring an appropriate level of privacy and data protection is important to foster public trust in a digital euro, which would underpin its adoption and use. The Eurosystem would not have access to or store any data that could directly identify end users. Rigorous standards of privacy, accountability for the protection of users' data, and transparency on how information would be secured and used are essential for a digital euro to command trust and confidence'.

104 Current privacy model of a digital euro works under condition that users of any digital payment service currently need to identify themselves to their PSP (payment service provider) before they can start making use of such services. Under the new draft legislation, onboarding to digital euro services would be treated in a similar way to other digital payment services.

105 As opposed, for example, to digital renminbi (eCNY). eCNY has a controllable anonymity based on the following principle: full anonymity for small payments and full traceability for large transactions. Dmitry Kochergin, (2022). 'Central Bank Digital Currencies: Experience of Introducing a Digital Yuan and Development of a Digital Ruble Conception'. *Russ J Econ & L*, 51, p. 62.

106 Coin Bureau, 'CBDCs are Imminent!! Digital Euro Update you Can't Miss!!'. 26 October 2023. <https://www.youtube.com/watch?v=0wxY1sojA6A> accessed 30 April 2024; Wealthy Expat, 'Digital IDs and CBDCs: How to Escape the Trap'. 23 December 2023. <https://www.youtube.com/watch?v=x4P84TWR8BY> accessed 30 April 2024.

Therefore, in the digital domain there is a lively debate about 'total control' and 'threat', with crypto-dealers playing a key role.[107] They persuade that financial resources should not be under the total control of one regulator and propose decentralized idea of money instead. They also say crypto is safe, while the new currency, digital euro, is a mechanism of society slavery and espionage where the supervisor would issue, control and see all the transactions with digital euro (and no privacy guaranteed).[108] But the point is quite opposite—the government does not wish to have total control over all transactions of all economic subjects, it just needs to ensure (for the society welfare purposes) that legal rules are complied with, and that the shadow financial world, like crypto, is tackled and put under legal pressure, so that there is no possibility to avoid obligatory rules hiding behind the privacy.

At the same time, the initiative provides for a high level of privacy for offline digital euro payments, which are cash-like proximity payments, however offline payments turns into online payments for settlement reasons once smartphone comes into wifi area, so the statement is only partially true. Online digital euro payment transactions would follow the same data protection as for private digital means of payment, in conformity with the EU AML/CFT framework and PSD2,[109] consistent with the GDPR[110] and the Commission's open data strategy.[111]

It is also important to note that government bodies have all the opportunities to be acknowledged on all transactions within government's legitimate interest through reporting systems and tax declarations, inquiries and investigation procedures. Consequently, the only way to avoid the government being aware of the transfer of funds is to make cash transfers, which is quite complex when dealing with large amounts of money.

4.4. Cryptocurrency Regulation and Its Relation to the Digital Euro

In accordance with the 2020 digital finance strategy, EU adopted a comprehensive legislative framework that regulates the issuing of crypto assets as well as the services provided in respect of crypto-assets. The Regulation (EU) 2023/1114 of the European Parliament and of the Council of 31 May 2023 on markets in crypto-assets, and amending Regulations (EU) No 1093/2010 and (EU) No 1095/2010 and Directives 2013/36/EU and (EU) 2019/1937 (the "MiCA")[112] came into force on 29 June 2023 and covers the crypto-assets and related services and activities that are not covered by other Union legislative acts on financial services.

MiCA has become a real milestone in long-attended legislation and introduced organizational, operational, and prudential requirements for issuers of crypto assets and crypto asset service providers, such as trading venues or wallets. So why it is relevant to a digital euro? Formally two regulations, on crypto and digital euro, are separate, but some predecessors as to regulated legal currency have appeared in MiCA, see for example Recitals (104) saying that significant e-money tokens denominated in an official currency of a Member State other than the euro which are used as a means of exchange and in order to settle large volumes of payment transactions can, although unlikely to occur, pose specific risks to the monetary sovereignty of the Member State in whose official currency they are denominated.

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[107] *Ibid*.

[108] *Ibid*. The motivation behind these opinions is the fear of losing the market and the flow of financial assets from unregulated and opaque crypto-holders to the official financial system with clear regulation and control mechanisms.

[109] PSD2 stands for a Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC [2015] OJ L 337. Digital version is available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32015L2366> accessed 30 April 2024.

[110] GDPR stands for a Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) [2016], *OJ L*, 119. Digital version is available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32016R0679> accessed 30 April 2024.

[111] The European data strategy aims to make the EU a leader in a data-driven society. Creating a single market for data will allow it to flow freely within the EU and across sectors for the benefit of businesses, researchers and public administrations. European Commission, 'European Data Strategy'. *European Commission*. <https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/european-data-strategy_en> accessed 30 April 2024.

[112] Regulation (EU) 2023/1114 of the European Parliament and of the Council of 31 May 2023 on markets in crypto-assets, and amending Regulations (EU) No 1093/2010 and (EU) No 1095/2010 and Directives 2013/36/EU and (EU) 2019/1937 [2023], *OJ L*, 150. Digital version is available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32023R1114> accessed 30 April 2024.

The mechanism of classification of certain digital assets (with more than 10 mio users and 5 bn EUR value, 2.5 mio transactions per day) as significant with its further transmission under EBA supervision also signals that EU is prone to regulatory regime over other than digital euro currencies.[113]

Therefore, MiCA[114] has become, in a way, a precursor of the digital euro[115] and a complementary framework to the digital euro regulation, which constitutes its second half, because without crypto-regulation, the digital euro itself would not be effective and able to resolve a problem of unregulated digital finance.[116] While the proposed regulation on the digital euro, as accompanied by MiCA, covers the full range of possible digital assets.[117] In China the regulator decided the combatting issue more radically: by full exclusion of crypto trading and replacing it with CBDC.[118]

The MiCA framework addresses the key risks which have appeared in recent crypto asset market, such as due information obligation of customers, reducing risks of fraud, preventing market manipulation and insider trading. From technical perspective MiCA also provides for specific rules aiming at avoiding hacks and bugs in the blockchain, requiring the establishment of adequate IT security procedures and systems in place to guard against cyber risks and IT failures, in which respect it is very similar to digital euro regulation.

4.5. Regulation for Non-Euro Countries

As MiCA refers to crypto-digital assets outside the euro area, so does the Proposal on the digital euro.[119] There are several Member States of the European Union that do not use the euro as their currency. These countries either have not met the necessary criteria to adopt the euro or have negotiated opt-outs from the eurozone. The list of EU countries that do not use the euro includes Bulgaria, Czechia, Hungary, Poland, Romania, Sweden, and Denmark, the latter has specifically opted-out[120] from the euro and uses the Danish krone.[121] These countries maintain their own currencies for various reasons, including maintaining financial independence and addressing country-specific economic issues. Those issues include setting own monetary policy (prerogative of monetary sovereignty), handling national debt, modulating inflation. While the euro, as the common currency, imposes a system of central monetary policy applied uniformly throughout all euro area.

So, some EU countries chose not to fully utilize EU policies for a variety of reasons. Sovereignty concerns often play a significant role, as some nations prefer to maintain greater control over decision-making processes.

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113 See Art. 56, Art.43(1) and (7) of MiCA: where an asset-referenced token has been classified as significant pursuant to a decision of EBA taken in accordance with paragraph 6, the supervisory responsibilities with respect to the issuer of that significant asset-referenced token shall be transferred from the competent authority of the issuer's home Member State to EBA within 20 working days of the date of notification of that decision.

114 Work on MiCA has started in 2018 with a final act being enacted in May 2023 (5 years work): see EU Commission policy timeline. European Commission, 'Crypto-Assets'. *European Commission*. <https://finance.ec.europa.eu/digital-finance/crypto-assets_en> accessed 30 April 2024.

115 Work on digital euro has started in 2020 and still there is no final act as of April 2024 (4 years work): see EU Commission policy timeline. European Commission, 'Digital Euro'. *European Commission*. <https://finance.ec.europa.eu/digital-finance/digital-euro_en> accessed 30 April 2024.

116 According to Allen H.J. 'Virtual currencies like Bitcoin are a type of privately issued money. …Virtual currencies are inherently fragile because they are nothing more than a series of numbers recorded on a database, and have no worth as an asset class other than their ability to facilitate transactions. They are not backed by a sovereign, or a commodity, or any other type of payment stream that could be of value if the virtual currency ceased to be accepted as a means of exchange. Instead, virtual currencies have value only because people believe that others will be willing to accept the virtual currency in exchange for other goods and services.' Hilary J. Allen, (2017). '$=Euro=Bitcoin?'. 76, *Md L Rev*, 877, p. 881.

117 Though NFTs are still an exclusion as they are not regulated by MiCA (but represents a tradeable asset). However, it is not so liquid and popular so probably it would not be as problematic to monetary sovereignty.

118 In September 2021 the People's Bank of China (China's central bank) declared all types of activity with crypto, including cryptocurrencies and stable coins, as illegal, including their mining, sale, acquisition, investment, holding, etc. Dmitry Kochergin, (2022). 'Central Bank Digital Currencies: Experience of Introducing a Digital Yuan and Development of a Digital Ruble Conception'. *Russ J Econ & L*, 51, p. 61.

119 Recitals (45), (63) and (104) of MiCA, Art.20, 43 of MiCA. Specifically, Recital 63 provides that MiCA is without prejudice to national law regulating the use of domestic and foreign currencies in operations between residents, adopted by non-euro area Member States in exercising their prerogative of monetary sovereignty.

120 Denmark, in particular, is legally exempt from adopting the euro. European Commission, 'Denmark and the Euro'. *European Commission*. <https://economy-finance.ec.europa.eu/euro/eu-countries-and-euro/denmark-and-euro_en> accessed 30 April 2024.

121 Currently the euro is the official currency of 20 out of 27 EU member countries which together constitute the euro area. European Commission, 'Countries Using the Euro | European Union'. *European Commission*. <https://european-union.europa.eu/institutions-law-budget/euro/countries-using-euro_en> accessed 30 April 2024.

Some countries may also have different national interests, economic considerations, and cultural elements that may not align with EU priorities or preferences. But now it seems like euro is forced upon those countries in a mandatory way, as these countries have to ensure that the digital euro, having a legal tender through new legislation, the Proposal on legal tender, is accepted as a payment for goods and services. In other words, accepting euro payments effectively means introduction of euro within the country's monetary system with the need to convert currency, to establish the currency rate, and with a consequence of converting of some certain amount of money mass in national currency into euro currency by people preferring more stable currency, up to the limit of 3.000 euro, which might be a high limit for certain countries with not high wages.[122] Indeed, it puts an issue if ECB, or EU, intervenes with mandatory requirements into sovereign territory of financial policy of those 7 EU Member States.

Specifically, in order to prevent illusion that euro is introduced, though only in digital form, into non-euro area, the new proposal on regulation has been accurately named as a proposal for provision of services in digital euro, with an accent to services, not the euro. Simultaneously, the Proposal on digital euro is very short on the currency exchange: it contains just guidelines for further details to be provided. Thus, Article 21 of the Proposal on digital euro on the "Cross-currency payments" says that cross-currency payments between the digital euro and other currencies shall be subject to prior agreements between, on the one hand, the European Central Bank and, on the other hand, the national central banks of the Member States whose currency is not the euro and the third countries. The ECB shall cooperate with national central banks of Member States whose currency is not the euro to enable interoperable payments between the digital euro and other currencies.[123]

Media sources report some politicians standing against introduction of a digital euro as it would negatively impact national economy. For example, Czech Prime Minister stated that adoption of the euro is not favored, and the country does not yet even meet the criteria for adopting the single currency, and consolidation of public finances should be a prerequisite for any debate on the euro to take place.[124]

4.6. *Cyber Resilience*

The last, but not least, point of concern with regard to introduction of digital euro is cyber resilience, i.e., the possibility to stand before different attacks and successfully dispelling it, and possible cyber threats to payment systems. Over time cyber-attacks have increased in quantity and scale, and the particular concern for intangible assets like digital euro would be: (i) stealing, (ii) technical errors leading to loss of money or (iii) wrong transactions (mistakes), and (iv) dissemination of personal and financial data.

Commercial banks and payment service providers are obliged to have a more resilient cyber shield (in comparison to general persons) but still criminals were successful in attacks of several institutions.[125] The

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[122] As of March 2024, the net average earnings for a full-time employee were around €913 in Bulgaria, Czech Republic - €1,434, Hungary - €1,083, Poland - €1,351, Romania - €1,042, Sweden - €2,885. It shows that all non-euro countries have a salary threshold well below 3k euro (except for Sweden (2,8k) and Denmark that opted out on a different terms, having 4k€ average salary). This means 3k euro threshold is quite high for the national population and could threaten national economy and currency exchange rates. Still some euro-area countries have a below 3k EUR threshold salary as well, *e.g.*, Estonia: €1,598, Croatia: €1,326 etc. Wikipedia, 'List of European Countries by Average Wage'. *Wikipedia*, 30 April 2024. <https://en.wikipedia.org/wiki/List_of_European_countries_by_average_wage> accessed 30 April 2024.

[123] Explanatory Memorandum to the Proposal on non-euro areas states that to ensure that the provision of digital euro services by payment service providers incorporated in a Member State whose currency is not the euro in the euro area is adequately supervised by competent authorities of the Member State whose currency is not the euro, it is necessary to lay down rules that will apply to these payment service providers. Harmonised rules governing the free provision of payment services across the Union Payment would be guaranteed by the Payment Services Directive and should also apply to payment transaction in digital euro.

[124] ExpatCZ, 'Explained: Why Czech PM is Saying 'not yet' to Euro Adoption'. *ExpatCZ, Prague, Czech Republic*, 5 January 2024. <https://www.expats.cz/czech-news/article/fiala-czechia-is-not-yet-ready-for-euro-adoption> accessed 30 April 2024.

[125] Since 2013, the cybercrime gang have attempted to attack banks, e-payment systems and financial institutions using pieces of malware they designed, known as Carbanak and Cobalt. The criminal operation has struck banks in more than 40 countries and has resulted in cumulative losses of over EUR 1 billion for the financial industry. Europol, 'Mastermind behind EUR 1 Billion Cyber Bank Robbery Arrested in Spain | Europol'. *Europol*, 26 March 2018. <https://www.europol.europa.eu/media-press/newsroom/news/mastermind-behind-eur-1-billion-cyber-bank-robbery-arrested-in-spain> accessed 30 April 2024. Another example is EIB, with assets surpassing €500 billion, that have become the latest victim of cyber threats against European financial institutions. The cyberattack has resulted in a complete outage of the EIB's website. Tim Sandle, 'European Investment Bank Caught out in Cyberattack'. *Digital Journal*, 11 July 2023. <https://www.digitaljournal.com/tech-science/european-investment-bank-caught-out-in-cyberattack/article> accessed 30 April 2024

ECB's central role in issuing and settling all digital euro payments throughout the EU makes it a perfect target for cybercriminals, who no longer need to spread their attempts among several banks. Therefore, it would be of strategic importance to build a relevant security policy around the ECB and other national central banks, as well as other participants in digital euro transactions, which could become a complex matter.

In the Commission's report it is stated that 'payments with digital euro will face similar cyber, IT and other operational risks as existing payment systems. In addition, the Euro system may face increased cyber and operational risks as issuer of a digital euro.'[126] These issues have now been addressed and mitigated by the forthcoming legislation:

(a) Regulation (EU) 2022/2554 of the European Parliament and of the Council of 14 December 2022 on digital operational resilience for the financial sector and amending Regulations (EC) No 1060/2009, (EU) No 648/2012, (EU) No 600/2014, (EU) No 909/2014 and (EU) 2016/1011 (the "DORA"),[127] entered into force on 16 January 2023 and being applied starting from 17 January 2025 (payment service providers would be subject to DORA);

(b) The Proposal for a Regulation of the European Parliament and of the Council on horizontal cybersecurity requirements for products with digital elements and amending Regulation (EU) 2019/1020 (the "Cyber Resilience Act");[128]

(c) Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC (the "PSD2"),[129] that is already in action and includes requirements for payment service providers; and the more general;

(d) Directive (EU) 2022/2555 of the European Parliament and of the Council of 14 December 2022 on measures for a high common level of cybersecurity across the Union, amending Regulation (EU) No 910/2014 and Directive (EU) 2018/1972, and repealing Directive (EU) 2016/1148 ("NIS2")[130] aiming to achieve a higher common level of cybersecurity across the Union and covering much of corporates included in trade and business.

In particular, DORA states that in order to keep pace with a quickly evolving cyber threat landscape, financial entities are required to set-up and maintain resilient ICT systems and tools that minimize the impact of ICT risk, to identify on a continuous basis all sources of ICT risk, to set-up protection and prevention measures, promptly detect anomalous activities, put in place dedicated and comprehensive business continuity policies and disaster and recovery plans as an integral part of the operational business continuity policy.[131] If that legal requirements would be implemented in practice, we can predict quite safe digital euro from a cyber resilience perspective. Digital euro could not be introduced without respective cybersecurity legislative framework, as cyber risks would undermine stability of sovereign currency as it is designed in a digital form, and its launch would be premature. In this sense cybersecurity legislation complements digital euro legal design.

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126 Commission' Staff Working Document: Executive Summary of the Impact Assessment Report, Brussels, 28.06.2023, SWD(2023) 234 final, page 3.

127 Regulation (EU) 2022/2554 of the European Parliament and of the Council of 14 December 2022 on digital operational resilience for the financial sector and amending Regulations (EC) No 1060/2009, (EU) No 648/2012, (EU) No 600/2014, (EU) No 909/2014 and (EU) 2016/1011 [2022] OJ L 333. Digital version is available at <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:32022R2554> accessed 30 April 2024.

128 Proposal for a Regulation of the European Parliament and of the Council on horizontal cybersecurity requirements for products with digital elements and amending Regulation (EU) 2019/1020 [2022] COM/2022/454 final. Digital version is available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52022PC0454> accessed 30 April 2024.

129 Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC [2015] OJ L 337. Digital version is available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32015L2366> accessed 30 April 2024.

130 Directive (EU) 2022/2555 of the European Parliament and of the Council of 14 December 2022 on measures for a high common level of cybersecurity across the Union, amending Regulation (EU) No 910/2014 and Directive (EU) 2018/1972, and repealing Directive (EU) 2016/1148 (NIS 2 Directive) [2022] OJ L 333. Digital version is available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32022L2555> accessed 30 April 2024.

131 Recitals (48) and (49) of DORA.

5. Conclusion

This research sought to ascertain whether digital euro legal design poses a threat or a benefit to the European economy, and whether the legal framework adequately addresses demands of digital finance evolution. There are still a lot of questions around the digital euro and its implementation. It has not yet been decided whether it will be launched or not. But given the extent of the discussions, the timeframe of the proposal (4 years of work), the number and importance of the parties involved (EU Commission, ECB, national central banks), the level of the discussion forums (many journalists, interviews and contributions from top ECB managers, WEF materials and a broad discussion forum), there is no doubt that the digital euro will be launched. Because it has now become a question of monetary sovereignty and economic strategy.

Many other countries are working within the framework of the CBDC, preparing and maintaining technological and legal issues before final implementation. And this work is being done globally, not just in one or two countries, but by powerful countries with large economies. So not introducing it would be a big mistake. It would threaten financial stability. Perhaps it is already a threat, because we see that other countries are much faster in adopting the new financial technology. And if the time gap were quite large, it could lead to instability and losses for the EU. Therefore, as much of the basic work (assessment, feedback gathering, risk assessment, public debates, drafting of legislation) has already been done, the procedures should probably be accelerated by fine-tuning the last details. Of course, the milestone in digital finance is the introduction of the digital US dollar as the world's largest reserve currency. Its non-implementation saves the EU and gives it more time.

The digital euro still has a number of drawbacks and causes for concern. The biggest one is the banking system, as the issuance of central bank money with no risk to the user (apart from the commercial bank's liability risk) may not only undermine the current routine of banking activity, but also its very existence.[132] Potentially, private banks as intermediaries between the issuer of the money (the ECB) and the end users (individuals and companies) could be eliminated by digital technologies with the central bank as the sole issuer. Assuming money is issued directly to the public, is instantly accessible through technology (via an application on a smartphone), is secure and has all the necessary functions (saving, paying, postponing obligations and measuring value), why does the public need banks at all? Especially if we take into account the commissions charged by the banks.

So, the ECB has opted for a compromise solution whereby there will be no saving function of the e-money, like cash which brings no cashback and no interest.[133] The essential function of saving the value and investment would still be vested with the banks who accommodate savings of the public (and pay interests in turn) and provide this financing to businesses and consumers while saving certain reserves for critical situations. The payment function of the banks would be partially distracted by ECB through its digital money, but to a certain limit of 3k Euro. The ECB will oversee the payment function of the banks, while payments will continue to be made from users' bank accounts, and settled through a distributed ledger technology (DLT). This means that banks will act as intermediaries, checking transaction documents and making persons verification (KYC/ AML/CFT) with the technology performing all the necessary work.

It is important to note that banks are not allowed to charge commission on such payments. This means that they do not earn any revenue from these transactions. Therefore, the commercial banks' functions of distributing money and providing access to it to the population, as well as the payment function, are being taken over by new technology and the ECB. This leaves private banks with only the savings function. However, the primary purpose of a bank is to make a profit by collecting funds and distributing them to creditors in exchange for financing, and this core function remains with commercial banks.

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[132] According to Warren 'if the eventual outcome of C.B.D.C. is a state monopoly on money, banks would compete using their acumen as credit intermediaries and PSPs [*payment service providers - author*] – not their ability to create CoBM [*commercial bank money - author*]. There is an inherent instability within banks that has not been solved.' Mark Warren, (2023). 'Let the Digital Euro Circulate: Introducing a Retail C.B.D.C. in the Eurozone with Unlimited Holdings by Users'. 8, *U Bologna L Rev*, 1, p. 40.

[133] Kochergin points out that, by contrast, the Chinese digital CBDC (e-CNY) has all 4 money functions including the saving function. Like traditional [*commercial – author*] money it has the same legal and economic equality. Dmitry Kochergin, (2022). 'Central Bank Digital Currencies: Experience of Introducing a Digital Yuan and Development of a Digital Ruble Conception'. *Russ J Econ & L*, 51, p. 59.

It also opens up new opportunities for banks, albeit only potentially and not yet practically. Banks would be able to create and offer new products in digital finance that could become popular because of their cost-effectiveness, speed and security, such as smart contracts, PvP and PvD: payment-versus-payment (currency exchange, currency swap contracts, hedging) and payment-versus-document (all areas of trade and export finance involving international payments and logistics of goods and services).

Banks can potentially benefit from increased revenues through automated global transactions facilitated by blockchain technology. This technology allows them to connect with each other in a peer-to-peer system, eliminating the need for intermediaries such as central banks of origin and destination countries and correspondent banks. The advent of digital forms of documentation, delivered when the cargo arrives on the ship, has opened up new opportunities for international finance and trade. This eliminates the need to check original paper documents and wait for them to be delivered by international delivery services, which can take days or weeks. It also reduces the risk of financing being lost.

It is no longer necessary to physically hand over documents to make payments; digital uploads are now permitted, with funds released once the necessary conditions have been met. This method of payment is both secure and convenient, making it ideal for international trade. The legal framework for such transactions has already been drafted (the whole package of eUCP, eURC, URDTT) and is ready for testing with new technologies by private actors. So even though banks are losing some of their payment processing services, they are gaining a huge potential for new services on a global scale, which just need time and effort to become routine.

The most pressing issue currently facing the banking sector with the introduction of the digital euro is the risk of liquidity shortages and balance sheet contraction. This can only be addressed by the provision of additional funding by central banks. The transfer of commercial bank funds into the central bank's digital currency results in the transfer of the balance of assets from the commercial bank to the central bank. This effectively removes the private bank's ownership of the money asset. Although this issue has been addressed through a limitation of sums approach, it is important to consider the impact on the entire population of the EU, with each individual having extracted approximately 3,000 euro from the commercial banking system. The overall impact of this could be significant.

It is not possible to address the liquidity issue other than through limits and additional financing. The existing restrictions are considered appropriate and have been properly assessed by the experts with the result of the 3k euro limit. So only time and practice will show whether it undermines the economy or not, and in any case the ECB would be monitoring the effects and would have the possibility to intervene. On the other hand, the 3k euro limit does not allow for large purchases or satisfying business needs, as the amount is small.

KYC, as well as AML and CFT obligations, would still be the responsibility of commercial banks, and they will be responsible for all checks and reporting. In practice, this may be a difficult task as blockchain technology guarantees anonymity and only provides a ‘nickname’ of the user and does not allow for ex-ante verification. As in traditional banking, the bank’s automated compliance system and/or the officer who has received a payment order checks it for fraud triggers, verifies the documentation and may ask for additional clarifications and documents, and in case of non-satisfaction, the bank may stop the transit of the funds. This is more of a technical issue and banks would need to adapt their compliance systems to new technologies that would allow them to report suspicious transactions. All the necessary legal notices to the current legislation have been properly done and the banks just need to comply with the new rules and put them into practice.

The major advantage of introducing euro, apart from maintaining financial sovereignty[134] and keeping in line with innovations and strengthening euro position globally, is tackling the crypto issue.[135] For several years, while crypto assets have not been properly regulated, both money and asset-backed crypto assets have flooded the financial market, allowing huge amounts of unsecured money to circulate without control and

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[134] Particularly, to support Europe’s open strategic autonomy and reinforce the international role of the euro. European Commission, ‘Questions and Answers on the Single Currency Package’. *European Commission*, 28 June 2023. <https://ec.europa.eu/commission/presscorner/detail/en/qanda_23_3502> accessed 30 April 2024.

[135] *Ibid*. European Commission: ‘It is also Important against the Backdrop of the Developing Crypto Currency Market’.

reporting, undermining financial sovereignty and stability.[136] The fact that large corporations and banks have already invested heavily in crypto finance and technology, with some of them launching crypto services to the public, made the problem even worse. Fortunately, in 2023 MiCA has been enacted becoming a major milestone in bringing financing back to safe and regulated framework. The second milestone in the fight against crypto-associated risks is the introduction of a digital euro—a secure and transparent alternative digital option. In addition, it is an official currency that allows for all the technological solutions previously proposed only for cryptocurrencies (except for saving function).

The introduction of the digital euro will attract consumer and business money and draw investment away from crypto assets, at least for payment purposes, as central money offers the same opportunities as crypto, but with a much lower cost. The two pitfalls that prevent the digital euro from successfully competing with crypto are a limit of 3k euro, whereas in crypto the sums for investments and payments are unlimited, and no saving function, whereas crypto assets could serve to save the earnings (value of money) and also increase the profit, i.e., serve as an investment itself. For example, bitcoin started at around USD 0.07 (July 2010) and now costs more than USD 60,000 (April 2024), with its high volatility sometimes an advantage and sometimes a disadvantage.[137] But the digital euro, for the reasons explained above, cannot have these two characteristics (savings function and limitlessness), so it would not become a 100% alternative to crypto, which means that both digital currencies would continue to be used simultaneously, serving different functions, but on a similar regulated basis.

The political issue of forcing the non-euro countries to start using the euro is another delicate point, as 7 countries within the EU have opted out of using the euro in favor of their own national currencies and monetary policies. The Proposal for non-euro countries, as underpinned by the Proposal on legal tender of the digital euro, de facto forces 7 independent countries to introduce, use and accept the euro as legal tender within their territories, as well as to maintain burdensome organizational and technical obligations towards the ECB. This may appear to be a form of soft or veiled economic subordination or patronage, which some governments (e.g., the Czech Republic) have tried to tackle.[138] They are unhappy because the introduction of the euro (even at 3k euro per person multiplied by the size of the population) could lead to serious problems of monetary regulation and a fall in the value of national currencies (without any promise by the ECB to help the local economy with funding). Other countries, such as Denmark, however, are optimistic about the introduction of the euro in digital form, seeing a 3k euro limit as a safe harbor.[139]

From the point of view of the average citizen, the most problematic aspect of the introduction of the digital euro is the invasion of privacy and the possibility of total control over people's money and spending. But these are nothing more than well-founded and populist fears. There is no reason to believe that the ECB or other official authorities would spy on operations, as they simply would not have access to them, as stated in the legislative proposal. Concerns about state control-i.e., the possibility of restricting the use of funds or carrying out certain types of transactions, the possibility of withdrawing funds, e.g., for taxes or other compulsory levies-generally depend on the political regime of the country. Normally, these fears should not materialize in countries with democratic regimes and the rule of law (and may only be of concern in totalitarian countries).

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136 As stated by I.M. Oehler-Sincai 'in contrast to crypto assets such as Bitcoin, which are privately issued, the central bank electronic money, either wholesale or retail, would be free of liquidity risk, credit risk and market risk, resembling cash.' Iulia Monica Oehler-Sincai, (2022). 'The Digital Euro Project: A Preliminary Assessment'. 22, *Romanian J Eur Aff*, 50, p. 51.

137 To be more precise, the very first reported transaction in Bitcoin was an exchange of 5050 BTC for 5.02 USD, thus the first recorded price at which Bitcoin exchanged hands at 0.00099 USD. Bitcoin price linear is available at Bitbo, 'Bitcoin Price History Chart (Since 2009)'. *Bitbo Calendar.* <https://calendar.bitbo.io/price/> accessed 30 April 2024.

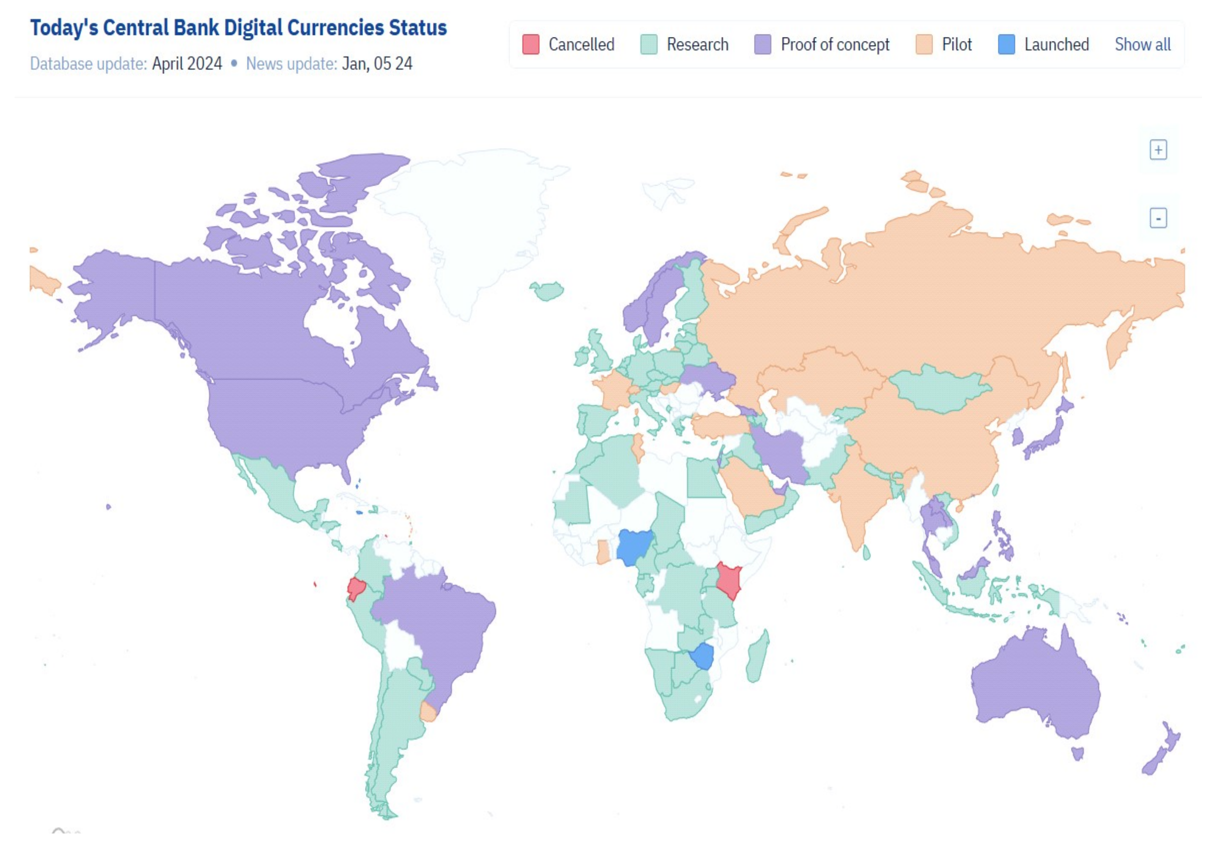
138 Czech Prime Minister stated that adoption of the euro is not favoured and the country does not yet even meet the criteria for adopting the single currency. Expat CZ, 'Explained: Why Czech PM is Saying 'not yet' to Euro Adoption'. *ExpatCZ, Prague, Czech Republic*, 5 January 2024. <https://www.expats.cz/czech-news/article/fiala-czechia-is-not-yet-ready-for-euro-adoption> accessed 30 April 2024.

139 The Danish Central Bank's analysis report states that the dominant role of the Danish krone in Denmark will limit the use of the digital euro for domestic payments. For example, salaries are paid up in *kroner*, as is the case for all payments to and from the public sector – Dansmark Nationalbank, 'Digital Euro – Potential Implications for Payments, Fixed Exchange Rate Policy and Financial Stability in Denmark'. *Dansmark Nationalbank*, 24 November 2023, page 4. <https://www.nationalbanken.dk/media/4onlz0lo/digital-euro-potential-implications-for-payments-fixed-exchange-rate-policy-and-financial-stability-in-denmark.pdf> accessed 30 April 2024.

Although the current legal design has made the digital euro a white elephant, with complicated legal, political and economic issues and concerns surrounding its introduction, it still has more advantages than disadvantages. In one way or another, the disadvantages and risks can be further adjusted in practice or at the regulatory level. The predominance of the benefits makes the digital euro an inevitable step towards a real revolution in the financial world. Its rapid introduction should be welcomed.

Appendices

Appendix 1: The Current Global Map of CBDC Research. CBDC Tracker, 'Today's Central Bank Digital Currencies Status' (CBDC Tracker) <https://cbdctracker.org/> accessed 30 April 2024



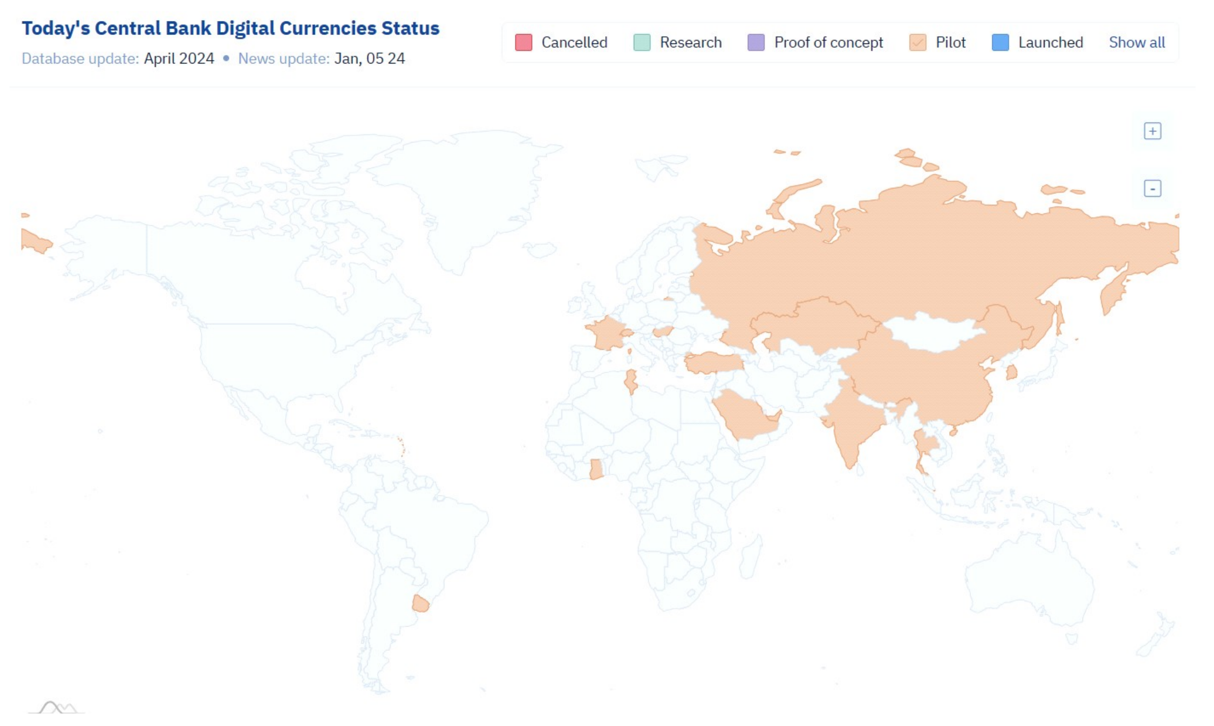
Appendix 2: The List of Countries Where CBDC is Being Launched. CBDC Tracker, 'Today's Central Bank Digital Currencies Status' (CBDC Tracker) <https://cbdctracker.org/> accessed 30 April 2024

☆ Digital currency	Country / Region	Central Bank(s)	Announcement Year	Status	Update rate
☆ JAM-DEX	Jamaica	Bank of Jamaica	2023	Launched	
☆ ZiG	Zimbabwe	Reserve Bank of Zimbabwe	2021	Launched	
☆ e-Naira	Nigeria	Central Bank of Nigeria	2021	Launched	
☆ Sand Dollar	Bahamas	Central Bank of Bahamas	2017	Launched	

Appendices (Cont.)

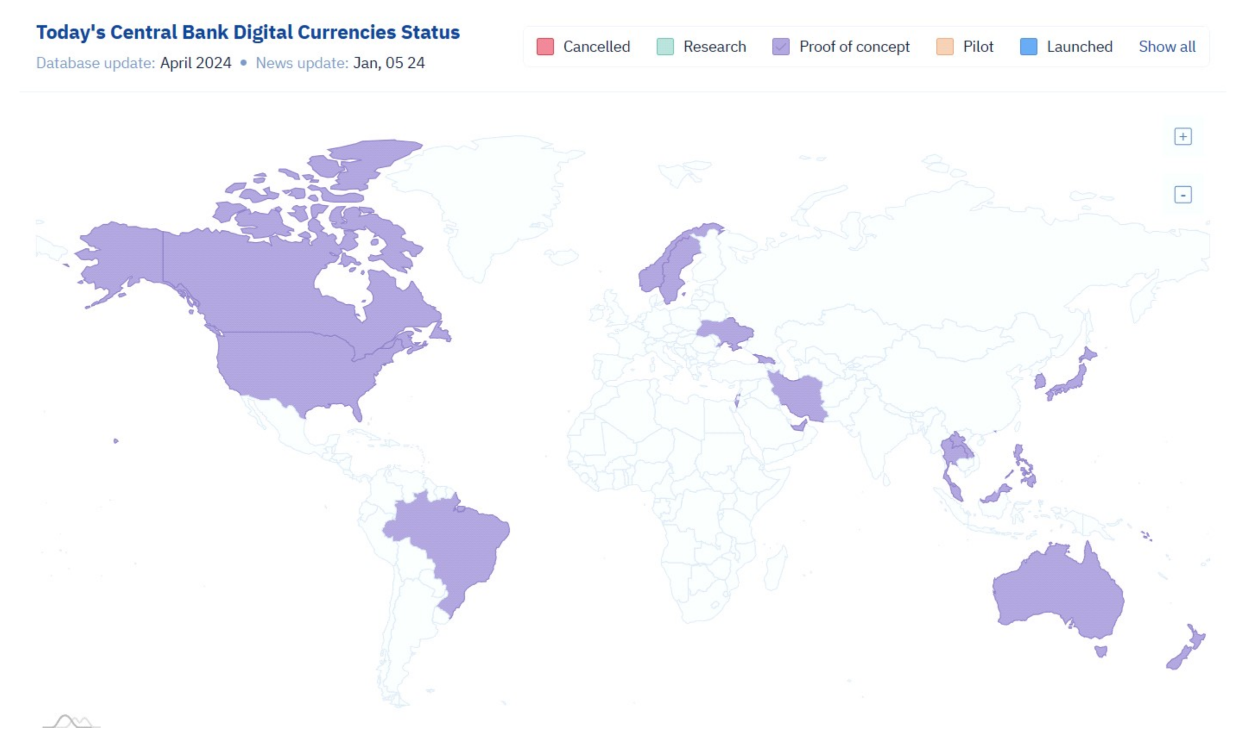
Appendix 2: The World Map of Countries Where CBDC is Being Launched. CBDC Tracker, 'Today's Central Bank Digital Currencies Status' (CBDC Tracker) <https://cbdctracker.org/> accessed 30 April 2024

Appendix 3: The World Map of Countries Where CBDC is Being Piloted. CBDC Tracker, 'Today's Central Bank Digital Currencies Status' (CBDC Tracker) <https://cbdctracker.org/> accessed 30 April 2024

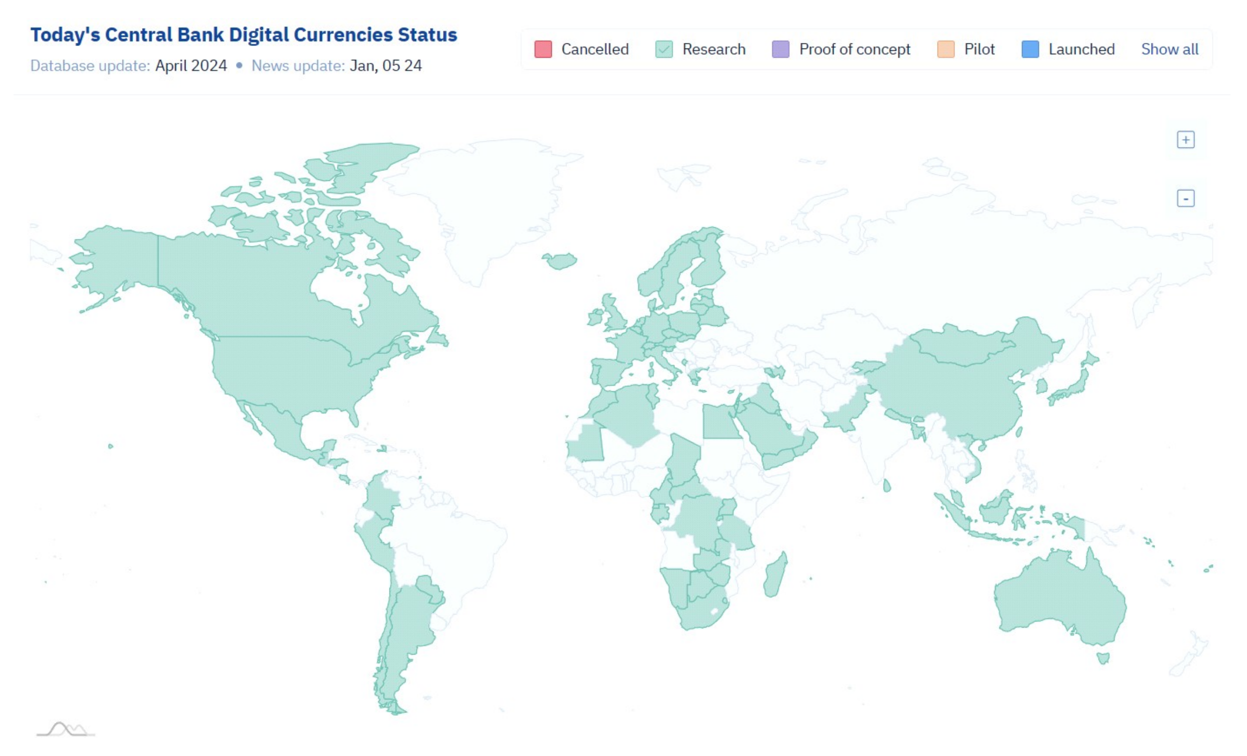


Appendices (Cont.)

Appendix 4: The World Map of Countries Where CBDC has been Proved as a Concept. CBDC Tracker, 'Today's Central Bank Digital Currencies Status' (CBDC Tracker) <https://cbdctracker.org/> accessed 30 April 2024

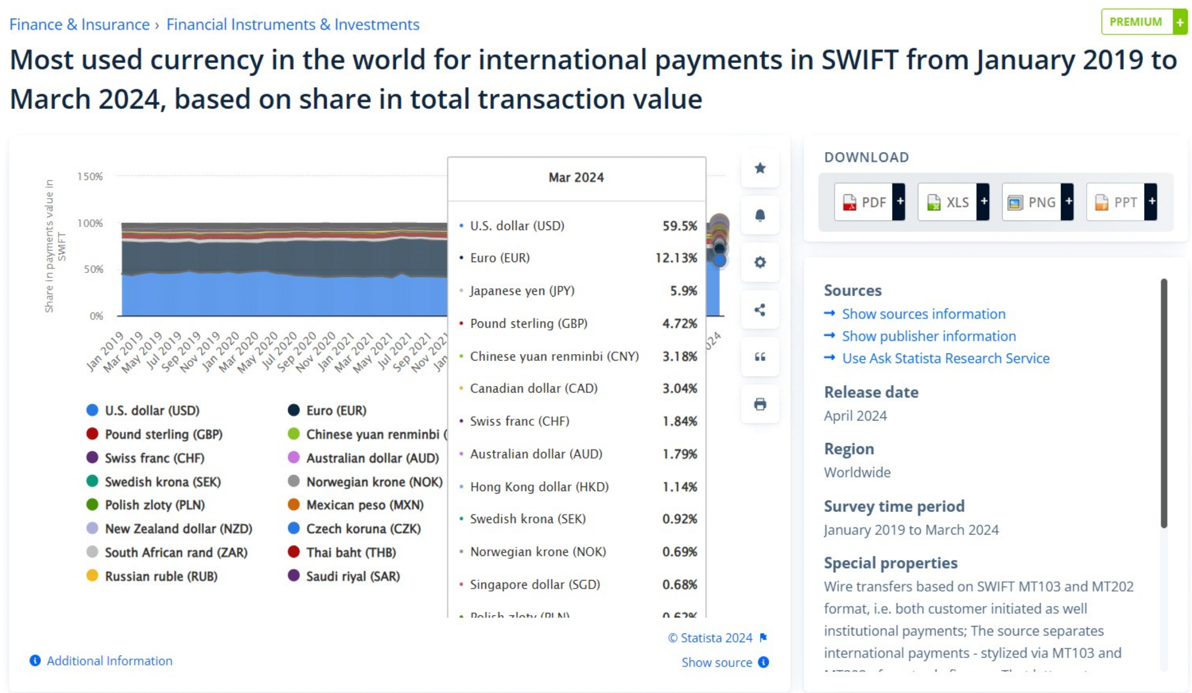


Appendix 5: The World Map of Countries Where CBDC is Being Researched. CBDC Tracker, 'Today's Central Bank Digital Currencies Status' (CBDC Tracker) <https://cbdctracker.org/> accessed 30 April 2024

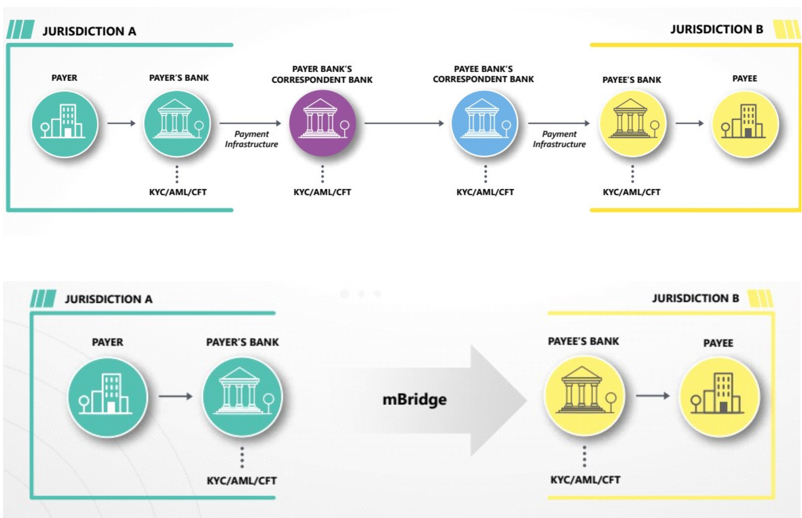


Appendices (Cont.)

Appendix 6: The World Convertible Currency Turnover, as of March 2024. Statista, 'Monthly International Payments Currency Share in SWIFT 2019-2024' (Statista, 26 April 2024) <https://www.statista.com/statistics/1189498/share-of-global-payments-by-currency/> accessed 30 April 2024



Appendix 7: Traditional Banking Transaction Model versus New Proposed System Interoperable with CBDC. BIS Innovation Hub, 'Project mBridge Update' (BIS Innovation Hub, October 2023), page 3, <https://www.bis.org/innovation_hub/projects/mbridge_brochure_2311.pdf> accessed 30 April 2024



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