# THE LEGAL DESIRABILITY OF TOKENIZED MONEY: A COMPARATIVE ANALYTICAL FRAMEWORK

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This chapter examines the legal desirability of tokenized money through a comparative analysis of regulatory approaches across major jurisdictions. Legal desirability denotes the systematic evaluation of whether novel monetary instruments should be introduced and under what regulatory conditions. The research reveals a fundamental paradox: technological convergence in tokenization capabilities intersects with persistent regulatory divergence across central bank digital currencies, tokenized deposits, and stablecoins. Analysis of wholesale-retail dynamics, financial stability trade-offs, privacy-AML/CFT balance, and adoption challenges demonstrates that jurisdictions rationally reach different conclusions based on payment system contexts, institutional capacity, and policy objectives. Empirical data confirms the emergence of a multifaceted digital monetary system: wholesale digital currencies issued by central banks for interbank settlements, tokenized deposits for programmable payments, and regulated stablecoins for crypto-asset markets. The framework reveals that tokenization subordinates monetary instruments to computational logic, creating infrastructural legal primacy that challenges constitutional monetary sovereignty. Legal desirability requires context-specific assessment rather than universal technocratic determination.

Keywords: *tokenized money, legal desirability, CBDC, comparative financial regulation, monetary sovereignty.*

## 1. *Comparative Analysis: Convergences and Divergences*

This chapter constitutes the final Section of the Florentine research unit, to conclude the analysis of digital currency regulation and its legal desirability. The analysis builds on the empirical landscape documented in the opening Section and incorporates insights from the preceding essays. [1]

Having established the paradox of technological convergence intersecting with regulatory divergence and having posed the central analytical questions about why

[1] See the chapters by Chiara Ferri, 'Value and Its Representation in the Digital Space: The Native Tokens'; Rosa Giovanna Barresi, 'The Regulatory Challenges of Stablecoins: The Multi-Issuance Scheme'; Mauro Lombardi, 'CBDC and Macroeconomic Government in an Entropic World', all in this volume.

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jurisdictions reached different conclusions despite similar technological possibilities, we now turn to systematic comparative analysis.

The following sections examine four analytical dimensions that explain both convergent patterns [2] and persistent divergences [3] in digital currency legal desirability assessments: (1) the wholesale pivot from retail hesitation to wholesale acceleration; (2) financial stability trade-offs in managing systemic risks; (3) privacy-AML/CFT balance as a regulatory trilemma; and (4) adoption challenges moving from technical feasibility to market reality. The synthesis integrates these dimensions to construct a comprehensive framework for assessing the legal desirability of digital currency.

### 1.1. *Privacy-AML/CFT Balance: The Regulatory Trilemma*

The privacy-AML/CFT balance emerged as a regulatory trilemma: achieving strong privacy protections, comprehensive anti-money laundering and countering financing of terrorism compliance, and technological efficiency simultaneously appears infeasible, requiring difficult choices about which objectives to prioritise. The 2024-2025 period revealed various approaches to this trilemma, with no jurisdiction achieving full resolution but several developing innovative partial solutions that manage trade-offs more effectively than earlier generation systems. [4]

The privacy-AML/CFT-efficiency trilemma can be conceptualised as three competing objectives, in which the optimisation of any two of them invariably compromises the third. [5] This approach yields jurisdiction-specific calibrations that reflect legal traditions, surveillance concerns, and financial crime exposure. [6] European

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[2] Lucia Quaglia and Amy Verdun, 'The Geoeconomics of Central Banks Digital Currencies (CBDCs): The Case of the European Central Bank (ECB)' (2025) 30(5) New Political Economy 639 <https://doi.org/10.1080/13563467.2025.2504390>; Maria Demertzis and Josh Lipsky, 'The Geopolitics of Central Bank Digital Currencies' (2023) 58(4) Intereconomics 173 <https://www.intereconomics.eu/contents/year/2023/number/4/article/the-geopolitics-of-central-bank-digital-currencies.html> accessed 25 November 2025; International Monetary Fund. Monetary and Capital Markets Department, 'IMF Approach to Central Bank Digital Currency Capacity Development' (2023) 016 Policy Papers 1, <https://doi.org/10.5089/9798400240256.007>.

[3] Anamaria Illes and others, *Advancing in Tandem – Results of the 2024 BIS Survey on Central Bank Digital Currencies and Crypto*, BIS Papers No 159 (BIS 2025); Thomas Jose Aurazo, Holti Banka, Jon Frost and Anneke Kosse Piveteau, 'Central Bank Digital Currencies and Fast Payment Systems: Rivals or Partners?' (2024), World Bank, <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099060725223535417> accessed 25 November 2025; Tayo Tunyathon Koonprasert, 'Central Bank Digital Currency Adoption' (2024) 005 Fintech Notes 1 <https://doi.org/10.5089/9798400289422.063>.

[4] See Ferri in this volume.

[5] IMF, 'Central Bank Digital Currency (CBDC) – Virtual Handbook' (IMF 2023–) <https://www.imf.org/en/topics/digital-payments-and-finance/central-bank-digital-currency/virtual-handbook> accessed 25 November 2025; Koonprasert (n 3).

[6] Office of Science and Technology Policy, *Technical Evaluation for a US Central Bank Digital*

jurisdictions with strong data protection traditions (GDPR, constitutional privacy rights) prioritise privacy protections, accepting compliance costs and efficiency reductions necessary to achieve them. The United States, facing substantial political opposition to perceived government surveillance, banned retail CBDC partly because the privacy-AML/CFT balance appeared unachievable within acceptable political constraints – stablecoins regulated under banking law offered a preferable alternative with established compliance frameworks.

China's approach reflects different priorities: prioritising State monitoring capacity and AML/CFT compliance over individual privacy, accepting the adoption consequences as secondary to policy objectives, including capital control enforcement and payment system oversight. [7] This is sustainable in an authoritarian context where public acceptance matters less than State control but would generate prohibitive adoption resistance in liberal democracies.

The analytical framework must therefore assess: (1) constitutional and legal privacy protections constraining design space; (2) public attitudes toward government surveillance affecting adoption; (3) financial crime exposure motivating AML/CFT priorities; (4) technical capabilities enabling privacy-preserving compliance architectures; (5) institutional capacity to operate distributed compliance frameworks; and (6) political economy determining acceptable trade-offs. These factors explain why similar technologies produce divergent privacy-AML/CFT calibrations across jurisdictions – legal desirability depends on context-specific balancing of incommensurable values rather than universal optimisation.

### 1.2. *Adoption Challenges: From Technical Feasibility to Market Reality*

The gap between technical deployment and sustained adoption emerged as a critical theme in 2024-2025, challenging assumptions that central bank digital currency would be naturally adopted once made available. The Bank of Canada's conclusion that 'introduction by no means guaranteed successful' [8] and the IMF's development of the REDI Framework [9] both reflected recognition that availability differs from adoption, and that successful implementation requires systematic strategies that address user needs, competitive positioning, and behavioural inertia favouring incumbent systems.

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*Currency System* (The White House, September 2022) <https://bidenwhitehouse.archives.gov/ostp/news-updates/2022/09/30/technical-evaluation-for-a-u-s-central-bank-digital-currency-system/> accessed 7 February 2026.

[7] Ying Zhang and others, 'Centralized Use of Decentralized Technology: Tokenization of Currencies and Assets' (December 2024) 71 Structural Change and Economic Dynamics 15–25 <https://doi.org/10.1016/j.strueco.2024.06.006>.

[8] Carolyn Rogers, 'Economic Club of Canada' (Bank of Canada, 6 November 2024) <https://www.bankofcanada.ca/2024/11/speech-carolyn-rogers-november-6-2024/> accessed 25 November 2025.

[9] Koonprasert (n 3).

China's e-CNY and India's digital rupee provided invaluable evidence about adoption dynamics at scale. China accumulated impressive metrics – $2 trillion in cumulative transaction volume, 2.25 billion wallets opened, extensive merchant acceptance – yet revealed persistent adoption challenges. Average transaction size declined from RMB 1,895 ($135) in 2023 to RMB 428 ($60) in 2025, suggesting that while many users maintained wallets and conducted occasional transactions, e-CNY failed to become a preferred payment method for routine commerce. [10] Alipay and WeChat Pay retained dominance for voluntary transactions, with e-CNY usage concentrated where government subsidies, merchant promotions, or explicit requirements incentivised adoption.

Several factors explained the adoption gap. First, feature disadvantage: Alipay and WeChat Pay offer integrated super-app ecosystems with social media, ridesharing, investment products, merchant discounts, and social features that e-CNY's payment-only functionality cannot match. Second, network effects: users' friends, family, and colleagues already use the dominant private platforms, creating switching costs even if e-CNY offered equivalent features. Third, behavioural inertia: payment habits are deeply ingrained, with users requiring substantial incentives to change established patterns in the absence of compelling reasons. Fourth, merchant preference: merchants already integrated with private platforms faced additional costs and operational complexity, and adding e-CNY acceptance offered no clear benefit beyond regulatory compliance.

India's digital rupee experience with 600,000 users similarly demonstrated that availability does not guarantee adoption. The relatively small user base despite aggressive promotion reflected several challenges: existing Unified Payments Interface (UPI) [11] system already provided instant, free digital payments across banks and platforms, reducing CBDC's value proposition; feature parity with UPI was challenging to achieve given UPI's mature ecosystem and continuous innovation; and users perceived limited reasons to adopt government digital currency when private alternatives met their needs effectively.

The IMF's REDI Framework synthesises lessons from early implementations into a structured adoption strategy, recognising that technical deployment is only one component of a successful introduction. The four pillars address distinct but interrelated adoption drivers.

The adoption challenge significantly alters the legal desirability assessment of CBDCs. [12] While technical feasibility and aligned policy objectives are essential for

[10] People's Bank of China, *Progress of Research & Development of E-CNY in China* (2021), <http://www.pbc.gov.cn/en/3688110/3688172/4157443/4293696/2021071614584691871.pdf> accessed 25 November 2025.

[11] Reserve Bank of India, *Concept Note on Central Bank Digital Currency*, 7 October 2022 <https://rbidocs.rbi.org.in/rdocs/PublicationReport/Pdfs/CONCEPTNOTEACB531172E0B4DFC9A6E506C2C24FFB6.PDF> accessed 25 November 2025.

[12] IMF, *Central Bank Digital Currency: Progress and Further Considerations* (Policy Paper 2024/

successful implementation, they are not sufficient on their own. Equally important is evaluating the likelihood of adoption, which depends on several factors.[13] First, we must consider the quality of existing payment systems. It is crucial to determine whether the CBDC represents an incremental improvement or merely a negligible difference from current options. This assessment lays the groundwork for feature differentiation; specifically, we need to identify the unique advantages that a CBDC provides, which are not available through existing alternatives. Regulatory enablement is also a critical factor influencing adoption. The government's capacity to stimulate demand through mandates and requirements can significantly affect the success of a CBDC.

Furthermore, institutional trust is a vital dimension to consider. It is important to evaluate whether the public will accept and utilise a government-issued digital currency. Achieving and sustaining critical mass is another key consideration, drawing from the network effects strategy. We must formulate a comprehensive plan to ensure that once an initial user base is established, it continues to expand. Addressing incentive design and sustainability is also crucial; understanding what motivates adoption beyond initial promotional offers will be vital for long-term success. Lastly, we should not overlook the characteristics of the target population. Recognising and prioritising underserved communities, which may face higher switching costs yet have greater needs, will be essential to developing a robust adoption strategy.

Jurisdictions must therefore conduct realistic adoption assessments rather than assuming 'if we build it, they will come.' The evidence from China and India demonstrates that even massive State capacity and financial resources cannot guarantee adoption against well-established alternatives offering superior user experience. This sobering lesson should inform legal desirability determinations: technical feasibility and policy rationale do not guarantee market success, requiring careful assessment of competitive positioning and the sustainability of adoption strategy.

## 2. *The Multi-Form Digital Money System and The Legal Desirability Framework*

The comparative analysis across four dimensions – wholesale pivot, financial stability trade-offs, privacy-AML/CFT balance, and adoption challenges – reveals both convergent patterns and persistent divergences that, together, illuminate the framework for assessing the legal desirability of digital currency. The central finding is that technological convergence masks fundamental jurisdictional differences in institutional contexts, policy priorities, and risk-benefit assessments that rationally generate divergent regulatory responses.

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052, November 2024) <https://www.imf.org/en/publications/policy-papers/issues/2024/11/08/central-bank-digital-currency-progress-and-further-considerations-557194> accessed 25 November 2025.

[13] Koonprasert (n 3).

## 2.1. *The Coexistence Model Confirmed*

The 2024–2025 empirical evidence decisively confirms the multi-form digital money system model: the future will feature the coexistence of wholesale CBDCs for interbank settlement and securities tokenization, tokenized commercial bank deposits for programmable private-sector payments, and regulated stablecoins that bridge crypto-assets and traditional finance. [14] This coexistence is not a temporary transition State but a relatively stable equilibrium reflecting distinct institutional roles and comparative advantages.

Wholesale CBDCs excel at applications requiring absolute finality, 24/7 operation, cross-border efficiency, and trust anchor properties – use cases where central bank money status provides irreplaceable value. [15] The wholesale surge across jurisdictions from Switzerland to Singapore to China reflects convergent recognition of these value propositions, combined with favourable risk profiles avoiding retail-specific challenges. Wholesale CBDC legal desirability approaches universal consensus: clear benefits, manageable risks, and preservation of the two-tier monetary system.

Tokenized deposits enable programmability and blockchain integration while preserving private money creation, bank relationship management, and interest payment. The regulatory clarity breakthrough – tokenization does not alter the nature of a deposit – removed the key legal uncertainty that had been inhibiting adoption. [16] Banks facing competitive pressure from crypto-native platforms and corporate clients demanding tokenization capabilities now possess a legally certain path forward. Tokenized deposits represent the private sector's response to CBDC, demonstrating that a two-tier monetary system can adapt to a tokenized ecosystem rather than being displaced by them.

Regulated stablecoins provide crypto-native money for decentralized finance applications, cross-border transfers, and cryptocurrency market liquidity. The rapid regulatory convergence through MiCAR [17] and the GENIUS Act [18] reflects consensus that systemic risk requires prudential oversight. Stablecoins fill the niche for dollar-denominated (or euro, or other fiat-pegged) instruments operating in permissionless blockchain environments where CBDCs and tokenized deposits are absent. The legal desirability of stablecoins depends primarily on effective regulation – such as reserve requirements, redemption rights, and prudential supervision – rather than on whether they should exist at all. [19]

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[14] IMF (n 5).

[15] Illes and others (n 3).

[16] 'BIS, 'Annual Economic Report 2025' (29 June 2025) <https://www.bis.org/publ/arpdf/ar2025e.htm> accessed 7 February 2026.

[17] Regulation (EU) 2023/1114 of the European Parliament and of the Council of 31 May 2023 on markets in crypto-assets [2023] OJ L150/40.

[18] Guiding and Establishing National Innovation for US Stablecoins Act (GENIUS Act), Pub. L. No. 119–27, 119th Cong. (2025).

[19] See Barresi in this volume.

This coexistence model represents a pragmatic middle path between radical transformation (Bitcoin-style private cryptocurrency displacing sovereign money) and maintaining the status quo (digital payments within the existing monetary architecture). Central banks preserve monetary sovereignty and financial stability through wholesale CBDC and stablecoin regulation, while enabling private-sector innovation through tokenized deposits and regulated stablecoin issuance. The system features multiple monetary forms interoperating within governance frameworks that maintain protections for public interest.

### 2.2. *Jurisdiction-Specific Legal Desirability Determinations*

The comparative analysis reveals that the legal desirability of retail CBDCs hinges significantly on the specific contexts of different jurisdictions rather than a one-size-fits-all, technocratic approach.

Firstly, the payment system context is crucial. [20] Jurisdictions with mature fast payment systems, such as Australia, the UK, and to some extent the US, find that the incremental value of CBDC is diminished. Conversely, areas facing significant gaps in their payment systems, such as India with financial exclusion issues, or the EU grappling with cash decline, vulnerabilities, and concerns about strategic autonomy, are more likely to see a stronger case for CBDC implementation. It is essential to evaluate CBDC in relation to existing and potential alternatives rather than in isolation. [21]

Additionally, the characteristics of the financial system are vital. [22] Jurisdictions with well-capitalised and resilient banking systems might, in theory, tolerate the disintermediation that CBDCs could induce. However, they may opt not to take that risk, as seen in the US and UK. In contrast, vulnerabilities in specific banking systems may lead to conservative design constraints, such as the EU's low holding limits, or to avoidance strategies, such as Australia's decision to focus on a wholesale-only approach. Therefore, financial stability modelling tailored to each jurisdiction's banking structure must inform the legal desirability assessment of CBDCs.

Moreover, the political economy surrounding privacy and surveillance significantly influences acceptability. [23] Jurisdictions that uphold strong constitutional protections for privacy face higher thresholds for CBDC acceptance, necessitating robust technical privacy protections and legal assurances. Meanwhile, jurisdictions with less emphasis on privacy or those with authoritarian governance structures encounter fewer political constraints but may still face resistance to adoption. Thus, it

[20] Thomas (n 3).

[21] Koonprasert (n 3).

[22] Stijn Claessens and others, 'Opportunities and Challenges Associated with the Development of FinTech and Central Bank Digital Currency' (August 2024) 73 Journal of Financial Stability 101280, <https://doi.org/10.1016/j.jfs.2024.101280>.

[23] Kieran Murphy, 'Central Bank Digital Currency Data Use and Privacy Protection' (2024) 004 Fintech Notes 1, <https://doi.org/10.5089/9798400286971.063>.

is crucial to consider the varying political-economic constraints that can differ dramatically across governance systems when assessing legal desirability.

Another important factor is institutional capacity. [24] Successful CBDC implementation demands sophisticated central bank capabilities, including robust technical infrastructure, continuous operation, cybersecurity, user support, crisis management, and privacy protection. Jurisdictions with strong institutional capacity, such as the ECB, the Bank of England, and the Monetary Authority of Singapore, are better equipped to handle complex implementations. On the other hand, jurisdictions with limited capacity may face greater risks during implementation, highlighting the need for an honest assessment of institutional readiness rather than assuming that necessary capacity can be developed on demand.

Lastly, CBDC may address policy objectives beyond mere payment efficiency, such as promoting financial inclusion in India, enabling programmable subsidies in China, ensuring strategic autonomy in the EU, or enhancing monetary policy transmission. Even where the argument for payment efficiency may be weaker, these additional objectives can justify the introduction of CBDCs. Therefore, the assessment of legal desirability must weigh these multiple objectives rather than focusing solely on improvements within the payment system. [25]

In summary, the rational divergence observed – the EU's decision to move forward with CBDC, the UK's cautious preparations, the US's prohibition, Australia's wholesale-centric approach, and China's large-scale deployment – reflects appropriate responses to their distinct contexts rather than any one approach being viewed as the correct answer. Hence, legal desirability is not a universal principle but is contingent upon each jurisdiction's unique institutional, economic, and political characteristics.

### 2.3. *The Pragmatic Middle Path: Preservation Plus Innovation*

The synthesis reveals central banks' strategic choice of a pragmatic middle path, preserving a two-tier monetary system while enabling the benefits of tokenization. This path contrasts with both revolutionary transformation (displacing commercial banks with central bank retail accounts) and static resistance (prohibiting tokenization and maintaining analogue monetary instruments). [26] How can the middle path be realised?

The architecture for wholesale CBDC and tokenized deposits involves the innovative tokenization of central bank money specifically for institutional settlement, while simultaneously enabling the tokenization of commercial bank money for retail and corporate applications. This dual approach preserves the traditional division of labour between institutions while modernising both sectors. Banks continue to play

[24] IMF (n 5).

[25] Koonprasert (n 3); Illes and others (n 3).

[26] BIS (n 16).

a vital role in nurturing customer relationships, facilitating credit creation, and delivering payment services, while central banks remain the ultimate trust anchors and settlement authorities. Importantly, this architecture allows for enhanced programmability and the integration of blockchain technology without dismantling the traditional two-tier system of financial provision. [27]

In another aspect of this evolving financial landscape, central banks have chosen not to ban the issuance of private monetary instruments outright, such as stablecoins. Instead, they have implemented regulatory frameworks that include reserve requirements, redemption rights, and oversight mechanisms. This regulatory approach allows stablecoins to function as regulated private money for designated use cases, such as in crypto markets and for cross-border transfers. By adopting this method, central banks encourage innovation while effectively managing systemic risks, painting stablecoins as complementary rather than competitive to existing financial structures. [28]

Furthermore, a distributed innovation strategy underscores the essential role that central banks play by providing infrastructure and serving as a trust anchor through wholesale CBDCs. Meanwhile, the private sector is empowered to take the lead in driving innovations across user interfaces, features, business models, and use cases, including tokenized deposits and regulated stablecoins. This synergy between public and private sectors harnesses the innovative potential of the market while ensuring that regulatory oversight is maintained in the public interest, a hallmark of successful financial regulation. [29]

Finally, jurisdictions are increasingly favouring a graduated implementation approach rather than a binary decision-making process of simply proceeding or halting. Some regions, such as the UK, are preparing without firm commitments; others are opting for pilot programs with no obligation for deployment. Countries like Australia are prioritising wholesale implementation before extending to retail, while the US implements prohibitions with ongoing monitoring. This gradualism not only facilitates learning from experience but also allows for adjusting strategies as new evidence emerges, avoiding rigid commitments that may later be deemed imprudent. [30]

Overall, this pragmatic middle path demonstrates clear institutional learning from experiences with cryptocurrencies. It adopts a balanced approach, advocating the selective integration of beneficial features into governance frameworks that prioritise financial stability and consumer protection. This evolving consensus reflects a growing international agreement, even as countries maintain varying positions regarding retail CBDCs.

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[27] Claessens and others, 'Opportunities and Challenges Associated with the Development of FinTech and Central Bank Digital Currency'; Raphael Auer and others, 'Rise of the Central Bank Digital Currencies: Drivers, Approaches and Technologies' (2020) SSRN Electronic Journal, <https://doi.org/10.2139/ssrn.3724070>.

[28] Financial Stability Board, 'G20 Crypto-Asset Policy Implementation Roadmap: Status Report' (22 October 2024), <https://www.fsb.org/2024/10/g20-crypto-asset-policy-implementation-roadmap-status-report/> accessed 25 November 2025. See Barresi in this volume.

[29] BIS (n 16).

[30] Thomas (n 3).

## 2.4. *Remaining Open Questions for Analytical Framework*

The analysis of tokenized money reveals important definitional boundaries that distinguish it from tokenized financial or real assets. Beyond merely considering the characteristics of the underlying liabilities, it raises critical questions about how the technological substrate, especially the distributed ledger, influences the legal categorisation of monetary instruments. Additionally, it prompts inquiry into whether a neutral approach to technology can effectively tackle the unique challenges posed by tokenization.

As we explore the legal status foundations, it becomes evident that various legal frameworks govern tokenized money. These frameworks may derive from existing payment system laws, new statutes specifically for digital currencies, property law, or even hybrid approaches that blend these elements. The role of constitutional monetary powers also emerges as a significant factor in shaping or facilitating the issuance of CBDCs, underscoring how central banks' legal mandates influence the desirability of CBDCs.

In the realm of cross-border coordination, the possibility of multi-CBDC platforms achieving interoperability while preserving monetary sovereignty is a pressing concern. This highlights the legal frameworks governing cross-border tokenized money transfers and raises questions about how conflicts of law and dispute resolution are managed when transactions span jurisdictions with incompatible legal systems.

The legal implications of self-executing smart contracts are another crucial area of exploration. This encompasses resolving coding errors, unforeseen circumstances, and disputes, leading to questions about whether programmable money can include rules that override traditional contract defences or legal protections.

Furthermore, the balance between privacy and surveillance presents a noteworthy challenge. It is essential to consider whether technical architectures can provide robust privacy protections without compromising compliance with AML and CFT regulations, or if some trade-off between surveillance and privacy is inevitable. The legal frameworks governing data access, retention, and use also come into play, prompting inquiries into how constitutional privacy rights align with the imperatives of financial crime prevention.

Overall, these inquiries transition from empirical comparative analysis to normative legal theory, necessitating a close examination of foundational legal concepts, principles of institutional design, and regulatory philosophy. This leads to a comprehensive framework for evaluating the legal desirability of digital currencies across various contexts, while also identifying overarching principles that extend beyond jurisdictional specifics. The empirical landscape and comparative analysis lay the foundation for a systematic framework to assess the legal desirability of digital currency. Having documented what occurred and identified patterns explaining jurisdictional divergence, we will now develop the analytical tools necessary to evaluate whether specific forms of tokenized money should be introduced and under what regulatory conditions. Section 3 addresses the definitional boundaries distinguishing tokenized money from other digital assets, examines the forms and functions of different tokenization

approaches, and constructs a multi-dimensional legal desirability assessment framework integrating lessons from the 2024–2025 experience.

## 3. *What is Tokenized Money? Its Functions and Forms*

Tokenized money refers to the digital representation of financial claims recorded on a programmable platform. This process, known as tokenization, involves integrating the record of the underlying asset or claim with the rules and logic governing its transfer. Tokenization is anticipated to play an important role in the future financial system.

The technological foundation of tokenization enables contingent action, meaning specific operations can be automatically triggered when certain preconditions are met (e.g., 'if,' 'then,' and 'else').

In a broader sense, tokenization also applies to financial and real assets beyond money, such as bonds (the most tokenized asset), investment fund shares, real estate, equities, and commercial paper.

### 3.1. *Functions and Benefits of Tokenized Money*

Tokenization and the resulting systems, such as the proposed unified ledger – a new type of financial market infrastructure that brings tokenized central bank reserves, commercial bank money, and financial assets together – enable several advanced functions. Tokenization offers several significant benefits that enhance various aspects of financial systems.[31] One key advantage is the ability to integrate programmability with contingent execution. By embedding the rules governing asset transfers directly into tokens, smart contracts can automatically execute actions when specific criteria are met. This capability opens doors to innovative contracting outcomes, such as automated insurance agreements and continuous collateral verification.

Another crucial feature of tokenization is atomic settlement. This process allows the simultaneous execution of steps that were previously conducted separately, such as debiting the payer and crediting the receiver. By achieving this in a single, seamless operation, atomic settlement effectively mitigates principal risk.

In addition to these features, tokenization significantly enhances payment speed and integrity. It simplifies cross-border payments by replacing a complex chain of intermediaries with a unified process, which reduces operational risks, delays, and transaction costs.

The efficiency of the financial system is also improved by unifying money and assets in a single venue. This integration particularly benefits securities markets by minimising friction and reducing the need for manual reconciliations that traditionally arise from separate messaging, clearing, and settlement systems.

[31] BIS (n 16).

Moreover, tokenized central bank reserves play a vital role in maintaining trust and ensuring the singleness of money, which is essential for financial stability. With instantaneous settlement, the associated credit risks are substantially reduced.

Finally, programmable tokenized platforms have the potential to support extended market operations, enabling 24/7 trading. Additionally, they may include offline functionality, enabling a retail CBDC to facilitate transactions even in the absence of internet or telecom connectivity, much like a stored value card.

In essence, tokenization transforms how ownership records and claim transfers are managed, paving the way for a more integrated, automated financial system in which money and assets are 'executable objects.'

## 3.2. *The Forms of Tokenization*

The premise that tokenized money (currencies) must be distinguished from tokenized real and financial assets based on the nature of the underlying liability and the characteristics of the issuer must be considered, particularly when comparing CBDC to private digital money and tokenized claims.

The distinction rests on the fundamental difference between sovereign money (a direct public liability) and private sector claims (whether money or asset representations).

### 3.2.1. *The Nature of the Underlying Liability*

The primary differentiating factor is who bears the liability for the digital claim.

Tokenized money, in the context of a CBDC, is a form of digital money, denominated in the national unit of account, that is a direct liability of the central bank. Because retail CBDC balances are a direct claim on the central bank, they are not subject to bankruptcy risks. This makes money 'information-insensitive,' meaning agents accept it at par 'with no questions asked'. Moreover, CBDCs are designed to ensure final settlement in central bank money, acting as the ultimate safe medium for transactions.

For non-CBDC forms of tokenization, the underlying liability rests with a private entity or relates to a specific asset, introducing credit and liquidity risks do not present in central bank money. When it comes to private digital money, it is the liability of the issuer of a stablecoin or of a commercial bank deposit. When it comes to financial instruments and real assets, the distinction is even more evident.

### 3.2.2. *The Characteristics of the Issuer*

The identity of the issuer determines the legal and regulatory framework governing the token, thereby significantly impacting its stability and trustworthiness. In the case of a CBDC, the issuer is the central bank, which issues and regulates the currency. That is the central point: the uniqueness of the issuer here is that it provides the ultimate safe medium for settling transactions in the form of reserves and has a mandate to act in the public interest, underpinning trust in money as a fundamental public good. When we come to private digital money issuers, as well as financial and real estate assets, the issuers are often bespoke or being developed to

apply similar stringency to financial intermediaries posing similar risks, based on the principle of 'same activities, same risk, same regulatory outcomes.'

As a result, the key differentiation point is that CBDC would be the only digital sovereign money able to guarantee the singleness of money. Conversely, tokenized assets and private digital currencies (such as stablecoins) would require robust regulation, posing risks related to creditworthiness, liquidity, and stability.

## 4. *The Legal Desirability Assessment: Key Tensions*

However, the tokenization of currency, financial assets, and real assets through DLT raises normative questions that transcend traditional classificatory frameworks predicated solely upon issuer features and the legal nature of underlying obligations. This complexity becomes particularly salient when examining tokenized assets as executable objects capable of autonomous performance. The process of tokenization necessarily embeds legal relationships within a specific technological architecture, thereby establishing what may be termed 'infrastructural legal primacy' – a condition in which the operational logic of the underlying system constraints and shapes legal possibility.

The technological substrate of tokenization is not normatively neutral; instead, it operates as a constitutive force in determining the boundaries of legal action. The characterisation of public digital currency as merely the 'digital representation' of physical currency obscures a fundamental transformation: representation through DLT necessarily entails the subordination of monetary instruments to computational logic and protocol-based governance mechanisms, thereby displacing the exclusive primacy of positive law as the sole normative framework governing monetary relations.

Legal desirability, as employed herein, denotes the systematic evaluation and articulation of the requisite regulatory and legislative architecture that determines both whether a novel monetary instrument ought to be introduced into the financial system and the modalities through which such an instrument must be structured to achieve core public policy objectives while preserving legal certainty and ensuring regulatory compliance. The legal desirability framework necessitates a systematic evaluation across several interconnected dimensions. First and foremost is foundational legitimacy, which involves assessing whether the legal authority actually exists and determining whether the instrument in question should be granted legal tender status. Following this, we look at institutional design, focusing on how to structure mechanisms for entry, participation, and oversight effectively. Another critical aspect is risk management, where the challenge lies in balancing competing policy objectives, such as stability versus adoption and privacy versus AML/CFT measures. Additionally, technological governance plays a vital role in this framework; it emphasises the need to recognise that technological choices are not normatively neutral, as they inherently shape legal relationships. Lastly, we must consider operational resilience, which is essential to ensuring the security, stability, and long-term viability of the legal instruments in question.

Each dimension requires careful legal analysis to determine whether a novel

monetary instrument should be introduced and how it should be structured to achieve core public policy objectives while preserving legal certainty and ensuring regulatory compliance.

The complexity of these interrelated dimensions underscores that legal desirability cannot be reduced to a simple binary determination but requires nuanced, context-specific analysis that accounts for jurisdictional particularity, institutional arrangements, and the evolving technological landscape of digital currency systems.

### 4.1. *How Regulators and Central Banks Are Responding: Convergent Solutions*

A primary response is the alignment of global regulatory standards. Most policymakers are moving toward a holistic approach to the technology neutrality principle. The global regulatory landscape for stablecoins and crypto-assets is rapidly evolving. By the end of 2024, 45% of jurisdictions had enacted regulations for stablecoins and other crypto-assets, up from 35% in 2023. Furthermore, 22% of jurisdictions had proposed or were developing regulatory frameworks, meaning more than two-thirds worldwide will regulate these assets, either currently or soon.

Most jurisdictions are developing bespoke regulation tailored to crypto-assets or stablecoins, rather than relying solely on or modifying existing general financial regulation. International guidelines, particularly the GSC recommendations, focus on ensuring that stablecoins provide a robust legal claim to users against the issuer and/or underlying reserve assets, and utilise an effective stabilisation mechanism. Specifically, regulators require reserve assets for stablecoins referencing a single fiat currency to consist of 'conservative, high-quality and highly liquid assets.'

Regulation is also mandating AML/CFT compliance. Although AML/CFT requirements are the most frequently applied regulatory requirements for crypto-asset activities, implementation remains a challenge globally, with 75% of jurisdictions only partially compliant or non-compliant with the FATF's fundamental requirements. The development of tokenized systems, such as next-generation correspondent banking, aims for 'integrity by design,' by embedding pre-screening checks and compliance reporting capabilities. [32]

Central banks are collaborating on strategic policy and design choices to target end-user and intermediary involvement in CBDC ecosystems from the outset. The 'REDI Framework' encourages policymakers to consider Regulatory strategies, Education and communication, Design and deployment, and Incentives to prepare for CBDC adoption. A crucial convergence point is the need for compatibility and interoperability between CBDC systems and FPS. This synergy is necessary because many central banks see a role for both retail CBDCs and FPS to coexist and complement one another. Interoperability ensures that users can seamlessly transfer funds between their CBDC wallets and traditional bank or e-money

[32] FATF, *Targeted Update on Implementation of the FATF Standards on Virtual Assets/VASPs* (FATF 2024) <https://www.fatf-gafi.org/en/publications/Fatfrecommendations/targeted-update-virtual-assets-vasps-2024.html> accessed 7 February 2026; BIS (n 16). See also Ferri in this volume.

accounts. To achieve effective integration, several technical approaches can be employed. One key strategy is standardisation, which involves utilising standard components such as ISO 20022 messaging formats, standardised aliases, proxy identifiers, and QR codes. This helps to create a cohesive framework that enhances compatibility and usability across different systems. Another important approach is the utilisation of Application Programming Interfaces (APIs). By leveraging open APIs, payment service providers (PSPs) can facilitate interlinking, allowing them to develop additional end-user services. A practical example of this can be seen in China, where the e-CNY is integrated with the existing QR code system through a 'Unified QR Code.' This integration not only simplifies the payment process for merchants but also ensures interoperability with various private digital payment solutions, enhancing the overall user experience.

Regulators are actively utilising various legal and policy tools to facilitate the adoption of CBDCs. One significant measure being considered or implemented by several countries is the designation of CBDCs as legal tender. This approach, exemplified by initiatives such as the Bahamian Sand Dollar and proposals for the digital euro, aims to enhance merchant acceptance of digital currencies. In addition to legal tender status, some jurisdictions have mandated participation by financial intermediaries, particularly larger institutions, to accelerate adoption. A notable example of this is the legislative proposal for the digital euro, which stipulates that credit institutions must provide basic digital euro services to residents upon request. Similarly, in Brazil, the Central Bank requires institutions with over 500,000 active customer accounts to participate in the Pix payment system.

Another crucial aspect of facilitating CBDC adoption is the governance of fee structures. There is a prevailing consensus among central bank representatives that basic CBDC services should be offered without fees, as cash is used for essential personal payments. However, fees may be acceptable for additional value-added services provided by intermediaries.

As central banks increasingly position themselves as catalysts for change within the monetary system, they are also fostering public-private collaboration to shape the future of finance. One area of focus is tokenization initiatives, in which central banks and international organisations are exploring how tokenization can enhance the monetary system. This exploration emphasises a transition path that builds upon the foundations of the two-tier monetary system, which includes both central bank money and private money. For instance, Project Agorá brings together seven central banks and private financial firms to investigate tokenization, aiming to improve current capabilities while maintaining safeguards on integrity and governance. [33]

Finally, policymakers are encouraged to adopt a gradual, eclectic approach to tokenization. This means prioritising the tokenization of existing financial assets, such as fiat currencies, before integrating entirely new tokenized assets. Additionally, the relationship between centralization and decentralization is viewed as complementary;

[33] BIS Innovation Hub, 'Project Agorá: Exploring Tokenisation of Cross-Border Payments' <https://www.bis.org/about/bisih/topics/fmis/agora.htm> accessed 7 February 2026.

a certain degree of centralization is deemed necessary to ensure financial stability in permissioned consortium blockchains. In essence, regulatory responses are converging to establish comprehensive, globally coordinated frameworks to contain risks posed by new digital assets (crypto and stablecoins), while strategically designing and integrating public innovations (CBDCs and FPS) through collaboration and technical standards to ensure efficiency, resilience, and consumer protection.

### 4.2. *Why Divergences Persist: Structural and Philosophical Differences*

Divergences in CBDC projects and digital monetary policy persist due to fundamental differences in jurisdictions' structural conditions (such as market maturity and existing infrastructure) and philosophical approaches (including varying policy objectives and views on the roles of the public and private sectors).

#### 4.2.1. *Structural Differences: Market Maturity and Infrastructure*

Divergent approaches to implementing financial systems, such as CBDCs and Fast Payment Systems (FPS), are often shaped by the unique circumstances and maturity of a jurisdiction's existing financial ecosystem. In countries where a highly effective FPS already exists, such as Brazil with its Pix system, central banks may question the need to introduce a retail CBDC. Instead, they might explore the potential benefits of a wholesale CBDC, exemplified by initiatives like Drex. Similarly, in jurisdictions like India, the digital rupee pilot has faced challenges in achieving mainstream adoption due to the dominance of the widely used Unified Payments Interface (UPI). The evolution toward a payment landscape in which CBDCs coexist with FPS and e-money networks is inherently country-specific.

Competition dynamics also vary significantly across regions, particularly in areas where Big Tech companies hold a firm grip on retail payments. In China, for example, Alipay and TenPay lead the market, while in India, Google and PhonePe exert considerable influence. These competitive environments directly affect how central banks design and implement their financial systems.

The levels of digitisation and financial inclusion play crucial roles in shaping CBDC initiatives. Research and development efforts related to CBDCs tend to correlate with certain structural factors, such as higher mobile phone usage, which serves as a measure of overall digitisation, as well as greater innovation capacity. Retail CBDCs are more likely to be pursued in economies with significant informal sectors; these countries often see retail CBDCs as a greenfield initiative to address barriers to access to financial services.

Legal and technical readiness also differ markedly between countries. By the end of 2024, 42% of Emerging Market and Developing Economy (EMDE) central banks reported having the legal authority to issue a retail CBDC, in stark contrast to the mere 4% of Advanced Economy (AE) central banks that indicated similar authority. This legal uncertainty compels advanced economies to allocate resources toward changing or clarifying existing laws, with 29% of AE respondents highlighting this need. Additionally, there is a notable divergence in the preferred technology

for retail CBDCs: EMDEs are more inclined to utilise DLT for issuance, with 40% favouring this approach compared to only 6% of AEs.

#### 4.2.2. *Philosophical Differences: Policy Objectives and Monetary Vision*

Divergences in monetary policy arise from differing priorities, fundamental views on financial architecture, and desired levels of central bank control. The Bank for International Settlements (BIS), through its Innovation Hub, advocates a significant overhaul of current systems, proposing that the goal of the Unified Ledger is to rewire the global financial landscape through tokenization completely. The BIS's General Manager has suggested that existing legacy systems have reached the limits of their efficacy. In alignment with this vision, projects like Project Agorá aim to integrate tokenized central bank money and tokenized commercial bank deposits within a programmable core financial platform, addressing structural inefficiencies, particularly in cross-border payments.

There is also a notable divergence in regulatory stances between regions, especially regarding private digital currencies. In the European Union (EU), policies emphasise that central bank digital currencies (CBDCs) such as the digital euro and digital pound contribute to financial stability. At the same time, cryptocurrencies and stablecoins are viewed as risks to that stability. Conversely, new policies emerging from the United States tend to support dollar-backed stablecoins while opposing the introduction of CBDCs.

Further complicating the landscape are varying policy objectives and geopolitical motivations behind the issuance of CBDCs. While many central banks aim to enhance payment efficiency and promote financial inclusion, nations such as China, Iran, Russia, and Venezuela leverage CBDCs to reduce their reliance on the dollar and their vulnerability to US sanctions. Advanced economies primarily explore CBDCs to ensure the safety and robustness of payments, whereas emerging-market economies focus primarily on financial inclusion.

There is also disagreement on design philosophy, particularly regarding the programmability of CBDCs. Emerging markets and developing economies (EMDEs) show a greater inclination toward programmable money, with 33% indicating interest in a CBDC that can be programmed for specific purposes or durations, compared to just 11% in advanced economies. For instance, the ECB has made it clear that the digital euro will not be programmable, and EMDE central banks are more inclined to employ Capital Flow Management (CFM) measures through wholesale CBDCs – 35% favouring this approach versus a mere 6% in advanced economies.

Finally, the roles of the central bank and the private sector vary widely, reflecting no uniform model of private-sector participation. The US Federal Reserve envisions an intermediated model in which financial institutions facilitate end users' access to CBDC services. In contrast, the legislative proposal for the digital euro requires that credit institutions offer basic digital euro services. In contrast, The Bahamas is drafting regulations mandating that commercial banks provide access to the Sand Dollar. Notably, EMDE central banks are more likely to consider the mandatory involvement of Payment Service Providers (PSPs) for wholesale CBDCs, with 35% supporting this compared to only 6% of advanced economies.

These pervasive divergences underscore that decisions regarding CBDCs are ultimately sovereign and depend on the specific assessments and circumstances within each jurisdiction.

## 5. *Conclusion*

The analysis of the legal-economic dimensions of tokenization reveals fundamental transformations that challenge the very foundations of modern monetary sovereignty and regulatory paradigms. What emerges most strikingly is that the renewed emphasis on constitutional sovereignty and central control mechanisms, far from representing a straightforward assertion of State authority, instead exposes deep tensions within regulatory frameworks that must simultaneously preserve sovereign monetary functions while accommodating the borderless, disintermediated nature of cyber-physical networks. The convergent regulatory responses emerging across major jurisdictions represent a solution born from the philosophical underpinnings and structural characteristics of global payment infrastructures. Nevertheless, these responses create new tensions between regulatory harmonisation on one hand and the imperative to maintain distinctive national approaches rooted in specific constitutional and institutional contexts on the other. We observe that attempts to converge on regulatory frameworks paradoxically arise from fundamentally divergent challenges, as each jurisdiction grapples with how to assert meaningful control over monetary systems that increasingly operate according to logics that transcend traditional territorial boundaries and legal categorisations.

These challenges are fundamentally rooted in the emergence of what we might term the cyber-physical universe and its distinctive architecture of control. Tokenized money presents not merely a technical innovation but rather a transformation in the very substrate through which value flows and economic relationships are constituted. This transformation involves a decisive shift from conventional State-mediated political and institutional structures to systems increasingly dominated by non-State actors, particularly large technology companies and global financial platforms operating across digital networks whose reach and influence extend far beyond any single jurisdiction's capacity for effective oversight. The architecture of control embedded within these systems operates through mechanisms that may not respect or even recognise the boundaries that have historically defined monetary sovereignty, creating what amounts to parallel infrastructure for value transfer that can function independently of traditional banking channels and central bank oversight. The emergence of this cyber-physical universe thus presents profound challenges not only to existing regulatory frameworks but to the foundational assumption that monetary systems ultimately rest upon and derive their authority from State institutions operating within clearly demarcated territorial boundaries. [34]

[34] See Lombardi in this volume.

The consequence of this transformation is that traditional constitutional sovereignty, understood as the capacity of nation-States to exercise supreme authority over monetary and financial matters within their borders, finds itself progressively eroded by technological and institutional developments that resist incorporation into conventional legal categories. This erosion manifests not as a dramatic rupture but as a gradual transformation driven by the proliferation of payment mechanisms and value transfer systems that operate according to protocols and governance structures largely independent of State control, thereby creating situations in which constitutional authority over money becomes increasingly theoretical rather than practical. The architecture of tokenized systems enables forms of monetary exchange and value storage that may technically occur within a jurisdiction's territory while remaining functionally beyond the reach of that jurisdiction's regulatory apparatus, creating a fundamental mismatch between the geographical logic of State sovereignty and the topological logic of networked digital systems.

Moreover, the reliance on financial intermediaries functioning as what regulatory frameworks term 'obliged entities' introduces its own set of complications that extend well beyond traditional oversight mechanisms. This is particularly evident in the case of financial institutions operating under Anti-Money Laundering and Countering the Financing of Terrorism frameworks, which transform these intermediaries into essential components of State surveillance and control infrastructure while simultaneously making them the primary arbiters of transaction legitimacy.[35] The practical effect is a fundamental shift in the architecture of monetary control, as the tracing of financial flows under these frameworks moves verification and authorisation functions away from centralized State authorities and distributes them throughout a network of private intermediaries, each operating according to protocols that may vary considerably in their interpretation and implementation. This distributed authorisation system introduces what we might call 'permissioned peer-to-peer' transfers, which operate without requiring centralized authority validation for each transaction yet depend entirely on the intermediaries' capacity to maintain adequate identity verification and transaction monitoring across an increasingly complex ecosystem of payment channels and asset types.

The regulatory implications of this transformation extend to fundamental questions about the nature of oversight and accountability in monetary systems. As intermediaries assume these verification and monitoring functions, it becomes increasingly complex to maintain clear lines of responsibility for ensuring regulatory compliance and identifying the ultimate beneficial owners of assets or the true parties to transactions. The verification of sender and receiver identities, traditionally a straightforward matter within conventional banking relationships, becomes a complex technical and legal challenge when transactions may involve multiple intermediaries, cross multiple jurisdictions, and utilise various forms of tokenized representations of value that may not map cleanly onto existing legal categories of property or financial instruments. Such changes have prompted discussions about what some scholars have termed a potential 'end of

[35] See Ferri in this volume.

accountability,' insofar as the proliferation of intermediaries and the technical complexity of tokenized systems may make it effectively impossible to establish transparent chains of responsibility for ensuring that transactions comply with legal requirements and that participants in the system can be held accountable for violations.

This challenge is compounded by an evolution in regulatory thinking in which the presence of intermediaries may increasingly serve as the sole criterion for determining whether transactions fall within regulatory purview, rather than examining the substantive nature of the value transfer itself. Such a shift in regulatory focus from substance to form risks creating a system where the technical architecture of how a transaction is executed matters more for regulatory purposes than the economic reality of what the transaction accomplishes, potentially opening pathways for regulatory arbitrage and creating incentives to structure transactions in ways that minimize intermediary involvement regardless of whether such structures serve any legitimate business purpose beyond regulatory avoidance.

Furthermore, the introduction of CBDCs brings with it a unique set of accountability challenges that differ fundamentally from those associated with private tokenized money systems, precisely because CBDCs represent direct liabilities of the central bank rather than claims on private intermediaries. The architectural choices underlying CBDC design, whether systems employ distributed ledger technology structures that enable novel forms of asset representation potentially extending beyond the traditional categories recognised in financial regulation, or whether they create more direct relationships between central banks and end users that bypass conventional banking intermediaries entirely, have profound implications for how accountability is conceptualised and enforced within the monetary system. These design choices determine not only the technical capabilities of the system but also the fundamental legal relationships between State monetary authorities, financial intermediaries, and individual users, relationships that may require a comprehensive reassessment and restructuring of existing regulatory frameworks to account for arrangements with no clear precedent in conventional monetary architecture. The challenge, then, is not simply to adapt existing regulatory approaches to accommodate new technologies, but rather to fundamentally reimagine how accountability, oversight, and sovereign monetary authority can be maintained within institutional and technical arrangements that operate according to logics quite different from those that have historically underpinned the regulatory framework governing money and payments.