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Currency tokenisation race:

Public institutions
or private innovators?



The Research Focus series

The *Research Focus* series is an initiative of the **Macro Research Team of Minerva Investment Management Society**.

The series provides concise, data-driven analysis of macroeconomic and financial developments, with a particular focus on their policy and market implications.

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Introduction

Money has been one of the major innovations of mankind, enabling trade and saving, and driving economic growth by improving the allocation of resources. Yet it is experiencing a profound evolution with the development of **distributed ledger technology** (DLT), a digital record based on cryptographical consensus of nodes, that **shifts money from physical tokens or scriptural money to digital protocols**.

While its three functions- unit of account, medium of exchange store of value- remain unaffected, understanding the shift from traditional cash to digital money requires to go back to the concept of **money as a trade technology**: money has a memory function (Kocherlakota, 1996) in the sense that the monetary token (the coin) transferred from the buyer to the seller proves that the buyer holds property of this token from a past exchange, and has the necessary purchasing power to engage in the present transaction, thereby avoiding double-spending.

This mirrors the decisive function of the ledger: it is a record-keeping device that allows to settle transactions between agents who evidentially are the owners of the assets to be exchanged.

While scriptural money and digital payment systems are firmly established in most economies, the emergence of digital money leads to the crossroad of two major novelties relevant for finance. First, the blockchain, an application of the DLT and potential economic game-changer that impacts not only the way we trade, save and invest, but also the way we generally deal with data in the future. Second, the “distributed” nature of that same technology that revives the economic debate about the efficiency of competition among privately-issued currencies.

While ongoing technological and institutional evolution makes the present topic quite uncertain to navigate, it seems vital to develop analysis in order to anticipate rifts and identify perspectives for the international monetary system. In this context, we point out that privately-issued crypto tokens have no legal tender, and therefore refer to them as “crypto-assets” in accordance with monetary literature.

Are crypto-assets and digital currencies reshaping the international monetary system? We base our analysis on both government-issued central bank digital currencies (CBDC) and privately-issued cryptocurrencies, providing an initial worldwide overview followed by a particular focus on the EU. Following an introduction to the technical framework that underpins tokenization (Section 2), we investigate the shifts that may arise in digital payment infrastructure (Section 3) and in the revenue from seigniorage (Section 4). Eager to set digital currencies in the context of the international monetary system, our analysis then focuses on the impact on the transmission mechanism of monetary policy (Section 5) and financial markets (Section 6), as well as geopolitical consequences (Section 7).

Definitions and the concept of tokenization

After years of proof-of-concept, banks and institutions are implementing blockchain in real use cases to streamline traditional finance. Momentum has coalesced around three core applications: (1) **tokenization of real-world assets**¹; (2) **blockchain-based clearing and settlement**; (3) **cross-border payments**.

Swiss blockchain exchange shows how even global institutions are leveraging tokenization for capital markets (World Bank, 2024). Tokenization consists of the creation of an online share certificate or bond certificate. This can apply to investments into funds, equity bonds, real estate, all then capable of being **traded 24/7** because of the automated ownership transfer and records. Over the past years pilot programs have started to bring these theoretical benefits into reality through big financial institutions.

Tokenized bonds and securities: In May 2024, the World Bank issued a CHF 200 million digital bond on Switzerland's SIX Digital Exchange, settled using a Swiss franc wholesale CBDC (World Bank, 2024). The May 2024 bond issuance made the World Bank the first international issuer to use a blockchain-based CBDC for bond settlement. In a similar vein, Hong Kong's government sold HK\$800 million (\$100 million) of tokenized green bonds in early 2023, using Goldman Sachs' DLT platform to achieve an efficient, fully digital issuance. Incumbent firms like BlackRock, WisdomTree, and Franklin Templeton also offer tokenized fund shares that investors can buy and sell via blockchain networks (Avalanche, 2024; Citigroup Inc., 2024).

Beyond public markets, tokenization is unlocking traditionally illiquid assets. Real estate, for instance, is seeing early experiments where property trusts issue tokenized shares to broaden investor access. This holds true also for private equity and credit. Citi recently completed a proof-of-concept with asset manager Wellington to tokenize a private fund on an Avalanche blockchain subnet, embedding the fund's legal rules into smart contracts (Citigroup Inc., 2024).

Due to the increase in blockchain implementation, trades that once took days to settle can clear in seconds, and assets that were hard to split (like commercial real estate or fine art) can be fractionalized to reach new investors. This not only saves costs but also adds revenue streams. The current embrace of tokenization signals a belief that finance can be made more accessible and efficient without sacrificing trust.

The impact of digital currencies on payment systems

Smarter Clearing and Settlement

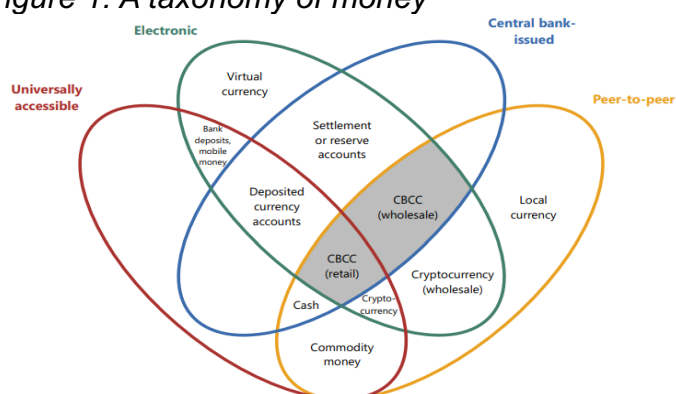
Blockchain has revolutionized trade clearing, settlements and the administrative work necessary to transfer ownership. The behind-the-scenes workings of finance, trade clearing, settlement, and custody are also being reimaged through blockchain and smart contracts. Historically, after a trade is executed, brokers confirm trades, clearinghouses manage counterparty risk, custodians exchange assets, and

¹ As BlackRock's CEO, Larry Fink, remarked in early 2024, "We believe the next step (...) will be the tokenization of financial assets, and that means every stock, every bond (...) will be on one general ledger".

settlement can take several days or more. By using a distributed ledger as a single source of truth, many of these steps can be automated or compressed, potentially enabling same-day or simultaneous settlement.

In 2024 a coalition of financial institutions recorded over 350 simulated transactions simultaneously through blockchain operations, demonstrating real-time settlements and therefore eliminating traditional counterparty risk in trades. The trial was called the Canton Network (Canton Network, 2025). Traditional exchanges and clearinghouses are likewise embracing blockchain to modernize markets. The London Stock Exchange Group (LSEG) announced plans in late 2023 to build an “end-to-end digital market ecosystem” using blockchain for issuing, trading, and settling traditional financial assets. However, the transition is non-trivial. Early attempts illustrate the challenges: Australia’s ASX spent years trying to replace its CHES clearing system with a blockchain solution, only to halt the project in 2022 after complexities proved overwhelming.

Figure 1: A taxonomy of money



Source: Bech et al. (2017)

Cross-border payments

JPMorgan’s Onyx (now “Kinexys”) platform illustrates how **banks are using private blockchain networks for 24/7 cross-border transfers**. Perhaps the most immediate impact of blockchain for everyday banking is in cross-border payments. Today’s international transfers often snake through a chain of correspondent banks, with fees and settlement delays (1–3 days is common) accumulating at each step. Blockchain-based payment networks are tackling this friction by enabling banks and payment providers to transact directly and instantly, using tokenized money that moves as fast as data. Over the last year, bank activity has surged in the usage of tokenization and blockchain to facilitate automated and faster movement of money across the world. Some banks have launched their own digital currencies and are experimenting with digital assets pegged to the other assets such as gold or fiat currencies (stablecoins), all aimed at making cross-border payments as quick and seamless as a Revolut transfer.

J.P. Morgan was one of the first major banks to launch a stablecoin, and it’s now gaining real adoption. JPM Coin, live on the bank’s Onyx blockchain network (recently rebranded as Kinexys Digital Payments), is essentially a tokenized deposit used for

24/7 wholesale payments. In 2024, Brevan Howard Digital² became one of the latest clients to start using JPM Coin for cross-border transfers and settlements. By holding JPM Coin, Brevan can instantly sweep money between its accounts in London, New York, Singapore, etc., without waiting for wire cut-off times. The result is cash in the right place at the right time, available on demand even outside normal banking hours. It's a glimpse of how bank-backed digital cash can make international treasury operations much more efficient (Treasury Today, 2024).

Mastercard had launched its Multi-Token Network (MTN) initiative and, in late 2024, announced a partnership with J.P. Morgan's Onyx/Kinexys. The goal is to let mutual bank clients settle **B2B foreign exchange and payments through a single API**, using blockchain to provide greater transparency and near-instant finality across borders. In other words, a company could pay a supplier abroad and have the payment settled via a tokenized bank deposit and confirmed on both sides within minutes, all through the familiar Mastercard interface (Mastercard, 2024).

Another prong of innovation is collaborative projects that bring **multiple banks or central banks onto shared ledgers**. For example, the Swift network, which underpins most international bank wires, has been experimenting with blockchain interoperability (Swift, n.d.).

On the public-sector side, **central banks** are directly testing cross-border CBDCs. Project *mBridge*, led by the Bank for International Settlements with central banks of China, Hong Kong, Thailand, UAE and others, has built a multi-CBDC platform on blockchain aiming for instant foreign exchange settlements. In a pilot (late 2022 into 2023), 20 banks across four countries conducted over 160 foreign exchange and trade payment transactions on *mBridge*, with values totalling around HK\$171 million (≈\$22 million) settled in seconds (Bank for International Settlements, 2024).

The impact of digital currencies on seigniorage

Digital currency and seigniorage: Who earns the “money-printing” rent?

At its core, seigniorage is very simple. When a central bank issues money, it receives interest-bearing assets in return, usually government bonds, while paying little (or no) interest on the money it created. **The difference between what the central bank earns on its assets and what it pays on its liabilities is seigniorage**, and it ultimately flows to the government budget.

In the cash world this mechanism is tangible: we hand over a banknote that costs only a few cents to print but is worth 10, 20 or 50 units of currency. The same principle applies to digital central bank money, the reserves that commercial banks hold at the central bank. What changes with CBDCs and privately issued digital money is who gets to issue the most attractive form of money and therefore collects this rent.

CBDC: same balance sheet logic, new political economy

The ECB's recent work on the impact of CBDC shows that, from a balance-sheet point of view, **a retail CBDC is just another monetary liability of the central bank**,

² the crypto division of hedge fund Brevan Howard

alongside banknotes and reserves. When households swap banknotes for CBDC, the structure of central bank liabilities changes but the overall seigniorage from that part of the money stock is broadly preserved: the central bank still holds interest-bearing assets on the asset side and low-cost liabilities on the other (Bindseil et al., 2024).

Where things get more interesting is when CBDC substitutes not only for cash but also for commercial bank deposits. If deposits migrate into CBDC, central banks' balance sheets expand because they now hold more assets to back the larger amount of central bank money. **Banks lose a cheap and stable source of funding** and may need to replace it with more expensive wholesale funding or central bank credit. Whether this is fiscally good or bad depends on design choices (Bindseil et al., 2024):

- If CBDC is remunerated at a rate significantly below the policy rate, seigniorage could rise because the central bank earns policy-rate returns on its assets while paying less on its CBDC liabilities.
- If CBDC is remunerated close to policy rates, the margin shrinks and seigniorage falls³.

This is one reason why many emerging CBDC designs rely on caps and tiered remuneration, for example, paying zero or a low rate on basic balances and a lower or even negative rate above a threshold. These features are explicitly aimed at limiting large-scale shifts from bank deposits into CBDC and at keeping the fiscal and financial-stability implications manageable. (IMF, 2024; Bindseil et al., 2024)

So CBDC itself does not automatically “destroy” seigniorage. It shifts where it comes from (more digital, less cash) and makes it more sensitive to interest-rate policy and CBDC design.

Stablecoins: Private seigniorage in public-currency clothing

While CBDC keeps seigniorage within the public sector, stablecoins channel it to private issuers. A dollar-denominated stablecoin is backed by reserves in safe assets, short-term government securities, repos and bank deposits, that generate interest income. Yet the token itself often pays little or no interest to holders. In effect, the issuer earns seigniorage: it holds interest-bearing assets against a liability that behaves like money but is remunerated very cheaply.

BIS (2023) shows how sensitive this business model is to the global interest-rate environment. When U.S. monetary policy tightens, the total market capitalization of stablecoins falls markedly, while assets in traditional money market funds actually rise (Aldasoro et al., 2024). In other words, as interest rates go up, investors prefer regulated, interest-bearing instruments, and the scope for stablecoin issuers to skim off large seigniorage rents shrinks.

³ Sustained periods of very low interest rates also squeeze seigniorage, regardless of CBDC, because the yield on central bank assets trends towards zero.

From a public-finance perspective, however, what matters is that this rent, when it exists, does not accrue to the domestic treasury. A global, offshore stablecoin pegged to a major currency can attract users from all over the world, earning interest income in the financial center where its reserves are held, with limited local oversight and no automatic pass-through to local taxpayers. **The more payments migrate to such instruments, the more seigniorage leaks out of domestic public balance sheets and into private (foreign) hands.**

Cross-border reallocation of seigniorage: The BIS experiment

Digital money also changes where seigniorage is earned geographically. **The widespread adoption of foreign CBDCs or stablecoins can accelerate currency substitution**, especially in economies with a history of inflation or weak institutions (IMF, 2024). If residents of a small open economy prefer to hold dollar or euro stablecoins, or even foreign CBDCs in the future, the domestic central bank's monetary liabilities shrink. Its ability to generate seigniorage and to act as lender of last resort may erode, while the issuing foreign jurisdiction gains both monetary influence and fiscal revenue. At the same time, **new multi-CBDC platforms are being designed explicitly to support the use of local currencies in cross-border payments**. Project *mBridge*, led by the BIS Innovation Hub with several Asian and Middle-Eastern central banks⁴, is a good example. It builds a common platform, the *mBridge* Ledger, on which each central bank issues its wholesale CBDC to be used by domestic commercial banks for real-time cross-border payments and FX trades (BIS, Innovation Hub, 2023). One of its stated goals is to make it easier to settle international trade directly in local currencies, rather than always routing through the US dollar. If such arrangements scale, they could redistribute seigniorage away from the traditional reserve-currency issuers towards a more multipolar set of monetary authorities.

The impact of digital currencies on monetary policy in the EU

The ECB decision to advance a digital euro stems from (1) structural and (2) strategic imperatives. Digital payments now dominate euro-area transactions (e.g., U.S. tech networks, China's e-CNY). At the same time, years of quantitative easing (QE) have left the ECB with a large balance sheet but a narrow set of transmission tools. A CBDC promises to maintain public access to risk-free money and modernize the monetary-policy operating framework.

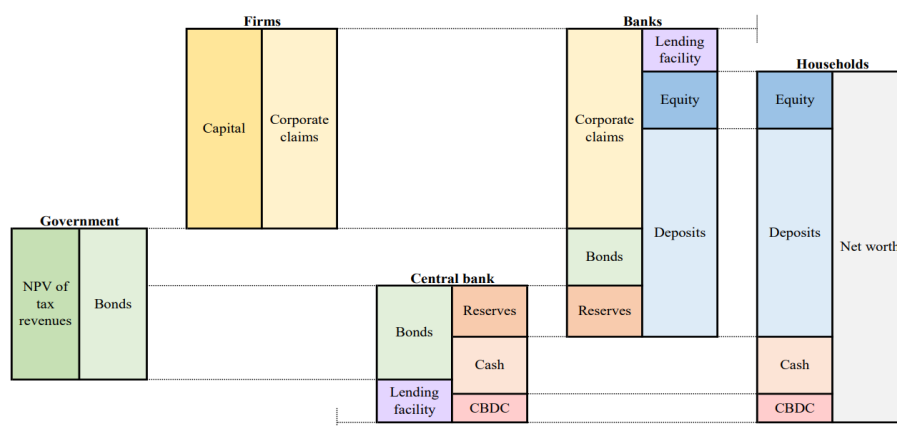
The ECB is pursuing the digital euro to extend the benefits of cash into digital payments, ensuring that central bank money remains accessible and sovereign in an increasingly digital economy (Cipollone P., ECB Conference?, November 2025). Europeans currently depend on non-European card networks and platforms for a large share of their digital transactions, leaving the euro area reliant on "the kindness of strangers." **The digital euro is thus intended to preserve Europe's monetary autonomy, strengthen resilience and competition in retail payments, and**

⁴ List of central banks actively participating in Project *mBridge*: People's Bank of China (PBoC), Hong Kong Monetary Authority (HKMA), Bank of Thailand, Central Bank of the United Arab Emirates, Saudi Central Bank.

guarantee freedom of choice for citizens between public and private means of payment.

The stated goals of the ECB - financial inclusion, payment resilience, and strategic autonomy - **could be masking deeper macro motives: preparing a post-QE framework** where liquidity and interest rates can be steered directly through public holdings of digital money. In other words, a CBDC changes the composition of central-bank liabilities, giving policymakers a retail-level lever over liquidity⁵.

Figure 2: Balance sheets of the different consolidated sectors of the model economy



Source: Abad et al. (2024)

International Experiences

Experience abroad shapes the ECB's gradualism. **China's e-CNY demonstrates that strict tiered access and non-remuneration prevent disintermediation** while expanding digital payments. This informs the ECB's two-tier design, where payment-service providers distribute the currency while the Eurosystem maintains the ledger.

Other cases provide caution. Nigeria's e-Naira achieved a rapid launch but negligible use; **the United States remains on hold over privacy and institutional concerns**. Within Europe, half of German households would open a digital-euro account even if unremunerated, but that in stress periods the same trust could trigger "fast disintermediation" (Bidder, Jackson, and Rottner, 2024).

ECB (*Progress on the Preparation Phase of a Digital Euro Closing Progress Report*, 2025) user research indicates that adoption will hinge on trust and usability: people, especially vulnerable consumers, prefer a universally accepted, free-to-use, simple, and intuitive payment method with offline capability, in-person support, and delivery via trusted banks or public bodies; accordingly, the design centers on cash-like privacy offline and pseudonymous online payments.

⁵ Caps of €1,500-€3,000 per person, balance inclusion and stability, thresholds later embedded in the ECB's blueprint.

Theoretical Foundations

New Keynesian Frictions

Abad et al. (2024) consider CBDCs in a New Keynesian model with heterogeneous banks and a frictional interbank market calibrated to the euro area. CBDC reduces deposits and reserves; if adoption exceeds ca. 4% of GDP, the policy framework shifts from an ample-reserves “floor” to a “corridor” regime in which the interbank rate tightens. Output effects remain small ($GDP \downarrow 0.25\%$ at 14 % CBDC/GDP), but credit provision declines unless the central bank expands refinancing, effectively a QE offset. The model formalizes why the ECB insists on holding limits and liquidity backstops.

DSGE Welfare Models

Barrdear and Kumhof (2016) found that issuing a CBDC worth 30% of GDP backed by government bonds could raise output by as much as 3%, as lower real rates stimulate investment, distortionary taxes, and monetary transaction costs. Davoodalhosseini (2021) finds an increase of 0.15-0.34% in consumption in Canada and the U.S., but coexistence with cash significantly restricts policy freedom. These DSGE results suggest that a fully digital regime maximizes efficiency but at institutional cost, hence the ECB’s preference for coexistence.

New Monetarist Channels

Keister and Sanches (2022) use the Lagos-Wright framework to show that targeted CBDCs - competing only with cash or only with deposits - raise welfare, while a universal CBDC risks crowding out banks. Optimal design requires imperfect substitutability and controlled remuneration, precisely the ECB’s preferred two-tier structure.

Market-Structure Models

Andolfatto (2020) demonstrates that in monopolistic banking, CBDC competition raises deposit rates, which in turn leads to greater financial inclusion and desired saving without cutting lending, provided its rate is less than or equal to interest on reserves. Garratt, Yu, and Zhu (2022) extend this to a duopoly, observing that higher CBDC rates improve policy pass-through but erode small-bank margins, whereas greater “convenience value” (privacy, usability) narrows competitive gaps. The ECB’s focus on accessibility rather than high yield follows this logic.

Nominal Fragility and the “CBDC Trilemma”

Fernández-Villaverde et al. (2021) merge Diamond-Dybvig banking with nominal contracts. A consolidated central bank cannot simultaneously achieve price stability, monetary trust, and social optimality. A rigid price-stability commitment can spark “runs on the price level,” while flexible inflation deters them. The ECB’s insistence that the digital euro not be a policy instrument is, in part, a credibility defense against this trilemma.

Monetary-Policy Transmission

Across models, CBDC consistently strengthens the interest-rate pass-through from policy to the real economy. Bhattarai et al. (2024) show that a remunerated CBDC directly links households' returns to the policy rate when the CBDC is the policy instrument, forcing banks to adjust deposit rates and compressing the wedge between official and retail rates. Andolfatto (2020) reaches similar conclusions in a monopolistic setting. Garratt et al. (2022) find that transmission gains depend on design: raising remuneration enhances pass-through but increases concentration risk; raising convenience achieves much of the same at lower cost.

Abad et al. (2024) add a system-wide mechanism. As deposits migrate to CBDCs, reserve scarcity shifts the euro-area framework from a floor (with ample reserves) to a corridor, amplifying interbank rate sensitivity. To prevent this, the ECB must replenish reserves through asset purchases or targeted lending—a micro-foundation for future QE.

At the limit, Bordo and Levin (2017) argue that a universal, interest-bearing CBDC would let the ECB bypass interbank markets altogether, the policy rate would simply be the interest on digital euros. Though officially disclaimed, tiered remuneration would give the ECB this latent capability, turning the digital euro into a potential direct-rate instrument if conventional channels weaken.

However, transmission gains hinge on take-up and substitutability. With modest adoption, the effect is marginal, while with widespread use, the ECB gains fine control over household liquidity but also bears responsibility for safeguarding bank stability.

Additionally, Cipollone (2025) linked the transmission motives explicitly to sovereignty and resilience. He explained that the digital euro would ensure the Euro zone retains a domestic, public anchor for digital payments, reducing dependence on non-European infrastructures. By allowing households and merchants to transact in a European system operated on European infrastructure, the ECB aims to secure strategic autonomy while safeguarding the effectiveness of monetary policy in a digital economy.

CBDC, Quantitative Easing, and Fiscal Interactions

From QE to Retail Liquidity

CBDC generalizes QE, the central bank still manages its balance sheet, but its liabilities now circulate among citizens rather than banks.

Abad et al. (2024) show that CBDC adoption shifts households from deposits into CBDC, draining banks' reserves. Therefore, preserving the floor framework requires expanding central bank assets via government bond purchases or targeted bank lending to keep reserves ample. Assenmacher et al. (2024) confirm that bond purchases or credit operations can smooth output during the transition.

Fiscal–Monetary Links

Bacchetta and Perazzi (2021) argue that CBDC can increase seigniorage revenue and reduce distortionary taxes, but generous remuneration erodes these benefits. Redistribution occurs from banks to households as deposit rents fall. Fernández-Villaverde et al. (2021) warn that fiscal pressure to exploit this funding could imperil price stability, exactly the “CBDC trilemma” mentioned previously. The ECB’s pledge of cost neutrality and legislative oversight is thus both macroprudential and legal.

The “Helicopter” Capability

An account-based CBDC enables direct transfers, monetary stimulus delivered straight to citizens. While politically sensitive, **the infrastructure makes such “helicopter money” feasible** in future crises. For example, **the ECB publicly denies this intent**, yet its architecture, central accounts managed by payment providers, renders it a **potential emergency channel**.

Crisis Planning and Geopolitical Imperatives: Is there a chance for the euro?

Historically, the ECB has circumvented intermediaries through QE and pandemic-era asset purchases. A digital euro institutionalizes that capacity, providing a contingency instrument if bank transmission fails. Keister and Sanches (2022) show that even a passive CBDC changes equilibrium liquidity allocation, granting the central bank direct control of funding costs in crises.

The geopolitical rationale is equally strong. Brunnermeier et al. (2019) warn that **the global economy is moving toward “digital-currency areas” dominated by large issuers or platforms**. Without a European CBDC, the euro risks erosion by the e-CNY or U.S. dollar-backed stablecoins. The digital euro is therefore a strategic shield for monetary sovereignty and the euro’s international role. However, the current plan of full implementation by 2029 may be too slow to avoid the threat of the mentioned technologies becoming mainstream in digital payments. After twenty-five years of the euro, Europe still lacks a fully pan-European digital payment instrument (Cipollone, 2025). The digital euro is meant to close this gap by providing a European digital payment solution built entirely on European infrastructure and governed by European law, thereby ensuring that the euro remains a stable unit of account and medium of exchange in an increasingly competitive global landscape.

Privacy, Stability, and Design Trade-Offs

Privacy and stability are the ECB’s main social constraints. Official documents promise “cash-like” privacy for small payments, pseudonymity, offline functionality, and separation of transaction data from identity. This addresses consumer concerns but threatens banks’ data-driven business models. Losing transaction data weakens banks’ competitive advantage, reducing profits and possibly credit supply (Garraat et al., 2022)

Stability concerns dominate the quantitative literature. Bidder et al. (2024) show that unrestricted CBDC access generates bank runs during stress, while caps of €1,500-€3,000 or tiered interest neutralize this risk. Abad et al. (2024) likewise find negligible macro effects for adoption below 4% of GDP, but credit tightening beyond 10%.

These thresholds guide the ECB's design, a two-tier system with holding limits and differentiated remuneration.

Privacy and freedom are central to public acceptance. Cipollone (2025) confirmed that the digital euro will never be programmable money and that offline use will guarantee cash-like anonymity, while online transactions will be protected by encryption and pseudonymization. Independent data-protection authorities will supervise compliance with EU law. He further emphasized that no one will be forced to use the digital euro and that it will always complement, not replace, physical cash.

Is there an outlook for the Digital Euro?

The digital euro emerges as a transformative yet stabilizable innovation. Models converge on 5 insights:

- **Enhanced transmission.** By providing a risk-free alternative to deposits, CBDC strengthens the pass-through of policy rates to households and firms.
- **Operational flexibility.** CBDC coexists with balance-sheet tools; if reserves tighten, asset purchases/credit operations can preserve the operating framework while CBDC shifts central-bank liabilities toward households.
- **Fiscal implications.** Seigniorage gains and potential direct-transfer capabilities blur monetary–fiscal boundaries, demanding strict governance.
- **Design discipline.** Tiered remuneration, caps and intermediated access preserve bank stability and public trust.
- **Strategic autonomy.** As private and foreign digital monies expand, the digital euro secures the euro's role as a stable store of value and unit of account.

Under the 5 conditions, the digital euro can modernize policy transmission without destabilizing intermediation. Its sustainability will depend not on technology but on credibility and restraint, ensuring it remains a complement to, not a

substitute for, Europe's banking system and central bank money continues to serve the public interest in a wholly digital economy.

Impact of digital currencies on financial markets

Digital currencies are changing how payments, funding and risk transfer work in practice. In the euro area, a retail CBDC (digital euro), stablecoins and bank-tokenized deposit pilots are advancing in parallel. There are two questions: How are banks likely to react to these developments? How can institutional investors hedge the subsequent risks? Let us therefore put an emphasis on design choices (holding limits, legal tender, privacy), funding and money-market channels, and on the new regulatory perimeter under MiCA (Markets in Crypto-Assets regulation of the European Union).

The reaction of the banking system to digital currencies

CBDC design and bank intermediation. A main objective for a retail CBDC is to preserve the monetary anchor while limiting the loss of bank deposits. The European Commission's proposal makes a digital euro legal tender with mandatory acceptance (subject to narrow exceptions) and specifies that it is not programmable money (European Commission, 2023). There are three main safeguards: (1) individual holding limits; (2) no remuneration; (3) and a reverse waterfall linking wallets to bank accounts so payments above the limit draw from deposits (ECB, 2025). Research also distinguishes two types of deposit flows: "slow" substitution in normal times and "fast" outflows in stress (Bidder et al., 2025). Together, these elements shape banks' pricing, competition in payments, and the risks that investors need to monitor.

Stablecoins and MiCA (Markets in Crypto-Assets Regulation). Stablecoins are now central to crypto market liquidity. If they become very large, they could drain deposits from banks and, in periods of stress, trigger sales of safe assets that affect core fixed-income markets (Reuters, 2025). In the EU, MiCA brings e-money tokens and asset-referenced tokens under clear authorization, prudential and reserve rules, reducing uncertainty about how stablecoins are supervised and how they can compete in retail payments (EBA, 2025).

Tokenized deposits and market plumbing. Tokenized deposits are sight deposits recorded on a shared ledger (typically a permissioned blockchain). Legally they remain ordinary bank deposits, but they can be transferred and settled with programmable rules on that shared platform. The EBA has reviewed their main use cases and supervisory implications, while the BIS *Project Agora* studies how tokenized deposits could work together with wholesale CBDC in cross-border payments. Taken together, these initiatives are often described as a "bank money on new rails" response to the rise of stablecoins and retail CBDC (BIS, 2025).

Transmission to money markets. Changes in the level and stability of deposits tend to show up first in euro risk-free curves: €STR OIS and its basis to Euribor. For this reason, hedges around CBDC or stablecoin news usually rely on €STR futures and options (and, where relevant, Euribor futures) to manage profit-and-loss sensitivity to short-term rate moves and to shifts in the spread between risk-free and bank funding rates.

Institutional investors and hedging strategies

Correlation patterns and macro sensitivities. As more institutional investors entered crypto markets after 2020, the ups and downs of crypto and equities started to co-move, reducing traditional diversification benefits and making risk-on/risk-off episodes more pronounced (Adrian et al., 2022). For policy-related shocks (CBDC announcements, MiCA implementation, stablecoin incidents), hedging positions thus tends to focus on short-term interest rates, bank credit and bank equity, and the U.S. dollar, rather than on traditional safe havens such as gold.

Direct hedges with regulated crypto derivatives. For spot BTC/ETH or ETF positions, the main hedging tool is to take an opposite position in regulated futures and to complement it with options. On CME, Bitcoin futures (BTC) are cash-settled to

the CF BRR; options on these futures allow investors to build put or call strategies that limit losses while preserving some upside. The size of the hedge is typically chosen using a minimum-variance ratio,

$$h^* = \frac{\text{Cov}(\Delta P_a, \Delta P_h)}{\text{Var}(\Delta P_h)},$$

Cross-asset hedges for policy or regulatory shocks. Shocks to the banking system or payment infrastructure are often hedged using liquid European financial indices rather than crypto itself. A common approach is to hedge (i) equity risk with EURO STOXX Banks futures or options (Eurex FESB) and (ii) credit risk with the iTraxx Europe Senior Financials (5Y) CDS index. Changes in the funding mix are instead managed with positions in €STR OIS instruments, which are sensitive to short-term interest rates.

A simple working recipe. In practice any hedge is limited by market liquidity and risk limits, but the basic logic is simple. First, identify the events that matter (for example rulebook publications, legislative votes, or guidance on stablecoins). Second, measure how the portfolio moves relative to BTC/ETH futures, EURO STOXX Banks, iTraxx SenFin 5Y, and €STR OIS. Third, use the estimated h^* to size the hedge. Fourth, re-balance at a regular frequency (for instance weekly) or when volatility increases

Timeline & catalysts that move markets

Date	Milestone	Why markets care
2023–2025	Digital euro preparation phase (ECB)	Draft rulebook, selection of providers, work on privacy and offline use; helps investors to gauge the likely impact on banks and payment firms.
2026 (target)	Possible EU Regulation adoption	Opens the way to a formal pilot; clarifies legal tender status, acceptance rules and the tools to enforce holding limits.
2027 (indicative)	ECB pilot program	Live testing of the system; may change expected investment needs for banks and the pricing of payment services.
2029 (indicative)	Issuance window	Forces markets to take a view on long-run adoption and limits, with implications for money markets and bank equity and credit.

Source: Information and data provided by the European Central Bank (2025).

Takeaways

- Policy design (legal tender, holding limits, non-remuneration, privacy and offline features) determines how strongly the digital euro will affect banks' funding and payments business, and therefore which risks matter most for markets.
- As crypto has become more integrated with traditional markets, institutional exposures behave more like macro risk; hedging now routinely uses regulated futures and options together with equity, credit and rate instruments linked to banks.
- MiCA reduces uncertainty about the regulatory treatment of stablecoins, while tokenized deposits show how banks intend to offer "money on new rails"; both developments are most naturally hedged through positions in €STR, bank indices and foreign exchange.

Fragmentation risk: will digital money split the monetary system into blocs?

Digitalization is often sold as a force for frictionless global integration. In payments, central banks and international bodies have indeed used new technology to tackle the classic problems of cross-border transfers: high costs, slow settlement, complex compliance, and opaque fees. Multilateral payment platforms and fast-payment interlinkages can shorten transaction chains and reduce reliance on legacy correspondent banking networks. (BIS et al., 2023). Yet, the same wave of innovation also carries a less discussed risk: that **the international monetary system fragments into regional "digital spheres of influence"**, each with its own standards, rules and infrastructures.

The promise and politics of multilateral platforms

The BIS, IMF and World Bank describe multilateral platforms as payment systems that are "multi-jurisdictional by design". They allow banks in different countries to send and receive payments directly on a shared infrastructure. (BIS et al., 2023). Instead of a chain of correspondent banks, there is a single platform with a common rulebook.

Their report highlights two ways these systems can evolve. A **growth approach** expands existing regional platforms, for example in Africa, the Caribbean or the euro area, to more currencies and participants. A **greenfield approach** builds a brand-new global infrastructure from scratch, with harmonized rules and technology but much harder governance questions (BIS et al., 2023).

In theory, both paths should make global liquidity more integrated by shortening payment chains and standardizing data. In practice, politics and regulation intervene. Each jurisdiction aims at preserving monetary sovereignty, enforcing its anti-money

laundering legal framework (AML/CFT in U.S.), data and capital-flow rules, and, increasingly, maintaining insulation from foreign sanctions. This makes it tempting to build regional platforms that are highly efficient internally but only loosely connected to others.

Project *mBridge* again illustrates this tension. Technically, it is a multi-CBDC common platform that can make cross-border payments nearly instant and far cheaper than traditional correspondent banking, and recent pilots show settlement times of seconds and large cost savings (BIS, 2023). But the project is also explicitly designed so that each central bank retains full control over issuance, redemption, FX rules and capital-flow measures on the platform. That is a strength from a sovereignty perspective, and a selling point to participants, but it also makes it easier for the world to split into competing multi-CBDC zones if other blocs build similar platforms that are not fully interoperable.

Fast-payment links: bridges or parallel lanes?

At the retail level, central banks are interlinking domestic fast-payment systems so that a person using an instant-payment app at home can send money abroad with the same ease. The BIS's 2024 report on linking fast payment systems (FPS) explains how bilateral links between two national systems and hub-and-spoke arrangements connecting many systems can extend the domestic "pay in seconds" experience across borders. (CPMI, 2024).

These arrangements promise lower costs, faster transfers and greater transparency, but they also raise complex questions of governance, risk-sharing and oversight. The report notes that the links do not introduce fundamentally new risks compared with existing payment systems, but they can change the scale and the way risks materialize: cyber incidents can propagate, fraud can be harder to handle across legal systems, and legal uncertainty can arise from overlapping regulations (CPMI, 2024). Many FPS links are thus being built on a corridor or regional basis, reflecting existing economic ties and legal compatibility. From a global perspective, that is rational, starting where it is easiest. Nevertheless, it also risks creating parallel lanes: well-connected regions with dense instant-payment links internally, but weaker connections between blocs where legal or political frictions are higher.

Fragmentation and the geography of liquidity

Why does all this matter for the international monetary system and seigniorage?

If cross-border payments increasingly run through region-specific CBDC platforms and FPS hubs, liquidity may become "sticky" within blocks. A bank that holds and uses CBDC on *mBridge*, for instance, may find it easier and cheaper to trade with counterparties in participating jurisdictions than with others. Similar dynamics could emerge in a euro-centric or dollar-centric network centered on systems like TIPS or *FedNow*-linked platforms. Over time, this shapes where financial activity, and thus demand for different currencies, is concentrated.

Fragmentation could harden currency blocs. If trade between two regions is routed through separate infrastructures with limited interoperability, it becomes natural to

settle within each bloc's dominant currency. That would reinforce regional seigniorage centers: the issuers of currencies most deeply embedded in digital infrastructures gain both monetary influence and fiscal revenue, while others risk being locked into someone else's system or marginalized.

Fragmentation can undermine some of the benefits digital money is supposed to bring to households and firms. For a small exporter, the best-case scenario is one in which a single payment instruction, perhaps from a mobile wallet, can reach any customer or supplier worldwide, with predictable fees and full transparency. The worst-case scenario is a world of "walled gardens", where each corridor requires a different app, compliance process and set of intermediaries.

Governments are clearly aware of this tension. Both the multilateral platforms report and the FPS interlinking work stress the importance of common standards, strong governance and cross-border cooperation precisely to avoid incompatible islands of innovation (BIS et al., 2023; CPMI, 2024). Project *mBridge* itself is framed as a potential public good infrastructure that could interoperate with existing systems rather than replace them. (BIS, Innovation Hub, 2023). Whether that vision is realized will depend less on code and more on politics.

Conclusion

Crypto-assets and digital currencies have the potential of reshaping the international monetary system. While technological and institutional evolution are ongoing, the advantages of assets and payment systems settled on distributed ledgers (blockchain) no longer need to be proved: permanent availability, low transaction fees, no intermediary risk and instant settlement, which lead to a decrease in transaction costs and reduced liquidity risk.

Markets (financial intermediaries and institutional investors) are increasingly embracing the economic potential of this innovation, realizing that crypto-assets are no simple transposition of cash or deposits on the blockchain, but come along with **efficiency gains** that are having an impact on the real economy.

In this context, central banks, the ECB in particular, are preparing the introduction of retail central bank digital currencies. Their main motivation is offering a digital currency with legal tender, able to rival crypto assets in order to avoid seigniorage being drained from governments to private currency issuers, and to protect monetary sovereignty. Indeed, with stablecoins rivaling legal currencies, central banks are eager to strengthen the competitiveness of their currency vis-à-vis other potential CBDCs or stablecoins, while also preserving their currency area's independence from foreign providers of digital payment systems.

Drawing from historic experiences of privately issued currencies and cross-country precedents of CBDCs, we note that **efficiency and financial stability largely depend on currency design**: tiered remuneration and caps on holdings are meant to avoid bank disintermediation and preserve financial stability, while pseudonymity, offline use and intermediated solutions are given as guarantees against persisting privacy concerns.

The impact of this shift on monetary policy is particularly challenging to anticipate: central banks will gain direct control of household liquidity, which is particularly important in case the bank transmission mechanism fails. On the other hand, competition between retail CBDC and privately issued crypto-assets are likely to constrain government spending, i.e. public debt, and monetary policy, as both seigniorage accruing to the Treasury and the transmission mechanism of monetary policy are altered.

While meticulous currency design, as well as creating public trust through clear communication of monetary goals seem indispensable, the future of CBDC and crypto-assets also depend on digital infrastructure and computational capacity.

From a global perspective, there are two concluding remarks to be made: **CBDC and crypto-assets have the potential of facilitating *de jure* or *de facto* adoption of foreign currencies in regions with historically low monetary stability** (e.g. *de facto* dollarization in Argentina). This might improve monetary stability in these regions and lead to increased economic output. However, it would also concentrate the power on monetary policy in different regions in the world in the hands of the central bank of the adopted currency and is **likely to cause significant geopolitical polarization**.

On the other hand, monetary sovereignty has the potential of creating fragmentation of legal frameworks that apply to payments in crypto and are not interoperable. Such geographical asymmetries would nuance the efficiency gains, such as instant settlement and low transaction costs, and eventually thwart the global economic inclusion cryptocurrencies are meant to drive. In order to enhance interoperability, **a common ruleset internationally developed among states would be a possible solution**.

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