

THE TOKENIZATION OF MONEY: MAPPING THE GLOBAL REGULATORY LANDSCAPE AND THE LEGAL DESIRABILITY QUESTION

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This chapter examines the global regulatory landscape for tokenized money, analysing how jurisdictions assess the legal desirability of central bank digital currencies, tokenized deposits, and stablecoins. Legal desirability is defined as the systematic evaluation determining whether novel monetary payment instruments should be introduced and under what conditions. Analysing extensive documentation from international organisations and major jurisdictions during 2024-2025, the research reveals a fundamental paradox: technological convergence around distributed ledger technology masks profound regulatory divergence across legal frameworks, institutional designs, and monetary sovereignty priorities.

While most central banks are exploring CBDCs, implementation strategies vary dramatically – from the EU’s coordinated digital euro advancement, to US retail CBDC prohibition alongside stablecoin legalisation, to diverse Asia-Pacific implementations. Three convergent patterns emerge: wholesale CBDC experimentation for cross-border settlement, tokenized deposits as bank-issued money under existing frameworks, and comprehensive stablecoin regulation. Rather than a single dominant model, evidence reveals a multi-form monetary architecture featuring the coexistence of wholesale CBDCs, tokenized deposits, and regulated stablecoins serving distinct use cases.

Keywords: *digital currency regulation, legal desirability, CBDC, tokenized money, comparative regulatory analysis.*

1. *The Research Premise*

This chapter introduces the findings of the Florentine research unit’s investigation into currency tokenization, exploring how market-driven innovations have emerged to address fundamental inefficiencies within existing payment systems. The launch of the Bitcoin blockchain marks a critical juncture, with the subsequent Libra/Diem initiative serving as a particularly illuminating case study. Our research examines the phenomenon of tokenization through three intersecting analytical frameworks: the legal status of currency, the architecture of the international monetary system, and the regulatory frameworks governing payment infrastructures.

The disruptive influence of cryptocurrencies has prompted a digital transformation of currency and payment mechanisms, creating what can aptly be described as a living laboratory for transdisciplinary inquiry that encompasses technical, economic, and, most importantly for this study, legal domains. This dynamic environment necessitates a fundamental re-evaluation of established monetary concepts, starting with the ongoing relevance of legal tender definitions and extending to broader questions surrounding the exercise of monetary sovereignty within emerging digital ecosystems.

A critical gap drives our investigation: the inadequate understanding – or systematic underestimation – of the multifaceted effects of digitalisation on money, particularly its dual role as both a medium of exchange and an object of value transfer. This conceptual ambiguity carries profound implications that remain insufficiently addressed in both policy and practice.

Our perspective here is to consolidate the empirical findings and theoretical analyses contributed by our research collective, emphasising aspects that public and private stakeholders often overlook or undervalue. Moreover, our objective is to illuminate the legal, regulatory, and systemic challenges that demand urgent scholarly and policy attention as tokenized currencies continue to reshape the monetary landscape.

2. The Research Context: Empirical Landscape (2024-2025)

The 2024-2025 period marks a critical inflexion point in global digital currency development, characterised by the simultaneous acceleration of technological experimentation and crystallisation of divergent regulatory philosophies. With 91% of central banks exploring central bank digital currencies (CBDCs), this timeframe witnessed three breakthrough developments that fundamentally reshaped the digital currency landscape: first, Project mBridge achieved minimum viable product (MVP) status with real cross-border CBDC transactions among five central banks, demonstrating the technical feasibility of multi-CBDC platforms; second, tokenized deposits gained definitive regulatory clarity through the European Banking Authority's landmark December 2024 report, establishing these instruments as the private sector alternative within existing banking frameworks; and third, comprehensive stablecoin regulation materialized through the EU Markets in Crypto-Assets Regulation (MiCAR), which took full effect in December 2024, and the US GENIUS Act, signed in July 2025, creating the world's first federal stablecoin framework.

However, the empirical evidence reveals not convergence toward a single digital money model, but rather the emergence of a multi-form monetary architecture. The future system features the coexistence of wholesale CBDCs for interbank settlement, tokenized commercial bank deposits for programmable payments, and regulated stablecoins that bridge crypto-assets and traditional finance. Major jurisdictions pursued radically different paths: the European Union advanced its

digital euro toward 2029 launch, driven by declining cash usage and strategic autonomy concerns; the United States prohibited federal retail CBDC development while simultaneously legalizing payment stablecoins; China's e-CNY accumulated \$2 trillion in transactions yet confronted persistent adoption challenges against entrenched private payment systems; and Switzerland transitioned wholesale CBDC to production status, settling over CHF 750 million in tokenized bonds through continuous operational deployment.

This empirical landscape presents a paradox: technological convergence – distributed ledger technology, tokenization, programmability – masks profound regulatory divergence in legal frameworks, institutional designs, and monetary sovereignty priorities. The question is no longer merely technical feasibility, but legal desirability: under what conditions should tokenized money be introduced, and through which institutional architectures? This section maps the empirical terrain of 2024-2025 developments across four dimensions: (1) international organisations and their normative frameworks; (2) major jurisdictions and their divergent regulatory strategies; (3) transversal developments spanning cross-border initiatives, tokenized deposits, and stablecoin regulation; and (4) evolving legal foundations.

In conjunction with the following essays, it will serve as the foundation for the final comparative analysis, which will identify analytical patterns elucidating both convergences and persistent divergences.

2.1. International Organisations and Global Initiatives

International organisations have played, and continue to play, a pivotal role in shaping the conceptual and normative frameworks that guide national jurisdictions in developing their digital currency strategies. The Bank for International Settlements, the International Monetary Fund, the Financial Stability Board, and the World Bank have all provided valuable insights, experimental platforms, and policy guidance that have significantly influenced the global discourse on this matter. However, the impact of these organisations varied considerably across jurisdictions, influenced by factors such as institutional sovereignty, levels of financial integration, and geopolitical positioning.

2.1.1. Bank for International Settlements (BIS)

The BIS has emerged as a leader in digital currency discourse, underscored by extensive analytical research and pioneering experimental projects.¹ According to

¹ Ledger Insights, 'BIS Innovation Hub Agenda: Tokenization amongst Most Ambitious Projects' (23 January 2024) Ledger Insights – Blockchain for Enterprise <<https://www.ledgerinsights.com/bis-innovation-hub-agenda-tokenization/>> accessed 7 February 2026; Digital Pound Foundation, 'Project Agora Launched with Seven Central Banks, Featuring USD, Euro, GBP, and Yen CBDC Digital Currencies – Digital Pound Foundation' (4 April 2024) <<https://digitalpoundfoundation.com/project-agera-launched-with-seven-central-banks-featuring-usd-euro-gbp-and-yen-cbdc-digital-currencies/>>

the 2024 BIS survey, an overwhelming 91% of the 85 central banks surveyed were actively investigating retail and wholesale CBDCs, signalling a strategic shift towards wholesale solutions that has dominated the 2024-2025 development trajectory.²

To facilitate this transition, the BIS has proposed a tokenized unified ledger that amalgamates a ‘trilogy’ of tokenized central bank reserves, commercial bank deposits, and government bonds, forming the backbone of next-generation monetary systems.³ This architectural framework positions central bank money as the foundational trust anchor within tokenized ecosystems, preserving the essential principles of singleness, elasticity, and integrity that characterise sound monetary policy while enhancing programmability and enabling atomic settlement.

Project Agorá, initiated in April 2024, is the BIS Innovation Hub’s most ambitious undertaking, involving collaboration among seven central banks⁴ and 41 private financial institutions.⁵ This initiative seeks to integrate tokenized wholesale CBDC and commercial deposits to enable cross-border payment solutions, targeting the structural inefficiencies inherent in correspondent banking by leveraging a unified ledger framework. Notably, the unified ledger enables atomic settlement, in which payment messages and fund transfers coincide, thereby eliminating temporal discrepancies that often lead to settlement risk. The project directly addresses compliance hurdles by implementing front-loaded screening mechanisms shared among participants, thereby minimising duplicate anti-money laundering (AML) and know-your-customer (KYC) procedures that typically hinder traditional correspondent banking workflows. The project is slated for completion in the first half of 2026.

2.1.2. *The International Monetary Fund (IMF)*

In 2024, the IMF significantly enhanced its capacity development for CBDCs, with over 50 countries seeking technical assistance – an impressive increase that signifies a shift from conceptual exploration to concrete implementation planning. The second instalment of the CBDC Virtual Handbook focused on six essential operational topics: integrating CBDC into existing payment landscapes, ensuring cyber resilience, formulating adoption strategies, establishing data privacy frameworks, aligning with monetary operations, and considering cross-border design aspects. This comprehensive guidance drew on insights gained from first-generation pilots and marked the IMF’s transition from theoretical analysis to practical implementation support.

accessed 7 February 2026; BIS, ‘Project Agorá: Central Banks and Banking Sector Embark on Major Project to Explore Tokenisation of Cross-Border Payments’ (3 April 2024) <<https://www.bis.org/press/p240403.htm>> accessed 7 February 2026.

² Anamaria Illes and others, ‘Advancing in Tandem – Results of the 2024 BIS Survey on Central Bank Digital Currencies and Crypto’ (2025) BIS Papers n 159.

³ BIS, *Annual Economic Report 2025*, 77ff.

⁴ France/Eurosystem, Japan, Korea, Mexico, Switzerland, the UK, and the US Federal Reserve Bank of New York.

⁵ Including Visa, Mastercard, SWIFT, major global banks.

Additionally, seven detailed FinTech Notes offered jurisdiction-specific operational guidance throughout 2024. Notably, ‘Positioning CBDC in the Payments Landscape’ (October 2024) concluded that CBDCs, fast payment systems, and e-money could coexist harmoniously, with CBDC’s unique value stemming from its status as public money in an increasingly digital economy, rather than superior technical capabilities. This acknowledgement of the potential for various forms of digital money to coexist represented a significant departure from earlier zero-sum perspectives.

The report ‘CBDC Adoption’ directly addressed the challenges of adoption, emphasising that central banks cannot assume CBDCs will be widely embraced simply because they are available. It introduced the REDI Framework (Regulatory enablement, Education and awareness, Design excellence, Incentive alignment) as a systematic approach to adoption strategy, highlighting that technical deployment is only one facet of successful implementation. This framework would prove insightful, as evidence from China and India shows that transaction volume does not necessarily lead to sustained adoption, especially when competing with established payment systems.

2.1.3. *The Financial Stability Board (FSB)*

Throughout 2024, the FSB placed significant emphasis on the implementation of stablecoins and the associated risks of cross-border payment systems. A report titled ‘Cross-Border Issues of Global Stablecoins in Emerging Markets and Developing Economies’⁶ highlighted that emerging markets and developing economies are particularly vulnerable to increased risks from foreign-currency-pegged stablecoins. These can destabilise capital flows, undermine the effectiveness of monetary policy, and foster currency substitution dynamics beyond the control of central banks. This analysis underscores a growing acknowledgement that stablecoins are not merely new payment instruments; they may also serve as mechanisms for cross-border monetary transmission that operate outside traditional regulatory frameworks.

The G20 Crypto-Asset Implementation Roadmap Status Report,⁷ a collaborative effort between the FSB and the IMF, evaluated progress in implementing the comprehensive policy responses established in the aftermath of notable crypto market failures in 2022. Notably, the report noted that stablecoin issuers have become substantial holders of mainstream financial assets through their reserve holdings, creating new contagion channels that link crypto-asset markets to traditional finance. For instance, the combined holdings of US Treasury bonds by Tether and Circle positioned them as significant holders of sovereign debt, thereby raising

⁶ FSB, ‘Cross-Border Regulatory and Supervisory Issues of Global Stablecoin Arrangements in EMDEs’ (2024) <<https://www.fsb.org/2024/07/cross-border-regulatory-and-supervisory-issues-of-global-stablecoin-arrangements-in-emdes/>> accessed 7 February 2026.

⁷ FSB, ‘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 7 February 2026.

systemic implications that had not previously been considered within regulatory frameworks for crypto-assets.⁸

2.1.4. *The World Bank*

The World Bank has made significant contributions to research on the interoperability of CBDC and fast payment systems, addressing the crucial question of whether these technologies should be seen as substitutes or complements. The report titled ‘Interoperability Between CBDC Systems and Fast Payment Systems’ examined technical solutions, such as application programming interfaces (APIs), standardised messaging protocols, and specialised bridge providers, to facilitate seamless value transfer across various infrastructures.⁹ The World Bank’s involvement in Switzerland’s wholesale CBDC pilot highlighted the practical advantages of round-the-clock settlement availability for international financial institutions.

In the publication ‘CBDCs and Fast Payment Systems: Rivals or Partners?’,¹⁰ it was argued that both technologies exhibit functional similarities – including instant settlement, low transaction costs, and broad accessibility – with the fundamental distinction being that CBDCs represent direct liabilities of central banks, whereas private money carries credit and liquidity risks. This analysis supports the coexistence thesis, suggesting that different jurisdictions may rationally select various combinations of these technologies based on their financial infrastructure maturity, financial inclusion goals, and monetary policy priorities.

These international organisations have established normative frameworks that prioritise the preservation of financial stability, the protection of monetary sovereignty, and adherence to principles of technological neutrality. However, their influence has been unevenly distributed: jurisdictions with robust domestic research capabilities (such as the US Federal Reserve, European Central Bank, and People’s Bank of China) engaged selectively with international guidance, while emerging markets leaned more on the IMF for capacity development. The disconnect between international coordination efforts and varying national implementations underscores the limitations of multilateral governance in monetary innovation, setting the stage for the jurisdictional analysis that follows.

2.2. *Major Jurisdictions: Divergent Approaches*

In the context of international coordination efforts to develop common analytical

⁸ BIS (n 3) 27.

⁹ Raunak Mittal and others, ‘Interoperability Between Central Bank Digital Currency Systems and Fast Payment Systems: A Technical Perspective’ (2024) World Bank <<https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099607406262426195>> accessed 22 November 2025.

¹⁰ José Aurazo and others, ‘Central Bank Digital Currencies and Fast Payment Systems: Rivals or Partners?’ (2024) BIS Papers No 151 <<https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099060725223535417>> accessed 22 November 2025.

frameworks and best practices, individual jurisdictions adopted markedly different strategies concerning digital currencies. These variations stemmed from distinct institutional arrangements, differing levels of financial system maturity, unique geopolitical positions, and diverse monetary policy priorities. The period of 2024-2025 highlighted these divergences, demonstrating that technological possibilities do not solely dictate regulatory responses. Instead, it is the domestic political economy, the relationships between central banks and political authorities, and strategic evaluations of financial system vulnerabilities that have shaped these divergent pathways.

2.2.1. The Eurosystem: Coordinated Advancement Toward Digital Euro

The digital euro project reached its most advanced stage in 2024-2025, completing the two-year preparation phase with ECB Governing Council approval to proceed to the next development stage.¹¹ If proposed legislation passes in 2026, pilots could commence in 2027 with initial issuance potentially occurring in 2029.¹² Development costs are estimated at €1.3 billion through issuance, with annual operating costs of €320 million projected from 2029 onward.

The design features crystallised during this period reflect carefully calibrated responses to financial stability concerns and privacy imperatives. The digital euro will pay no remuneration (zero interest, like physical cash) to avoid triggering large-scale deposit substitution that could destabilise bank funding. Holdings limit in the €10,000-€20,000 range, with automatic ‘waterfall mechanisms’ converting excess balances to linked bank accounts, addressing disintermediation risks while enabling substantial transaction capacity. The privacy architecture implements best-in-class data segregation, ensuring the ECB cannot link transactions to individual users, and includes offline functionality using secure elements that enable cash-like privacy for person-to-person transfers. Conditional payments are supported through programmability while preserving privacy and scalability, and legislative commitments guarantee that neither the Bank nor the government can access personal data or program how people spend their digital euros.

Financial stability analysis demonstrated that even the lowest considered holding limits (€3,000) produced no significant systemic risks – only 13 banks representing 0.3% of total banking system assets would approach liquidity thresholds in extreme scenarios. The Draft Digital Euro Scheme Rulebook v0.9 established comprehensive operational rules following the processing of over two thousand stakeholder comments.¹³ User research showed 66% would likely try the digital euro, with vulnerable consumers emphasising the importance of universal merchant acceptance and offline access for inclusion.

¹¹ European Central Bank, ‘Eurosystem Moving to next Phase of Digital Euro Project’ (30 October 2025) <<https://www.ecb.europa.eu/press/pr/date/2025/html/ecb.pr251030-8c5b5bee0.en.html>> accessed 7 February 2026.

¹² European Central Bank, ‘Progress on the Preparation Phase of a Digital Euro – Closing Progress Report’ (30 October 2025) <<https://doi.org/10.2866/6934742>>.

¹³ *ibid.*

Concerning the other digital monetary forms, the multi-issuer stablecoin controversy emerged as a primary systemic concern during this period. The European Systemic Risk Board published a report identifying them as exploiting gaps in MiCAR.¹⁴ Such arrangements enable regulatory arbitrage, fragment reserve management, create coordination failures, and expose EU issuers to systemic stress and contagion risks from unregulated co-issuers. However, intense lobbying by well-funded issuers seeking to enter European markets continued, with European Parliament members writing to the Commissioner for Financial Services to express regulatory concerns.

Regarding tokenized deposits, the European Banking Authority issued a Report providing crucial regulatory clarity, stating that tokenization does not alter the fundamental legal nature of deposits.¹⁵ Tokenized deposits remain excluded from MiCAR scope and continue to be regulated under banking directives (CRR/CRD, DGSD), can pay interest, and retain eligibility for deposit insurance. This determination removed a significant legal uncertainty that had inhibited European banks from engaging in tokenisation experimentation. However, market activity remained limited – EBA identified only one live tokenised deposit case in the European Economic Area, though 17% of surveyed banks anticipated engagement within 1-2 years.¹⁶

The EU approach thus combined coordinated advancement of retail CBDC, comprehensive crypto-asset regulation through MiCAR, and regulatory clarity for tokenised deposits – a multi-layered strategy reflecting the EU's preference for comprehensive legal frameworks established through extensive consultation processes.

2.2.2. *The United States: Prohibition, Liberalisation, and Private Sector Primacy*

The US regulatory landscape reveals contrasting approaches to various forms of tokenized money, reflecting nuanced legal assessments of their desirability. The GENIUS Act¹⁷ established a dual regulatory framework for stablecoins, signalling federal acceptance of privately issued tokenized money under specific conditions, while simultaneously enforcing an explicit prohibition on retail CBDCs, thereby closing one avenue for sovereign tokenized currencies.

This regulatory bifurcation illustrates that determinations of legal desirability are fundamentally influenced by the issuer's identity and liability structure, rather than

¹⁴ ESRB, *Crypto-Assets and Decentralised Finance: Report on Stablecoins, Crypto Investment Products and Multifunction Groups: October 2025* (Publications Office 2025) <<https://data.europa.eu/doi/10.2849/6616962>>.

¹⁵ EBA, *Report on Tokenised Deposits*, Regulatory Report n 24 (European Banking Authority 2024) 48 <<https://www.eba.europa.eu/sites/default/files/2024-12/4b294386-1235-463f-b9b5-08f255160435/Report%20on%20Tokenised%20deposits.pdf>> accessed 7 February 2026.

¹⁶ Filippo Zatti, 'Navigating Technological Neutrality: The Challenge of Tokenized Bank Deposits and The Regulatory Framework of MiCAR' (4 October 2025) SSRN Scholarly Paper n 5787664 <<https://papers.ssrn.com/abstract=5787664>> accessed 13 February 2026.

¹⁷ GENIUS Act, Pub L No 119-XX (2025) effective January 18, 2027.

by the underlying technology alone. The ban on retail CBDCs stemmed from concerns regarding government surveillance, privacy within the monetary sector, and the potential stifling of competitive innovation. In contrast, the legalisation of stablecoins acknowledged the role of private-sector tokenized money, provided it adhered to reserve requirements, regulatory oversight, and consumer protection frameworks.

Additionally, the SEC's Staff Accounting Bulletin 122, released on January 23, 2025, facilitated bank engagement in tokenized money systems by rescinding the custodial asset recognition requirements outlined in SAB 121. This decision removed barriers to participation by traditional financial institutions in digital asset custody, which is essential to the deployment of institutional tokenized money.

In tandem, banking agencies systematically removed prior-approval requirements for cryptocurrency activities (as noted by the FDIC and OCC on March 26, 2025), allowing regulated banks to develop tokenized deposit capabilities and blockchain-based payment systems without the need for case-by-case regulatory approval. This change accelerated the shift towards bank-issued tokenized money.

The Federal Reserve's ongoing research into wholesale CBDCs, despite prohibiting retail versions, alongside the New York Fed's involvement in the BIS Project Agorá, underscores a strategic bifurcation: embracing wholesale tokenized central bank money for institutional settlement while rejecting retail implementations.

This framework exemplifies how legal assessments of tokenized money encompass multiple dimensions: the design of monetary instruments (wholesale versus retail), the characteristics of issuers (public versus private), regulatory structures (comprehensive frameworks versus prohibitions), and goals of infrastructure modernisation (interbank settlement systems versus general-purpose payment instruments).

2.2.3. The United Kingdom: Conditional Preparation

The UK approach exemplifies legal desirability assessment as an ongoing, conditional evaluation rather than a definitive determination. The 'prepare and decide' framework treats tokenized sovereign money not as technologically inevitable but as requiring continuous justification against evolving private-sector alternatives. The Bank of England's January 2025 status report confirmed that the design phase would continue through the mid-2020s without commitment to issuance – positioning legal desirability as contingent on demonstrated market failures in the private provision of tokenized money.

Governor Andrew Bailey's October 2024 articulation crystallised this conditionality: 'We must continue to prepare for retail CBDC. We have not yet seen enough evidence that innovation will happen in commercial banks. We should encourage, and if necessary, provide such innovation – but there is no good reason to be proprietorial about who delivers it.' This formulation reveals a legal desirability assessment centred on functional necessity rather than institutional prerogative – sovereign tokenized money justified only where private tokenized deposits prove inadequate.

The design principles establish architecture for potential retail CBDC deployment

while embedding assumptions about tokenized money's proper role within the monetary system: reliability and security requirements address technological infrastructure foundations; privacy commitments (neither government nor central bank accessing personal data) differentiate sovereign tokenized money from surveillance concerns; interoperability mandates ensure integration with existing payment systems rather than displacement; and holdings limits (£10,000-£20,000 range with automatic sweeping) explicitly manage bank disintermediation risks – treating tokenized central bank money as supplementary rather than substitutional.

This design framework reflects a sophisticated understanding that tokenized money's legal desirability depends on systemic integration rather than isolated technological capability. The emphasis on supporting private-sector innovation, technological adaptation, financial inclusion, and energy efficiency positions potential sovereign tokenized money as an infrastructural complement to private tokenized deposits rather than a competitive alternative.

Technology experimentation¹⁸ represents preparation without commitment – developing technical infrastructure whose deployment remains contingent on legal desirability determination.

Academic research¹⁹ directly challenged tokenized central bank money's incremental value proposition, finding that welfare gains from CBDC declined between 2010 and 2022 as private-sector digital payments improved. This suggests many benefits that tokenized sovereign money would offer are already available through existing private tokenized payment innovations – fundamentally questioning whether retail CBDC's legal desirability can be established given development costs and financial stability risks.

The UK approach thus operationalises legal desirability as a dynamic assessment: preparing the regulatory and technological architecture for sovereign tokenized money while continuously evaluating whether private tokenized deposits adequately serve monetary system objectives. Issuance becomes justified only upon demonstrated market failure – where private innovation proves insufficient for payment system modernisation, financial inclusion, or monetary policy transmission. This evidence-based conditionality contrasts with the EU's determination that sovereign tokenized money is legally desirable and necessary (commitment to proceed) and the US's categorical rejection of retail CBDC legal desirability (outright prohibition), revealing three distinct approaches to assessing whether new forms of tokenized money should be introduced into national monetary systems.

¹⁸ Project Rosalind with the BIS Innovation Hub testing APIs for over 20 use cases, offline capability proofs, privacy-enhancing technologies research with MIT, sample wallet applications, and the 2025 Digital Pound Lab sandbox.

¹⁹ Benjamin Hemingway, 'The Role of Central Bank Digital Currency in an Increasingly Digital Economy' (December 2024) Bank of England Staff Working Paper No 1101.

2.2.4. *Asia-Pacific: Diverse Implementations*

Asia-Pacific jurisdictions demonstrate the most diverse approaches to the legal desirability of tokenized money, reflecting fundamentally different assessments of which forms of tokenized money serve distinct financial system architectures, inclusion imperatives, and strategic positioning objectives.

Singapore's comprehensive tokenization strategy reveals a legal desirability assessment across multiple tokenized forms of money, rather than a privileged hierarchy. The production pilot of tokenized Monetary Authority of Singapore (MAS) bills settled using wholesale CBDC marks the operational deployment of sovereign tokenized money for institutional settlement.²⁰ Three major banks²¹ executing overnight interbank lending using CBDC demonstrated 24/7 settlement capability, establishing an always-on financial market infrastructure as achievable through tokenized central bank money.

Simultaneously, Singapore's stablecoin regulatory framework for single-currency stablecoins²² establishes legal desirability for privately issued tokenized money, subject to strict reserve backing and redemption reliability requirements – while accepting multiple competing forms of tokenized money within a coordinated regulatory architecture. The BLOOM²³ initiative, which encourages trials using both tokenized bank liabilities and regulated stablecoins, operationalises coexistence rather than exclusivity among tokenized forms of money.

Project Guardian's expansion²⁴ and the Global Layer One whitepaper (May 2024) proposing a multi-purpose shared ledger with native wholesale CBDC as the settlement asset crystallise Singapore's strategic determination: wholesale tokenized central bank money serves as the trust anchor and settlement layer, while private tokenized deposits and regulated stablecoins provide retail and cross-border payment functionality. This architecture treats different tokenized forms of money as complementary components within an integrated infrastructure rather than competing alternatives.

Japan's parallel pursuit of retail CBDC exploration and tokenized deposit implementation represents a bifurcated legal assessment of desirability: maintaining optionality for sovereign tokenized money while facilitating the deployment of private bank-issued tokenized money. The Bank of Japan's CBDC pilot²⁵ is developing privacy through data separation, scalability targeting 100,000+ transactions per second, and API sandbox infrastructure, which prepares for a sovereign tokenized

²⁰ MAS Managing Director Chia Der Jiun's declaration that tokenized assets are 'clearly out of the lab' signals regulatory confidence in the legal desirability of wholesale tokenized central bank money.

²¹ DBS, OCBC, UOB.

²² SGD, USD, and EUR-pegged.

²³ Borderless, Liquid, Open, Online, Multi-currency.

²⁴ 40+ institutions across seven jurisdictions completing 15+ trials.

²⁵ 64+ companies across seven working groups.

money architecture without commitment. Concurrently, the DCJPY tokenized deposit network's August 2024 production launch – becoming Asia's first major implementation – and Japan Post Bank's announcement of DCJPY adoption for 120 million accounts (\$1.29 trillion deposits) starting fiscal year 2026 demonstrate definitive legal desirability determination for bank-issued tokenized money. This could create the world's most extensive tokenized deposit base, establishing private tokenization as the primary modernisation pathway while preserving sovereign tokenized money as a potential future intervention.

Hong Kong's multiple initiatives reflect legal desirability assessment shaped by international financial centre positioning. Project mBridge reaching MVP (June 2024, with Saudi Arabia as the fifth participant) advances wholesale cross-border CBDC for international settlement – treating sovereign tokenized money as infrastructure for modernising correspondent banking. Project Ensemble Sandbox (August 2024) facilitates interbank settlement using tokenized money for tokenized assets, improving delivery-versus-payment efficiency. Stablecoin regulation (legislation passed in May 2025, effective in August 2025), establishing mandatory licensing, strict reserve requirements, and redemption rights, signals acceptance of privately issued tokenized money for cross-border and retail payments. Hong Kong's approach thus determines legal desirability differently across use cases: sovereign tokenized money for wholesale international settlement, and private tokenized money for retail and cross-border accessibility.

Australia's strategic decision (September 2024) to prioritise wholesale over retail CBDC exemplifies an explicit legal desirability determination through comparative institutional analysis. The joint RBA-Treasury conclusion that 'a clear public interest case yet to emerge for retail CBDC in Australia' reflects the assessment that existing fast payment systems adequately serve retail needs, and that retail sovereign tokenized money lacks sufficient incremental value to justify the financial stability risks and development costs. Conversely, Project Acacia (participants selected in July 2025), with 24 use cases, including 19 real-money pilots featuring wholesale CBDC across multiple distributed ledger technologies, and research suggesting potential annual gains of A\$19 billion from wholesale modernisation, establishes the affirmative legal desirability of institutional tokenized central bank money. This bifurcation demonstrates how legal desirability assessments can diverge dramatically between retail and wholesale tokenized money within a single jurisdiction, depending on the adequacy of existing infrastructure and the incremental benefits calculations.

China's e-CNY deployment reveals tension between technical implementation and functional adoption in the realisation of legal desirability. Reaching cumulative transactions of RMB 14.2 trillion (\$2 trillion) through September 2025, with 2.25 billion wallets, demonstrates sovereign capacity for mass-scale tokenized money infrastructure. However, the average transaction size declining from RMB 1,895 (\$135) in 2023 to RMB 428 (\$60) in 2025 amid Alipay and WeChat Pay's dominance suggests that legal authorisation and technical deployment are insufficient for the adoption of tokenized money when competing against entrenched private platforms offering

superior functionality. This challenges assumptions that legal desirability determination and infrastructure provision automatically generate usage, revealing that tokenized money's practical viability depends on competitive advantage over existing payment instruments rather than on regulatory mandate or technical availability alone.

The Asia-Pacific diversity thus illuminates how legal desirability assessment for tokenized money incorporates multiple analytical dimensions: wholesale versus retail use cases, sovereign versus private issuance, domestic versus cross-border functions, and competitive positioning against existing payment infrastructure. Jurisdictions determine whether specific forms of tokenized money should exist based on financial system gaps requiring addressed, strategic economic positioning, and realistic assessment of adoption likelihood given incumbent alternatives – producing regulatory architectures ranging from comprehensive multi-form tokenization (Singapore), parallel sovereign-private development (Japan), use-case differentiated approaches (Hong Kong), explicit wholesale-retail bifurcation (Australia), to sovereign deployment facing adoption challenges (China).

2.2.5. Emerging Markets: Financial Inclusion and Monetary Sovereignty

Brazil's Drex pilot faced the privacy trilemma, struggling to achieve privacy, scalability, and programmability simultaneously with distributed ledger technology. Phase 2 shifted its focus to testing business models and exploring the tokenization of bank deposits, public debt, and card receivables, with participation from 50 institutions. South Korea is set to launch a primary retail pilot in Q4 2024, involving 100,000 participants and concentrating on government vouchers and carbon emissions trading. Meanwhile, Saudi Arabia and the UAE have strengthened their monetary collaboration, with Saudi Arabia joining mBridge in June 2024, driven in part by the goal of reducing dependence on the USD, supported by a \$6.93 billion Saudi-China currency swap agreement. Turkey's Central Bank has advanced to Phase 2 development, opting for 'programmable payments' rather than 'programmable money,' while implementing self-sovereign identity solutions to enhance privacy protection.

These jurisdictional case studies illustrate several key patterns. Firstly, wholesale CBDC applications garner broader support than retail variants across diverse ideological and developmental contexts. Secondly, jurisdictions with established fast payment systems tend to scrutinise the value propositions of retail CBDCs more critically than those facing challenges in financial inclusion. Thirdly, the regulation of stablecoins has rapidly converged across jurisdictions following significant market failures, indicating that concerns about systemic risk can bridge regulatory fragmentation. Lastly, implementations of tokenized deposits have progressed under existing banking laws, as regulatory authorities clarified that tokenization does not fundamentally alter the nature of deposits. These patterns serve as the empirical foundation for the final comparative analysis.

2.3. *Transversal Developments: Three Pillars*

Three transversal developments across jurisdictions reveal convergent legal desirability determinations for distinct tokenized money forms, establishing differentiated regulatory architectures that address specific functional requirements: cross-border payment experimentation affirming wholesale tokenized central bank money for international settlement; tokenized deposits clarification establishing bank-issued tokenized money as legally equivalent to traditional deposits; and stablecoin regulation frameworks determining conditions under which privately issued tokenized money achieves legal desirability.

2.3.1. *Pillar 1: Cross-Border Payment Experimentation*

The BIS Project Agorá presents a multilateral legal desirability assessment of wholesale tokenized central bank money to address inefficiencies in correspondent banking. This initiative aims to create a unified ledger architecture for atomic settlement coupled with streamlined compliance. The project's MVP achievement, featuring five central banks conducting real-value transactions, demonstrates the feasibility of a multi-CBDC platform and outlines comprehensive governance frameworks addressing monetary sovereignty across various jurisdictions.

According to the IMF-FSB Cross-Border Payments Roadmap, more than half of the 15 priority actions are either completed or in progress; however, limited advancements toward the 2027 quantitative targets – specifically in reducing costs and increasing speed at a global aggregate level – highlight a systemic commitment to wholesale cross-border tokenized central bank money, despite existing geopolitical fragmentation. Currently, there are fifteen cross-border wholesale CBDC projects worldwide, a count that has doubled since the onset of the Russia-Ukraine conflict, illustrating how geopolitical motivations, alongside efficiency objectives, propel infrastructure development. Nevertheless, the risk of network fragmentation from multiple incompatible platforms could potentially revive the inefficiencies associated with correspondent banking at the infrastructure level, necessitating resolutions to interoperability concerns.

This experimentation substantiates the legal desirability of wholesale tokenized central bank money for cross-border institutional settlements, focusing on tangible efficiency gains, atomic settlement capabilities, and the preservation of sovereignty – thereby positioning sovereign tokenized money as a viable solution to structural inadequacies in payment systems rather than merely a technological novelty.

2.3.2. *Pillar 2: Tokenized Deposits as Private Sector Solution*

Regulatory clarity breakthrough arrived through the EBA's December 2024 report confirming tokenized deposits do not alter deposit nature – establishing the fundamental legal principle that bank-issued tokenized money retains identical legal characterisation to traditional deposits under banking law, excluded from MiCAR crypto-asset regulation, and maintains deposit guarantee schemes, prudential oversight, and consumer protection frameworks.

This determination seemed to resolve legal uncertainty that had been impeding bank experimentation with tokenized money issuance. Major implementations followed: Germany's CBMT Consortium²⁶ demonstrated cross-bank transactions with real-time gross settlement, smart contract automation, and multi-currency support. Targeted applications emerged for Industry 4.0 transformation in the wholesale business-to-business sector. UK Finance's Regulated Liability Network/Great Britain Tokenized Deposits pilot (January 2025-mid 2026) involving six major banks testing three use cases: peer-to-peer payments via marketplaces, repackaging processes, and digital asset settlement.

Key conclusion: 'Tokenization can be implemented to be neutral from a legal/regulatory perspective' – establishing that bank-issued tokenized money achieves legal desirability without requiring special regulatory dispensation, merely the technical implementation of existing deposit instruments.

Japan's DCJPY launched production with a two-zone architecture separating the Financial Zone (banks mint tokens) from the Business Zones (asset-class-specific distributed ledger networks), demonstrating a sophisticated implementation that addresses both regulatory compliance and functional specialisation. Significantly, DCJPY originally planned wholesale CBDC options for settlements by 2026 versus only 15% CBDCs currently – a stark reversal from previous assumptions about sovereign versus private tokenized money deployment trajectories.

This pillar establishes that bank-issued tokenized money achieves legal desirability through functional equivalence with existing deposit instruments rather than requiring novel regulatory categories – enabling rapid deployment within established banking law frameworks while preserving depositor protections and systemic oversight. The shift from anticipated reliance on CBDC to an overwhelming emphasis on private, tokenized deposits reveals a market-driven determination that bank-issued tokenized money better serves most use cases than sovereign alternatives for domestic and commercial transactions.

2.3.3. Pillar 3: Comprehensive Stablecoin Regulation

Stablecoin regulation establishes legal desirability conditions for privately issued tokenized money distinct from both bank-issued tokenized deposits and sovereign CBDCs. EU MiCAR's comprehensive framework operationalises legal desirability by differentiating prudential requirements for asset-referenced tokens from those for e-money tokens, with graduated oversight intensity reflecting systemic significance thresholds.

National implementations – Germany (KMAG), France (ACPR), Italy (Decree 129/2024), Singapore (August 2024), Hong Kong (effective December 2024) – demonstrate regulatory convergence, treating privately issued tokenised money as requiring specialised frameworks that assess technology neutrality against substance-over-form principles. Legal desirability determination centres on whether

²⁶DZ Bank, Deutsche Bank, Commerzbank, UniCredit, Helaba, plus BASF, Mercedes-Benz, Siemens.

actual economic features rather than technical implementation satisfy monetary instrument standards: reserve backing adequacy, redemption reliability, issuer capitalisation, and consumer protection equivalence to established payment instruments.

US GENIUS Act (signed July 2025, effective January 2027) established a federal framework determining legal desirability for privately issued stablecoins through distinct criteria: 1:1 reserves, monthly disclosure, annual audits, dual supervision (monetary authority licensing, banking regulator prudential oversight), bankruptcy priority protection, algorithmic/yield-bearing prohibition, and securities classification clarity. The Hong Kong Ordinance (effective August 2025) mandates licensing, strict reserves, and redemption rights, with a six-month transitional period.

FATF implementation monitoring showed improved compliance: only 1 jurisdiction was fully compliant with the comprehensive standards initially, but 73% passed Travel Rule legislation by 59% after October enforcement. However, 85% have not taken enforcement actions, revealing persistent challenges. Emerging risks (terrorist organisations, trafficking networks, most on-chain illicit activity now involving stablecoins) and Basel Committee amendments (January 2026 implementation), strengthening criteria demonstrate ongoing legal desirability reassessment – treating privately-issued tokenized money as requiring dynamic regulatory adaptation reflecting 1,250% risk weight elevation where standards prove inadequate.

These transversal developments establish global infrastructural convergences: cross-border wholesale CBDC platforms, tokenized deposits under banking law, and regulated stablecoins. Together they construct a multi-form digital money system featuring public money (wholesale CBDC), regulated private money (tokenized deposits), and regulated crypto-native money (stablecoins) – each serving distinct use cases within overlapping ecosystems. The question shifts from ‘which form will dominate?’ to ‘how will these forms interoperate, and under what governance arrangements?’

3. Legal Foundations and Scholarly Analysis

Empirical developments have unfolded within evolving legal frameworks that address fundamental questions of legal characterisation, specifically whether tokenized money fits within existing monetary categories or necessitates the creation of novel legal constructs. These developments significantly influence property rights, contractual obligations, and cross-border coordination mechanisms for cross-border implementation.

The BIS legal paper titled ‘Legal Aspects of Retail CBDCs’ (November 2024), produced collaboratively by seven central banks and BIS legal experts, offers the most comprehensive examination of the foundational legal requirements for sovereign tokenized money to achieve legal desirability. This analysis investigates whether retail CBDC qualifies as legally recognisable money within existing categories (such

as cash, deposits, and e-money) or requires a new legal classification. It also evaluates its legal desirability by assessing its compatibility with the relevant jurisdiction's legal framework.

Key questions regarding legal characterisation have a profound impact on regulatory frameworks for tokenized money: the determination of property rights (whether CBDC is deemed tangible or intangible property, which may potentially substitute traditional concepts of possession in ownership and secured transactions); the contractual characterisation of the relationship between holders and issuers; the mechanisms of transferability under property and negotiable instruments law; and the implications of legal tender status concerning mandatory acceptance and the discharge of obligations.

The IMF Working Paper WP/20/254 reveals that most central bank laws do not currently authorise the issuance of CBDC to the general public. This highlights the need to examine whether existing legal foundations facilitate the deployment of sovereign tokenized money or require legislative amendments. The paper illustrates that the issuance of CBDC requires explicit authorisation for general public distribution, detailing specifications regarding purposes, forms, holder eligibility, interest payment authority, and holdings limits. Additionally, it addresses issues related to settlement finality, insolvency treatment, and data privacy within the existing legal framework.

Cross-border legal interoperability coordination through multilateral frameworks addresses the question of whether tokenized money is legally desirable for international transactions. The Atlantic Council documented 17 bilateral CBDC agreements signed by 2025, covering the IMF XC Model, the BIS Universal Ledger approach, and SWIFT interoperability mechanisms. These agreements establish governance frameworks for data protection, settlement finality recognition, and dispute resolution – issues that multiply in complexity when transactions span multiple CBDC systems – and determine whether cross-border deployment of tokenized money achieves legal certainty sufficient for institutional adoption.

The evolution of the legal framework for smart contracts directly affects the legal desirability of programmable tokenized money. UNIDROIT value propositions, Global Financial Markets Association industry guidance (October 2024), and ISDA research reveal that most countries lack specific regulatory frameworks for smart contracts, creating legal uncertainty about code enforceability and dispute resolution mechanisms. Questions persist about whether code constitutes a legally binding agreement, how to handle coding errors, and whether automated execution overrides traditional contract defences – all of which fundamentally affect whether programmable tokenized money achieves the legal certainty necessary for commercial deployment.

European academic research produced substantial analysis, including a 78-page examination of digital euro regulatory proposals, legal analyses of the nature of private and monetary law, ECB accountability frameworks under EU constitutional principles, and critical evaluations of privacy protections and financial stability impacts. This scholarship addresses whether the legal desirability determination for

sovereign tokenized money requires resolving foundational questions of legal characterisation before deployment decisions.

Comparative jurisdictional analysis concluded UK CBDC represents a potentially superior alternative to existing fast payment system maturity, suggesting CBDC networks likely remain decentralized with regulatory divergence despite international coordination efforts. Interoperability achievement depends on the adoption of technical standards rather than legal harmonisation across jurisdictions – revealing a tension between technological coordination and legal fragmentation as obstacles to the realisation of tokenized money's legal desirability at the global scale.

Systematic legal foundation research produced analytical frameworks spanning national legal traditions, constitutional structures, and property law systems across jurisdictions. The diversity addresses the legal characterisation of digital currency, cross-border recognition mechanisms, and the enforceability of smart contracts – creating foundational challenges for the deployment of multi-CBDC platforms and tokenized ecosystems at scale.

Legal foundations remain contested terrain. While international organisations provided analytical frameworks, national legal traditions, constitutional structures, and property law systems generate persistent divergences. The absence of international legal consensus on the characterisation of digital currency, cross-border recognition, and the enforceability of smart contracts creates coordination challenges for the multi-CBDC platforms and tokenized ecosystems described above.

Legal certainty emerges as a jurisdiction-by-jurisdiction prerequisite through legislative action, regulatory clarification, or judicial precedent that establishes how tokenized money fits within existing legal categories and frameworks. Legal desirability assessment proves insufficient without a corresponding legal architecture that provides definitive answers to characterisation questions, property rights determination, transferability mechanisms, cross-border recognition, and smart contract enforceability – establishing legal harmonisation as a necessary (though not sufficient) condition for tokenized money deployment to achieve functional viability across jurisdictions. This pattern demonstrates that technological feasibility and policy desirability remain inadequate for the implementation of tokenized money absent foundational legal certainty about instrument characterisation and rights structure within each jurisdiction's legal system – a constraint consistent with monetary sovereignty's enduring salience in determining whether and how new money forms achieve legal recognition and operational deployment.

4. Brief Concluding Remarks and Outlook

The empirical documentation presented in this chapter establishes the context within which digital currency regulation must be understood. The 2024-2025 period revealed technological convergence – shared adoption of distributed ledger technology, tokenization, and programmability – producing not regulatory harmonisation

but profound divergence in legal frameworks, institutional designs, and assessments of monetary sovereignty implications. This paradox frames the central question: what determines whether specific forms of tokenized money achieve legal desirability within specific jurisdictional contexts? The Florentine research unit has approached this question through complementary analytical lenses, with each contribution illuminating distinct dimensions of how monetary tokenization challenges established legal, institutional, and theoretical frameworks. The following three chapters will explore the disintermediation challenge posed by native tokens for AML/CFT frameworks, the regulatory coordination requirements of multi-issuance stablecoins, and the implications of CBDCs for macroeconomic governance in cyber-physical systems.

The final chapter of our collective contribution returns to the analytical framework implicit in this empirical mapping. Building on the evidence documented here and informed by the developed theoretical and legal insights, a systematic comparative framework is proposed for assessing the ‘legal desirability’ framework. That analysis will examine why the wholesale pivot occurred across diverse jurisdictions, how financial stability concerns shape design architectures, why privacy-AML/CFT balance admits no universal solution, and what adoption challenges reveal about the implementation gap. The synthesis will aim to determine principles for evaluating digital currency regulation that preserve trust across multiple stakeholders and enhance policy effectiveness. The adopted methodology would combine empirical documentation, legal and economic analysis, and the construction of a theoretical framework to assess how regulatory architectures determine both whether novel monetary instruments should be introduced and the modalities for their compliant implementation.