Centre for International
Governance Innovation

CIGI Papers No. 358 — July 2026

China's Central Bank Digital Currency 2.0 and the Future of Digital Finance

Alex He

Centre for International
Governance Innovation

CIGI Papers No. 358 — July 2026

China's Central Bank Digital Currency 2.0 and the Future of Digital Finance

Alex He

About CIGI

The Centre for International Governance Innovation (CIGI) is an independent, non-partisan think tank whose peer-reviewed research and trusted analysis influence policy makers to innovate. Our global network of multidisciplinary researchers and strategic partnerships provide policy solutions for the digital era with one goal: to improve people's lives everywhere. Headquartered in Waterloo, Canada, CIGI has received support from the Government of Canada, the Government of Ontario and founder Jim Balsillie.

À propos du CIGI

Le Centre pour l'innovation dans la gouvernance internationale (CIGI) est un groupe de réflexion indépendant et non partisan dont les recherches évaluées par des pairs et les analyses fiables incitent les décideurs à innover. Grâce à son réseau mondial de chercheurs pluridisciplinaires et de partenariats stratégiques, le CIGI offre des solutions politiques adaptées à l'ère numérique dans le seul but d'améliorer la vie des gens du monde entier. Le CIGI, dont le siège se trouve à Waterloo, au Canada, bénéficie du soutien du gouvernement du Canada, du gouvernement de l'Ontario et de son fondateur, Jim Balsillie.

Credits

Research Director, Digital Economy Odun Olowookere
Director, Programs Dianna H. English
Program Manager Grace Wright
Publications Editor Christine Robertson
Publications Editor Susan Bubak
Graphic Designer Abhilasha Dewan

Human Analysis Standard

This publication's analysis was developed and approved by the named human authors under documented review controls; AI assistance was judicious, disclosed and verified.

67 Erb Street West
Waterloo, ON, Canada N2L 6C2
cigionline.org

Table of Contents

About the Author

Xingqiang (Alex) He is a CIGI senior fellow. Alex is an expert on digital governance in China, the Group of Twenty (G20), China and global economic governance, domestic politics in China and their role in China's foreign economic policy making, and Canada-China economic relations.

Prior to joining CIGI in 2014, Alex was a senior fellow and associate professor at the Institute of American Studies at the Chinese Academy of Social Sciences (CASS) and a visiting scholar at the Paul H. Nitze School of Advanced International Studies, Johns Hopkins University, in Washington, DC (2009–2010). Alex was also a guest research fellow at the Research Center for Development Strategies of Macau (2008–2009) and a visiting Ph.D. student at the Centre of American Studies at the University of Hong Kong (2004).

Alex is the author of *The Dragon's Footprints: China in the Global Economic Governance System under the G20 Framework*, published in English (CIGI Press, 2016) and Chinese editions, and co-author of *A History of China-U.S. Relations* (Chinese Social Sciences Press, 2009). Alex has published dozens of academic papers, book chapters, and newspaper and magazine articles.

Alex has a Ph.D. in international politics from the Graduate School of CASS and previously taught at Yuxi Normal University in Yunnan Province, China. Alex is fluent in Chinese and English.

Acronyms and Abbreviations

AML	anti-money-laundering
BIS	Bank for International Settlements
CBDC	central bank digital currency
DLTs	distributed ledger technologies
ECB	European Central Bank
KYC	know-your-customer
PBoC	People's Bank of China
rCBDC	retail central bank digital currency
RMB	renminbi
wCBDC	wholesale central bank digital currency

Executive Summary

At the beginning of 2026, the People's Bank of China (PBoC) introduced a major redesign of its central bank digital currency (CBDC), the e-CNY. Moving beyond its original definition as "digital cash," the e-CNY has been reclassified as "digital deposit money" — an interest-bearing, account-based instrument distributed and managed by commercial banks. This shift marks a decisive transition from a pilot-phase payment tool to a more deeply integrated component of China's financial system.

The introduction of interest-bearing features, the reallocation of liabilities from the central bank to commercial banks and the reinforcement of a two-tier architecture collectively address a key challenge in global CBDC design: how to innovate without destabilizing financial intermediation. The e-CNY 2.0 model demonstrates that CBDCs can be designed to strengthen rather than displace existing financial institutions.

The digital yuan 2.0 adopts a hybrid approach that departs from both purely centralized and fully decentralized paradigms. By integrating account-based systems with selectively deployed blockchain and smart contract functionalities, it offers a pragmatic solution: centralized systems for high-frequency domestic payments that require scalable efficiency and distributed ledger technologies (DLTs) for cross-border and multi-party transactions that necessitate trust.

This hybrid approach represents an institutional innovation aimed at incorporating emerging digital technologies into a state-controlled system that prioritizes currency sovereignty. More broadly, it reflects an evolving political economy of technology, one that emphasizes maintaining digital sovereignty, financial stability and continued relevance through the strategic adoption of new digital technologies. In the international domain, the expansion of cross-border infrastructures — particularly through platforms such as Project mBridge — positions the e-CNY as part of a broader effort to reshape global payment systems by offering a CBDC-based alternative. Taken together, these developments suggest a model in which sovereign control, technological interoperability and institutional trust are reconfigured through digital means.

The emergence of e-CNY 2.0 signals intensifying global competition over the future of digital money, with three distinct models taking shape: China's centralized, bank-integrated CBDC model; the United States' market-driven, stablecoin-based ecosystem; and Europe's privacy-oriented public digital currency. China's model may appeal to countries seeking to balance monetary sovereignty, financial stability and technological innovation, especially in bank-dominated emerging economies. At the same time, its emphasis on centralized oversight and data visibility raises important questions about privacy, governance and cross-border interoperability.

Introduction

China's decade-long CBDC pilot program reached a landmark turning point at the beginning of 2026. The PBoC released a new action plan to strengthen the governance of the digital yuan and upgrade the supporting financial infrastructure.[1] Effective January 1, 2026, China's CBDC — officially known as the e-CNY (also referred to as the digital renminbi [RMB] or digital yuan) — was redefined as "digital deposit money," marking a significant departure from its earlier design as digital cash.

Under the new framework, holdings of e-CNY now accrue interest, and, correspondingly, digital yuan balances are recorded as liabilities on the balance sheets of these intermediaries rather than that of the central bank. While the e-CNY is technically issued by the PBoC as its sole issuer, commercial banks and authorized payment institutions — rather than the central bank — are responsible for opening and managing e-CNY wallets (accounts), which function similarly to conventional bank accounts.

This institutional shift occurs at a pivotal moment of intensifying global competition over digital currencies and the future of money. China's e-CNY remains a global leader in large-scale CBDC initiatives, with both domestic and cross-border pilots continuing to expand. At the same time, the rapid proliferation of cryptocurrencies and stablecoins as alternative digital payment

1 The official name of the framework is the Action Plan on Further Strengthening the Digital RMB Management and Service System and the Construction of Related Financial Infrastructure.

instruments poses growing challenges to central banks' control over monetary policy and financial intermediation. Chinese policy makers have become increasingly attentive to the potential risks that these private digital currencies pose to the future adoption of the e-CNY and overall financial stability in China.

Domestically, the reconfiguration of the e-CNY framework seeks to more deeply integrate the digital yuan into China's regulated financial system, thereby overcoming structural bottlenecks associated with its earlier digital cash designation. This transition is intended not only to facilitate the next stage of the e-CNY's evolution, but also to position it more competitively in response to the rise of stablecoins and their role in further bolstering the supremacy of the US dollar in the global financial system.

This paper explores the economic and political implications of e-CNY 2.0 as a major institutional and technological innovation, which carries potentially significant implications for future CBDC design and the future of digital finance. It focuses in particular on how the recent redesign of digital yuan attempts to address three core challenges facing CBDCs globally: mitigating financial disintermediation; reconciling centralized CBDCs — prioritizing currency sovereignty — with the integration of decentralized ledger technologies such as blockchain; and enhancing cross-border payment systems through CBDC-based platforms.

The rest of the paper proceeds as follows. The first section, "Motivations," examines the policy motivations behind the transition of the e-CNY from digital cash to digital deposit money. The second section, "A Potential Model for Global CBDCs?," analyzes how the key innovations of this redesign — including changes in institutional architecture, technological pathways and cross-border payment applications — help address the three challenges identified above. The third section, "Implications for Global Digital Currency Competition," explores the international implications of this transition, including comparative discussion of the prospective digital euro and ongoing digital currency developments in the United States. The final section concludes.

Motivations

Two primary motivations drive the PBoC's decisions to transition the e-CNY from digital cash to digital deposit money: domestic stagnation within the pilot program and the escalating global challenge posed by stablecoins.

Domestic Adoption Bottleneck and Institutional Disincentives

Domestically, the e-CNY pilot has encountered a significant development bottleneck. Official data released by the PBoC suggests that e-CNY has achieved notable scale in absolute terms. As of November 2025, the digital yuan had processed 3.48 billion transactions with a cumulative value of 16.7 trillion yuan. Approximately 230 million personal wallets and 18.84 million corporate wallets had been opened via the digital RMB application. In the cross-border domain, the mBridge (a multi-CBDC bridge) recorded 4,047 transactions totalling 387.2 billion yuan, with the e-CNY accounting for roughly 95.3 percent of total transaction volume among participating currencies (Lu 2025).[2]

However, in relative terms, these figures remain marginal. The e-CNY transactions in 2024 account for only 0.2 percent of the 1.3 quadrillion yuan (Chorzempa 2026) in China's overall electronic payment ecosystem via bank cards and dominant digital platforms. This disparity underscores the limited penetration of the digital yuan within China's broader financial system.

Despite nearly a decade of experimentation, the program has remained in a prolonged trial phase without achieving widespread adoption. In practice, much of its progress has relied heavily on administrative measures, including mandating government agencies to distribute salaries in e-CNY, offering subsidies and issuing promotional "red envelopes" to incentivize usage (Bao and Zhang 2026; Tang 2026). High-profile events, such as the 2022 Beijing Winter Olympics, have also been leveraged to showcase its application.

Absent these policy-driven efforts, both users (customers and vendors) and participating institutions have shown limited willingness to adopt the digital yuan, which helps explain its

2 Author Lu Lei is the deputy governor of the PBoC.

constrained adoption. For individual users and service providers such as vendors, the core issue lies in the lack of compelling use cases. Existing electronic payment systems — dominated by WeChat Pay and Alipay — are already deeply embedded in everyday economic life, offering comprehensive coverage across virtually all consumption scenarios. As a result, the e-CNY has struggled to provide sufficiently differentiated value to justify a shift in consumer behaviour.

In addition, the payment acceptance network for e-CNY remains underdeveloped, with support from only a limited number of merchants and service providers. These businesses have to bear the costs of hardware and training of integrating e-CNY payment function without clear economic benefits for doing so. Consequently, many are reluctant to install payment facilities such as e-CNY point-of-sale terminals without subsidies.

From the perspective of commercial banks, the current framework has created structural disincentives. While banks bear the operational costs and responsibilities associated with managing e-CNY circulation, they have been unable to charge service fees or integrate digital yuan holdings into their core deposit and lending businesses under the digital cash design. Consequently, financial institutions have had little incentive to actively promote e-CNY adoption, reinforcing the lack of use cases that continue to stifle enthusiasm for the digital yuan among households, businesses and even public-sector entities. Non-bank payment institutions, most notably WeChat Pay and Alipay, lacked incentive to adopt e-CNY as well because acquiring digital yuan relied solely on commercial bank wallets. These platforms were not allowed to independently open and manage digital yuan wallets and had to transfer sensitive customer data to banks during the transaction process (Tang 2026).

Academic and policy debates within China had already anticipated these constraints. As early as 2021, scholars[3] argued that restricting the e-CNY to a narrow definition of digital cash (M0) would significantly limit its scalability and functionality. In its 2021 white paper "Progress of Research & Development of E-CNY in China," the Working Group on E-CNY Research and Development of the People's Bank of China (2021) maintained that the e-CNY should remain non-interest-bearing and cash-like. However, critics (Wang 2021; Zhang 2021) contended that such a design would confine its use to a narrow set of payment scenarios, preventing it from playing a meaningful role in broader financial intermediation. They advocated expanding the e-CNY's scope to encompass deposit-like functions (M1 and even M2), enabling its use across payments, settlements and financial markets, including lending and bond transactions, and allowing it to bear interest to meet diverse demand.

At the 10-year juncture of the pilot program, the transition toward digital deposit money reflects a strategic decision to overcome these structural limitations and unlock the next phase of development.

External Pressure and the Rise of Stablecoins

China's pivot is also a defensive response to the global rise of stablecoins as efficient instruments for payment and settlement. Amid intensifying global competition in digital currencies, Chinese policy makers have closely monitored regulatory and market developments abroad, specifically the US GENIUS (Guiding and Establishing National Innovation for U.S. Stablecoins) Act and Hong Kong's stablecoin regulations that aimed at formalizing stablecoin frameworks.

For the PBoC, stablecoins represent not just a technological shift, but an institutional threat to currency sovereignty and financial stability. Given their high efficiency in payment and settlement, combined with the dominant status of the US dollar, the widespread adoption of privately issued stablecoins raises concerns that elements of currency issuance and circulation could be effectively "outsourced" to non-state actors. In contrast, China maintains that fiat currency, whether physical or digital, should remain a public good provided and controlled by the central bank (Tang 2026). At the same time, regulators view stablecoins as operating in a relatively under-supervised space, posing risks related to large-scale cross-border capital flows, financial fraud and potential weaknesses in know-your-customer (KYC) and anti-money-laundering (AML) frameworks. These concerns are particularly acute in the Chinese context, where capital controls and financial stability have long been central policy priorities.

Consistent with this stance, the central bank reiterated in late 2025 its prohibition on

3 See He (2021).

cryptocurrencies, officially classifying stablecoins as a subcategory of restricted digital assets for the first time (PBoC 2025). As a result, earlier discussions around issuing offshore RMB-denominated stablecoins have largely receded. Regulatory tightening has also extended to adjacent areas, including stricter oversight of tokenized real-world assets (PBoC 2026).

Against this backdrop, the transition of the e-CNY from digital cash to interest-bearing digital deposit money signals a clear strategic direction. It demonstrates that China does not equate digital currency solely with blockchain-based or decentralized models. Instead, its approach prioritizes a state-centred architecture in which the e-CNY is embedded within the existing bank account system, while selectively incorporating technologies such as distributed ledgers and smart contracts where appropriate.

A Potential Model for Global CBDCs?

Despite domestic adoption hurdles, China's e-CNY program remains the most advanced and sophisticated CBDC framework among major economies. The PBoC's original two-tier architecture, which integrates the central bank with commercial banks and payment institutions, has already become a global benchmark for a viable institutional model for CBDC deployment.[4] The transition of the e-CNY from a digital cash framework to digital deposit money — accompanied by its evolution into an interest-bearing instrument and corresponding balance sheet restructuring — signals a potentially important shift in the global trajectory of CBDC design.

In its "2.0" form, the digital yuan can be understood as an attempt to address three fundamental challenges confronting CBDC design worldwide. The first — and arguably most critical — is the risk of financial disintermediation.

Mitigating Financial Disintermediation

A central concern in CBDC design is that direct issuance of central bank digital money to the public, particularly if interest-bearing, could disintermediate commercial banks by drawing deposits away from them. The e-CNY 2.0 framework explicitly addresses this risk by embedding CBDC within the existing banking system.

Under the revised model, e-CNY holdings in commercial bank wallets are treated as account-based liabilities on the balance sheets of those banks, rather than as direct liabilities of the central bank. This design choice effectively integrates commercial banks into the core of the CBDC architecture and preserves their role as primary financial intermediaries.

This approach reflects the structural realities of China's financial system, which remains heavily bank dominated. Unlike developed economies such as the United States, where capital markets and investment banks exert significant influence, China's financial landscape remains centred on commercial banking. Any viable digital currency framework that bypasses traditional lenders will not be workable.

Within the two-tier system, the PBoC operates as the top-tier level, setting technical standards and regulatory rules and overseeing core infrastructure. At the second-tier level, commercial banks are responsible for wallet provision, payment services, customer onboarding and compliance functions, including KYC and AML requirements (Lu 2025). Major non-bank payment platforms, such as WeChat Pay and Alipay, are also incorporated as operational participants, further embedding the e-CNY within existing payment ecosystems.

Conceptually, this redesign aligns with emerging international discussions around tokenized commercial bank deposits, such as those explored in the BIS-sponsored Project Agorá.[5] The redesign of the e-CNY as digital deposit money modernizes the underlying "plumbing" of the correspondent banking system without triggering systemic disruption. This shift effectively

4 Chinese officials and experts have advanced this claim (Lu 2025; Yang and An 2026; Du 2026). Notably, the PBoC pioneered the two-tier architecture as early as 2016 (PBoC 2021; Lu 2025). The Bank for International Settlements (BIS) (2021) maintained that CBDCs are most effectively designed as part of a two-tier system, specifically categorizing the e-CNY's model as a "hybrid" design.

5 See the introduction of Agorá here: www.bis.org/about/bisih/topics/fmis/agora.htm.

redefines the traditional BIS classification of retail CBDCs (rCBDCs)[6] as "value-based/token-based[7] digital cash issued directly by central banks" (ibid.). By effectively integrating the digital yuan that previously remained outside as a parallel M0 instrument into the core banking ecosystem, the PBoC has provided a structural solution to the risks of financial disintermediation.

The shift from e-CNY 1.0 to 2.0 is particularly significant in legal and accounting terms. Previously, as a form of digital cash (M0), the e-CNY constituted a direct liability of the central bank and remained largely outside the traditional deposit system. Under the new framework, digital yuan balances are incorporated into commercial bank balance sheets and treated similarly to conventional deposits. This allows them to be included within existing statutory deposit reserve system and deposit insurance schemes. While commercial banks operate under fractional reserve requirements, non-bank payment institutions participating in e-CNY operations must maintain a 100 percent digital yuan reserve (ibid.).

This integration produces several stabilizing effects. First, it enables banks to treat e-CNY holdings as a stable funding source, supporting core activities such as lending and asset allocation. Second, it preserves the effectiveness of the central bank's monetary policy tool kit. By applying reserve requirements to digital yuan deposits, the PBoC, as the sole issuing authority, retains its ability to manage liquidity and influence credit conditions through familiar channels.

Perhaps most importantly, this design mitigates the risk of a bank run or deposit flight. Previously, central banks avoided interest-bearing CBDCs to prevent deposit flight during financial crises. By incorporating e-CNY into the deposit insurance framework, the PBoC signals to the public that a digital yuan wallet is as safe as a traditional account. This reduces the incentive for users to "flee" to the central bank during a crisis, as the money is already government-insured at the commercial level. Institutionally, the redesign of digital yuan can effectively mitigate financial disintermediation, but it does not eliminate the underlying economic, psychological and institutional logic of bank runs. The e-CNY's near-instant convertibility and payment-as-settlement features, the persistent tendency toward flight to sovereign money or systemically important banks, and the limits and credibility concerns around insurance coverage all continue to pose risks of deposit flight.

For e-CNY's future development, this shift is critical. It replaces the earlier reliance on administrative promotion with a more market-driven adoption mechanism. This solves the "use it once and forget it" problem that plagues many global pilots. By combining payment functionality with financial returns, the e-CNY becomes more attractive to both users and financial institutions. By allowing commercial banks to offer returns on digital yuan holdings, the e-CNY 2.0 preserves their central role in credit intermediation and enables banks to leverage interest rate mechanisms to transform the e-CNY from a passive payment instrument into a dynamic financial asset with high liquidity. They gain incentives to integrate e-CNY into their broader product ecosystems, including wealth management, lending and inclusive finance services.

In practical terms, this enables the digital yuan to penetrate high-frequency and high-value use cases, such as retail payments, supply-chain finance and liquidity management for small and medium-sized enterprises, thereby overcoming the "low-usage equilibrium" that has constrained earlier stages of the pilot (Bao and Zhang 2026).

Finally, the introduction of an interest-bearing, state-backed digital asset enhances e-CNY's competitiveness vis-à-vis private digital instruments. By offering a low-risk or risk-free yield backed by the state, the digital yuan strengthens its appeal as both a medium of exchange and a store of value, reducing the relative attractiveness of privately issued stablecoins and other digital assets.[8]

6 The BIS (Committee on Payments and Market Infrastructure 2018) notes that CBDC is not a well-defined term; its definition has evolved but generally denotes central bank-issued digital money and a liability of the central bank. The BIS distinguishes between general-purpose (retail) CBDC, intended for the public, and wholesale CBDC (wCBDC), which is restricted to financial institutions for high-value settlements and securities. Unlike traditional reserves, wCBDCs often utilize tokenized formats on DLT platforms (BIS 2025).

7 The term "value-based" is used interchangeably with "token-based" to describe a non-account-based architecture.

8 The current rate for e-CNY deposits is 0.05 percent, which is widely viewed as too low to significantly boost adoption.

Reconciling Centralized Systems with Decentralized Technologies (Blockchain)

The second major challenge confronting CBDC design is how to respond to the rapid development of decentralized DLT-based payment systems, particularly stablecoins, without sacrificing efficiency, scalability and regulatory control of existing financial infrastructures.

The PBoC addresses this challenge through a hybrid architectural approach that combines traditional account-based systems with selected features of blockchain and smart contract technologies. In doing so, it explicitly challenges the prevailing assumption that digital currencies, epitomized by cryptocurrencies and stablecoins, must be fully blockchain-based.

At the core of the e-CNY 2.0 design is a "hybrid" framework often described as an integration of account system, "crypto-strings" — digital data packets representing the money — and smart contract functionality (Lu 2025). Rather than replacing the banking system with decentralized infrastructure, this model embeds digital currency innovations within the existing account-based architecture. The guiding principle is to promote the application of digital currency and smart contract technologies within the bank account system, thereby enhancing functionality without disrupting institutional continuity.

Efficiency and Scalability

Regarding payment efficiency, the PBoC argued that China's extensive pilot programs have demonstrated that an account-based system, augmented by smart contracts, achieves superior lower cost and higher throughput for digital currency services (ibid.). This is essential for China's massive retail market of 1.4 billion users.

The argument is rooted in the superior scalability of an account-based architecture, which is uniquely optimized for high-concurrency and low-latency payment environments. This is particularly critical in China's large-scale retail payment ecosystem, where systems must process tens or even hundreds of thousands of transactions per second, such as QR (quick response) code payments and metro gate access (Du 2026) — and, in peak scenarios including major online shopping events such as Singles' Day, potentially up to one million transactions per second — with near-instant settlement.

By contrast, traditional public blockchains such as bitcoin face inherent limitations in throughput and latency, often processing only a handful of transactions per second with confirmation times measured in minutes. These constraints make them incapable of meeting the subsecond response times required for large-scale, high-concurrency retail payment environments.

Strategic Deployment of Blockchain

The e-CNY's hybrid design therefore adopts a pragmatic division of labour: Centralized, account-based ledgers are used for high-volume retail transactions, while blockchain-based or distributed ledger components are selectively deployed in scenarios involving complex multi-party interactions, such as cross-border trade, supply-chain finance and certain forms of corporate settlement, where decentralized verification can reduce coordination costs and enhance trust.

This results in a multi-layered system in which different technological infrastructures are invoked depending on the use case. High-frequency retail payments rely on centralized systems for speed and efficiency, while lower-frequency, high-trust transactions may leverage distributed ledgers as a "shared source of truth" for scenarios such as targeted government subsidies and social relief. This flexible architecture reflects a functional, rather than ideological, approach to technological adoption.

Implementing a pure blockchain model would require a full-scale, costly restructure of the global payment infrastructure — a transition for which no nation is currently prepared or strategically inclined. Instead, the e-CNY 2.0 integrates into the existing mature electronic payment and settlement system of commercial banks, providing immediate advantages in standardization, compliance and interoperability. Meanwhile, the "crypto-string" and smart contract layers add "high-tech" functionality that traditional bank accounts lack. This division of responsibilities allows the system to combine centralized oversight with decentralized operational interfaces.

Regulatory Compliance and "Penetrative Supervision"

Equally important is the system's capacity for regulatory oversight. By anchoring the e-CNY within the account-based banking system, the PBoC preserves centralized visibility and control over monetary flows. The e-CNY utilizes crypto-strings to achieve end-to-end traceability. This grants the PBoC what it terms "penetrative supervision": real-time transparency into the money path.

This capability represents a significant departure from traditional financial data systems, where reporting is often delayed and aggregated. With e-CNY, the central bank can observe transaction flows in near real time. For example, it can "penetrate" third-party platforms' (such as Meituan or WeChat Pay) ledgers to see the digital yuan move through them, enhancing transparency across the broader payment ecosystem. While Western central banks, such as the European Central Bank (ECB) or the US Federal Reserve, often view this level of centralized visibility as a privacy intrusion, the PBoC prioritizes it as a tool for financial stability and macroeconomic steering.

Programmability and Expanded Use Cases

A key innovation of the hybrid model is the integration of programmable features through smart contracts. Importantly, the PBoC does not treat smart contracts as inherently tied to blockchain systems. Instead, it conceptualizes them as conditional executable programs that can operate within both centralized and distributed infrastructures (ibid.). Within the e-CNY framework, smart contracts function as a "conditional payment engine," enabling automated execution of transactions based on predefined rules. This enhances both precision and accountability in financial operations and significantly expands the range of potential use cases (ibid.).

The programmability of e-CNY supports applications across a wide range of domains, including public utilities, social security, corporate treasury management, prepaid fund management and consumer protection, and green finance. In each case, the combination of traceability and conditional execution improves both efficiency and policy targeting.

For instance, in the context of public finance, programmable e-CNY can be used to deliver targeted subsidies. Funds allocated for specific purposes, such as green energy investment or disaster relief, can be encoded with usage conditions, ensuring they are spent only on approved goods or services. This reduces the risk of fund diversion and provides a transparent audit trail for regulators. Similarly, in supply-chain finance, smart contracts can automate payments upon verification of delivery or contractual milestones.

Enhancing Cross-Border Payment and Settlement

The third major challenge for CBDCs lies in improving cross-border payment and settlement systems — an area long characterized by high costs, slow processing times and heavy reliance on intermediary networks. The e-CNY 2.0 framework addresses this challenge by combining its domestic account-based system with extensive use of DLTs in the cross-border domain.

The PBoC has explicitly identified cross-border applications as the primary field in which blockchain technology will be deployed at scale within the digital yuan ecosystem. Two institutional developments are particularly significant: the continued expansion of the mBridge and the establishment of the Digital RMB International Operations Center in Shanghai, which contains three business platforms, the digital yuan cross-border payment platform (Shubida), the blockchain service platform and the digital assets platform.

Together, these initiatives illustrate how China is constructing a multi-layered cross-border infrastructure that integrates centralized efficiency with decentralized coordination.

Shubida and the Cross-Border Payment Layer

At the operational level, the digital yuan's cross-border functionality is anchored by a dedicated payment and settlement platform commonly referred to as Shubida. Having evolved from earlier pilots over several years, including its connection with Hong Kong's Faster Payment System in 2022, Shubida formally upgraded in 2025 (Ma 2025) and functions as a high-speed gateway for cross-border transactions using e-CNY.

The platform is designed to provide near-instant settlement, significantly reducing both transaction time and cost compared to

traditional correspondent banking systems. Its standardized access protocols allow foreign banks and financial institutions to connect through a single interface, avoiding the need to build parallel infrastructure. In effect, Shubida operates as a "payment highway," enabling Chinese firms to settle cross-border trade directly in e-CNY without routing transactions through third-party currencies such as the US dollar.

Through its connectivity to the mBridge platform, Shubida is effectively serving as China's domestic interface (Chinese engine) with a broader multilateral CBDC ecosystem. This integration expands its functionality from bilateral retail interoperability to a comprehensive cross-border service capable of handling high-frequency trade via mBridge.

Improving mBridge for Decentralized Cross-Border Payment

While Shubida is the Chinese gateway, Project mBridge is the DLT network that facilitates peer-to-peer multilateral cross-border payment and settlement without a singular centralized authority. The mBridge architecture satisfies the critical requirements of data privacy and risk mitigation, as well as the monetary sovereignty of participating central banks. The following breakdown illustrates how the platform facilitates secure transactions without compromising national security, data privacy and regulatory autonomy.

First, the platform uses sovereign credit endorsement. A key innovation of mBridge lies in its reconfiguration of trust. Instead of depending on correspondent banking relationships or private intermediaries, the system is anchored in sovereign credit. Participating central banks act as validating nodes, each responsible for issuing and redeeming their own currency while collectively maintaining the integrity of the network. By doing so, mBridge addresses the structural absence of a central credit authority[9] in traditional cross-border settlement (Tu et al. 2024).

Second, it functions as a decentralized cross-border payment platform. It uses a federated governance model powered by blockchain for mBridge (the mBridge Ledger), which ensures that no single "hegemonic centre" dominates the system. Each central bank retains control over its own "business and monetary sovereignty" (Lu 2025) while participating in a shared settlement environment. In this sense, mBridge offers an alternative to existing global payment infrastructures by combining decentralization with state-backed credibility. Technically, the system operates on the private, permissioned, distributed mBridge Ledger (BIS 2022), where all authorized participants share a real-time synchronized record of transactions — a "single source of truth." This eliminates the need for post-transaction reconciliation, significantly improving efficiency and reducing operational risk.

Third, the platform employs algorithmic trust. The HotStuff Plus/Dashing[10] consensus protocol is fundamental to ensuring the trust, security and high performance of the mBridge platform. It ensures that transactions are mathematically irreversible and synchronized in real time. By requiring a majority[11] of sovereign "validator nodes" to sign off on a block, the system replaces human trust with cryptographic proof. This added complexity makes the platform harder to hack than the SWIFT (Society for Worldwide Interbank Financial Telecommunication) system, as a successful breach would need to compromise more than half of the validator nodes (Tu et al. 2024).[12]

Fourth, it is pseudoanonymous for data privacy. For every individual transaction, the mBridge platform ensures that sensitive details are visible only to the counterparties and their respective central banks and commercial banks (BIS 2022). Other central banks are not involved in the "approval" process, and specific transaction data remains invisible to them. They only see an encrypted "hash" to ensure the synchronization of the distributed ledger (network).

Chengfang Link as the Supporting Infrastructure

Complementing these payment and settlement systems is a state-backed blockchain framework often referred to as "Chengfang Link,"[13] which

9 Project mBridge and Project Agorá are conceptually aligned in their pursuit of eliminating credit risk using central bank money for settlement.

10 Dashing is a strengthened consensus protocol co-developed by the PBoC and Tsinghua University to improve the efficiency and stability of the consensus mechanism and the mBridge platform.

11 Technically a two-thirds supermajority in Byzantine Fault Tolerance protocols such as HotStuff.

12 Only the participating central banks run the validator nodes and all these nodes are localized.

13 The name comes from Chengfang Street in Beijing, which is the physical address of the PBoC.

serves as the underlying "operating system" supporting two additional platforms under the Digital RMB International Operations Center: a blockchain service platform and a digital asset platform (Lu 2025).

The blockchain service platform functions as the technical infrastructure enabling a trusted environment for on-chain settlement, cross-chain transfers and smart contract execution using the digital yuan. The digital asset platform serves as the tokenization layer, facilitating compliant asset digitization and supporting the issuance and trading of tokenized financial instruments such as trade finance assets, bonds and carbon credits.

Between the two platforms, a concept of "unified ledger with business segmentation" is implemented (ibid.). The unified ledger provides a synchronized record that enables real-time data consistency, atomic settlement and interoperability between assets and payments while preserving penetrative supervision for regulators. At the same time, business segmentation ensures the compartmentalization of financial risks across different functional domains, such as retail payments, cross-border transactions and trade finance.

Implications for Global Digital Currency Competition

Redefining the Concept and Design Space of CBDCs

The emergence of e-CNY 2.0 may prompt a broader global reassessment of what constitutes a CBDC, what functions it should perform and how it should be institutionally designed in an increasingly digitalized financial system. In particular, it highlights the possibility of intensified competition among divergent models pursued by China, the United States and the European Union.

China's approach represents a potential "third path" for digital currencies between two dominant paradigms: privately issued stablecoin systems and traditional CBDC models defined as non-interest-bearing digital cash. Unlike earlier frameworks, which often emphasized either rCBDC as central bank liability and wCBDC for institutional settlements via tokenized DLT platforms (as discussed by the BIS) or a digital form of cash (as in the ECB's digital euro proposals[14]), the e-CNY 2.0 departs from the notion of CBDC as a cash-like central bank liability.

Instead, it introduces a hybrid model characterized by interest-bearing, account-based digital money distributed and managed by commercial banks, thereby redefining the boundary between central bank money and commercial bank deposits. This conceptual shift expands the design space of CBDCs and raises important questions for other jurisdictions: Which elements of China's model are transferable and which remain contingent on its specific institutional and financial structure?

Addressing Financial Disintermediation and Sovereignty Concerns

For countries concerned about financial disintermediation — the potential migration of deposits from commercial banks to central bank digital wallets — the e-CNY model offers a possible solution. By embedding CBDC within the banking system and allowing it to function as an interest-bearing deposit, China preserves the role of commercial banks as primary financial intermediaries.

This feature may prove particularly attractive to jurisdictions that share concerns about both domestic financial stability and external monetary sovereignty. In an environment where privately issued stablecoins could undermine national currencies or financial control, the e-CNY demonstrates how a CBDC can be designed to remain "sovereignty-friendly" while still offering competitive functionality.

At the same time, by aligning incentives for commercial banks — allowing them to treat digital currency as part of their deposit base and integrate it into lending and financial services — the model transforms CBDCs from a perceived threat into a complementary instrument. This alignment could influence how other central banks approach CBDC deployment, particularly in bank-dominated financial systems.

14 See www.ecb.europa.eu/euro/digital_euro/html/index.en.html.

Enhancing Central Banks' Oversight and Macro-Governance

The e-CNY 2.0 offers a blueprint for enhanced monetary policy effectiveness. The real-time data visibility and programmability of the system allow for "penetrative supervision," enabling central banks to monitor monetary transmission, household-saving behaviours, and credit allocation in real time, and to enforce compliance, increasing the precision of public finance interventions. For many emerging economies, the ability to improve the precision of public finance and macroeconomic management is a powerful incentive to adopt a similar sovereign-led model.

However, this feature comes with a privacy trade-off and underscores a key divergence in global approaches. While the ECB places strong emphasis on privacy protection and is unlikely to adopt a system with full traceability, certain elements of the e-CNY model — such as account-based architecture, interest-bearing features and integration with commercial banks — may still inform the design of a more functionally robust digital euro. China's experience suggests that a standalone digital cash instrument has limited utility; to gain market share, a CBDC likely needs to coexist within the commercial banking layer. The European Union and the United States will need to evaluate if they can adopt the "account-based/interest-bearing" structure while stripping away the "centralized visibility" that defines the Chinese model.

Intensifying Competition with Stablecoins

The e-CNY 2.0 can also be seen as a direct response to the growing influence of stablecoins such as USDC (USD Coin) and USDT (USD Tether). In the United States, digital currency development has largely been driven by private-sector stablecoins rather than an rCBDC. China's model — combining state-backed credibility with features such as interest-bearing functionality and programmability — may intensify policy debates in the United States regarding the regulatory treatment of stablecoins. In particular, it raises questions about whether allowing stablecoins to offer interest (as implicitly enabled under emerging regulatory frameworks) could further strengthen the global role of dollar-denominated digital assets.

American policy makers may view China's e-CNY 2.0 as a threat to the supremacy of the US dollar. However, China's moves can be interpreted as both a defensive and a competitive response: defensive in safeguarding monetary sovereignty against the expansion of dollar-based stablecoins, and competitive in offering an alternative digital currency model capable of matching or exceeding the technological and functional advantages of private instruments.

In China's belief, sovereign currency in the digital age must be public goods provided by the central bank, not private stablecoin. While stablecoins offer advantages in speed, programmability and global accessibility, they also raise concerns related to regulatory oversight, financial crime and systemic risk.

In contrast, CBDCs provide state-backed credibility, full regulatory compliance and the absence of default risk. By incorporating features traditionally associated with stablecoins — such as programmability and efficient settlement, and even decentralized cross-border payments — the e-CNY narrows the functional gap between public and private digital money. For jurisdictions outside the United States, particularly those wary of dollar dominance, a CBDC-based cross-border system may offer a more attractive alternative to reliance on privately issued dollar-linked stablecoins.

Improving Cross-Border Payments to Reshape Global Financial Infrastructure

The cross-border dimension of the e-CNY is likely to have the most immediate international impact. China's integration of blockchain and smart contract technologies, particularly through platforms such as Shubida and mBridge, demonstrates a serious effort to build an efficient, secure and sovereign-controlled alternative to existing global payment systems.

This approach suggests a differentiated technological strategy: centralized control in domestic systems combined with selective decentralization in cross-border applications. Blockchain is deployed as a functional tool for trust-building, coordination and security in international transactions.

At the same time, China's development of supporting infrastructures, such as blockchain service platforms and digital asset platforms, signals an ambition to expand beyond payments

into asset tokenization and broader financial market applications. This is where the e-CNY 2.0 converges with the functional features of wholesale CBDC as defined by the BIS, mirroring the interbank settlement framework explored in Project Agorá and the ECB's Pontes and Appia initiatives. All are moving toward a "unified ledger" where tokenized commercial bank deposits and tokenized wholesale central bank money coexist to eliminate cross-border settlement friction.

Prospects for Global Cooperation and Financial Inclusion

Beyond competition, the e-CNY model may also contribute to new forms of international cooperation in digital finance. By offering a framework that combines monetary sovereignty with technological innovation and potential financial returns, it could serve as a reference point, particularly for emerging and developing economies.

Features such as offline payment capabilities, loose coupling with bank accounts, and programmability for targeted financial inclusion may enhance the appeal of CBDCs across the Global South, particularly for populations in remote areas who lack traditional banking access or reliable communication infrastructure. Compared to existing mobile money systems or cryptocurrency-based solutions, a well-designed CBDC could provide stronger institutional backing and broader policy utility.

Implications for RMB Internationalization

Finally, the introduction of interest-bearing digital yuan may support the gradual internationalization of the RMB. By providing incentives for holding e-CNY as a store of value, particularly in cross-border trade and settlement, the new framework enhances its attractiveness as an international financial asset. This process is likely to be incremental, beginning with trade settlement, cross-border e-commerce and tourism, and expanding through platforms such as mBridge. While it is unlikely to displace the US dollar in the near term, the e-CNY could strengthen the RMB's role in regional and sector-specific financial networks.

Conclusion

China's approach represents neither a continuation of traditional CBDC designs nor a replication of private stablecoin systems but rather a distinct institutional pathway that combines state authority, market incentives and technological adaptability. Whether this model will be adopted, adapted or resisted by other jurisdictions remains an open question, contingent on differences in financial structure, regulatory priorities and political values.

At the same time, the e-CNY experience underscores that CBDC development is not merely a technical exercise, but also a deeply institutional and (geo)political one. Issues of monetary sovereignty, financial stability, regulatory control and global currency competition are embedded in design choices that shape how digital currencies function in practice.

Looking ahead, the global trajectory of CBDCs is likely to be defined not by convergence on a single model but by continued experimentation across multiple pathways. The e-CNY 2.0 provides one of the most comprehensive and advanced cases to date — offering both a practical blueprint and a point of reference for ongoing debates about the future of money in the digital age.

Works Cited

Bao, Hong and Ming Zhang. 2026. "数字人民币计息, 全球数币博弈升级" [Digital RMB interest calculation, global digital currency game upgrade]. *财经杂志* [*Caijing Magazine*], January 31. https://m.caijing.com.cn/article/202601/396692.

BIS. 2021. *Annual Economic Report*. June. Basel, Switzerland: BIS. www.bis.org/publ/arpdf/ar2021e.pdf.

———. 2022. *Project mBridge: Connecting economies through CBDC*. October. Basel, Switzerland: BIS. www.bis.org/publ/othp59.pdf.

———. 2025. *Wholesale central bank money in the context of technological innovation*. September. Basel, Switzerland: BIS. www.bis.org/publ/othp99.pdf.

Chorzempa, Martin, 2026. "China gives up on state-backed digital cash: The US and Europe should take note — for different reasons." *Realtime Economics* (blog), February 10. www.piie.com/blogs/realtime-economics/2026/china-gives-state-backed-digital-cash-us-and-europe-should-take-note.

Committee on Payments and Market Infrastructure. 2018. *Central bank digital currencies*. March. Basel, Switzerland: BIS. www.bis.org/cpmi/publ/d174.pdf.

Du, Chuan. 2026. "数字人民币十年蝶变: 升级2.0, 混合架构开辟全球数字货币新路径" [Digital RMB ten years of butterfly change: upgrade 2.0, hybrid architecture opens up a new path for global digital currency]. *第一财经* [Yicai], January 22. www.yicai.com/news/103019815.html.

He, Alex. 2021. *Digital RMB: A Possible Way to Reassert Data Control in the Digital Economy*. CIGI Policy Brief. No. 169. Waterloo, ON: CIGI. www.cigionline.org/publications/digital-rmb-a-possible-way-to-reassert-data-control-in-the-digital-economy/.

Lu, Lei. 2025. "守正创新 稳步发展数字人民币" [Lu Lei, Vice Governor of the People's Bank of China: Be honest and innovative and steadily develop digital RMB]. *金融时报* [*Financial News*], December 29. www.21jingji.com/article/20251229/herald/92834d4139b621e74c8d2b1761d2ce70.html.

Ma, Meiruo. 2025. "数字人民币再进一步" [The development of digital RMB goes further]. *金融时报* [*Financial News*], September 25. https://finance.sina.cn/bank/yhgd/2025-09-25/detail-infrtimz8439731.d.html?vt=4.

PBoC. 2021. "Progress of Research & Development of E-CNY in China." White paper. July. https://upload.wikimedia.org/wikipedia/commons/c/cf/Progress_R%26D_E-CNY.pdf.

———. 2025. "打击虚拟货币交易炒作工作协调机制会议召开" [The meeting of the coordination mechanism to combat the speculation of virtual currency transactions was held]. PBoC, November 29. www.pbc.gov.cn/goutongjiaoliu/113456/113469/5916794/index.html.

———. 2026. "Officials from the PBOC and the CSRC Address Press Questions about the Notice on Further Preventing and Resolving Risks Related to Virtual Currencies and Similar Assets." Press release, February 6. www.pbc.gov.cn/en/3688110/3688172/2026/2026021316112965382/index.html.

Tang, Jun. 2026. "数字货币全球博弈升级 人民币飞跃新关"口 [The global game of digital currency has been upgraded, and the RMB has leaped over a new threshold]. *财经杂志* [*Caijing Magazine*], February 2. https://finance.sina.com.cn/tech/roll/2026-02-02/doc-inhkmmxz4175344.shtml.

Tu, Yonghong, Chang Zhang, Jiawei Liu and Qianyu Zhu. 2024. "m-Bridge: 数字经济时代的国际支付体系创新" [mBridge: Innovation of International Payment System within the Digital Economy]. *国际金融研究* [*Studies of International Finance*] 1: 73–85. https://doi.org/10.16475/j.cnki.1006-1029.2024.01.005.

Wang, Yongli. 2021. "数字人民币不应定位于M0" [Digital RMB should not be positioned at M0]. Sina.com.cn, January 6. https://finance.sina.cn/zl/2021-01-06/zl-iiznctkf0416169.d.html?from=wap.

Working Group on E-CNY Research and Development of the People's Bank of China. 2021. "Progress of Research & Development of E-CNY in China." White paper. July. https://upload.wikimedia.org/wikipedia/commons/c/cf/Progress_R%26D_E-CNY.pdf.

Yang, Yanqing and Xu An. 2026. "2026全球数字货币新格局: 三极分化与秩序重构" [2026 New Pattern of Global Digital Currency: Tripolarization and Order Restructuring]. 第一财经 [Yicai], January 12. www.yicai.com/news/102999946.html.

Zhang, Ming. 2021. "新周期下推进人民币国际化的策略与思路" [Strategies and ideas to promote the internationalization of RMB in the new cycle]. Sina.com.cn, July 17. https://finance.sina.cn/zl/2021-07-17/zl-ikqcfnca7454830.d.html?from=wap.

67 Erb Street West
Waterloo, ON, Canada N2L 6C2
cigionline.org