Analysis of Coordinated Development of Stablecoin and Digital RMB

Yahan Ke *

School of Accounting, Tianjin University of Commerce, Tianjin 300134, China

13867750426@163.com

* Corresponding author

Abstract

At present, under the full promotion of pilot programs of digital RMB and implementation of Hong Kong Stablecoin Ordinance, it is necessary to establish a coordinated monetary system with Chinese characteristics. Based on technical analysis, institutional analysis and cross-border transaction level analysis of dual-currency synergy mechanism, this paper analyzes the possibility of coordinated development of stablecoin and digital RMB. Under the circumstances that stablecoins will conflict with China's financial risk prevention system, it is recommended that a coordinated mechanism of dual-currency with digital currency as the main body and stablecoin as the supplement should be established. The "Belt and Road" policy should also be used to enhance the international influence of the RMB and construct a new green financial ecology. This coordinated mechanism of dual-currency provides a reference for empowering the development of real economy with digital currency and promoting the construction of infrastructure of digital yuan and stablecoin.

Keywords

Stablecoin, Digital RMB, Coordinated development.

1. Introduction

Currently, in the global trade environment, the trend of asset tokenization is flourishing, and the acceptance of cryptocurrency such as Bitcoin and various alternative coins (altcoins) has become the mainstream. In order to solve the existing problems such as the volatility of crypto assets and the inefficiency and high cost of traditional cross-border payment systems such as SWIFT and CHIPS, Tether launched the first stablecoin in 2014. According to Koemtzopoulos D., stablecoins play an important role in promoting the development of alternative decentralized financial systems. On the one hand, they provide relatively stable value stores in digital markets, on the other hand, they provide new ways to construct more inclusive and sustainable financial systems [1].

With the development of digital economy, China has officially issued the digital yuan (e-yuan), which is a central bank digital currency (CBDC), endowed with the legal status of legal money and intrinsic value. It is aimed at improving its position in the international monetary system. Due to the regulatory and system contradictions that stablecoins bring into China's highly controlled financial system, Hong Kong promulgated the Stablecoin Ordinance in August 2025 to pilot the offshore operation of stablecoins. It is planned to build a dual-track monetary model composed of digital yuan and internationally anchored offshore stablecoins. And then use the technological advantage of stablecoins in cross-border transactions to be coordinated and complemented with the sovereign digital currency. Therefore, how to establish a coordinated relationship among public currency, private stablecoin and cross-border digital currency has become a new problem that arises in academic circle and policy making.

Several scholars have started to examine institutional routes to embed stablecoins into China's financial system. [2] Meng et al. study how to institutionalize the development of domestically anchored stablecoins via multilateral CBDC bridges and "digital free trade accounts". They analyze the implications for risk management, value stabilization, and cross-border payments. [3] Ren et al. study how to restructure cross-border payment infrastructure via digital currency bridges and stablecoin arrangements within regulatory ranges. [4] Lu et al. study institutional arrangements that make use of digital currency cooperation to resolve the deep-seated inefficiencies in international finance and promote real-economy development.

Despite these progresses, current research focuses more on regulatory control and payment system design, while under-investigating the operational coordination between the digital yuan and private stablecoins as well as the underlying basic infrastructure to facilitate their coexistence. This paper attempts to bridge this gap by analyzing the technical coordination mechanism of the dual-currency system from three interrelated dimensions: technological integration, institutional governance, and cross-border functionality. The paper argues that, in a hierarchical design, the digital yuan would play the primary currency role while offshore stablecoins would act as complements in international transactions. Given the Belt and Road Initiative, China should expedite the construction of a dedicated cross-border transaction network for the digital yuan. Meanwhile, an effective legal framework and supervisory system for stablecoins need to be established to protect monetary sovereignty, promote financial innovation, and enhance the international influence of China's digital currency ecosystem.

2. Feasibility Analysis of Building a Two-Currency Coordination System

(1) Technical architecture compatibility

The digital yuan follows a "central bank–commercial bank" two-tier model, which is centralized in governance but built upon a blockchain-based distributed ledger technology. The shared technological foundation among the central bank and commercial banks provides a high degree of technical compatibility with other currency types—many of which also follow a distributed ledger technology (DLT) design. [2] Such technological convergence creates possibilities for seamless integration between the digital yuan and stablecoins at the system level. On the one hand, the two-tier structure of the digital yuan would strengthen the central bank's control in issuance and supervision, serving monetary control and financial stability. On the other hand, stablecoins follow a decentralized design to achieve higher transaction transparency, auditability, and settlement efficiency. By combining the regulatory strength of the digital yuan and the technological advantages of stablecoins, a hybrid system would emerge. Such system upholds monetary sovereignty while embracing innovation. Furthermore, interoperability would be possible at the smart contract layer. Contract protocols could be standardized to enable automated clearing and settlement between different platforms, furthering cross-chain applications and next-generation fintech.

(2) Cross-border transaction coordination

Now, the digital yuan is circulating mainly in domestic retail transactions and several selective cross-border pilot projects, while international transactions still rely on the multilateral Central Bank Digital Currency Bridge (mBridge) to connect the RMB internationalization facilitator. While stablecoins have shown their advantages in cross-border transactions, with near-instant transfers and lower transaction costs, being enabled by decentralized networks and blockchain settlement technology. In addition to being used as a means of remittance, stablecoins are also being used in cryptocurrency trading, DeFi platforms, and supply chain financing, especially in developing countries where the dollar still dominates, where stablecoins have become the de facto substitute of major fiat money. The coordinated use of the digital yuan and legal offshore stablecoins creates an opportunity to challenge the entrenched position of the SWIFT+CHIPS,

and pair them as a more resilient, efficient, and cost-effective global payment system, combining sovereign backing and technological innovation.

(3) Feasibility of institutional supervision

As currency legally supervised by national credit and directly supervised by the People's Bank of China, the digital yuan is subject to highly controlled supervision. In Hong Kong, the supervision is jointly conducted by the Hong Kong Monetary Authority (HKMA) and the Securities and Futures Commission (SFC) and establishes a dual supervision system. While mainland China still strictly prohibits private stablecoins, Hong Kong has implemented several offshore stablecoin operation pilot projects under the regulated sandbox framework. It is worth noting that both sides are gradually aligning with international standards (such as the EU's Markets in Crypto-Assets, MiCA regulation). The regulatory sandbox allows authorities to conduct controlled experiments, to evaluate the risks such as money laundering, financial stability, and systemic spillovers, and to promote innovation while strictly controlling risks.

3. Technical Cooperation Mechanism

Chinese scholars have proposed models to accommodate risk management, value anchoring, and cross-border payment efficiency. Meng Tian and his co-authors proposed to use the "central bank + commercial bank" two-tier structure of the digital yuan to reduce transaction frictions in international settlement and enhance international settlement interoperability. [2] Lu et al. proposed to establish a three-tiered coordinated framework of sovereign digital currency, offshore stablecoins, and private stablecoins within the Chinese dual monetary system. [5] By anchoring the stablecoin transaction to the mBridge infrastructure, the model reduces the counterparty credit risk of stablecoin transactions and enhances settlement efficiency for foreign trade enterprises through the mBridge, thus reducing financing costs for the real sector.

In order to achieve technical coordination, the following implementation ways may be explored. First, distributed ledger technology can facilitate real-time data sharing and cross-verification between networks of digital yuan and stablecoins, making the whole system more transparent and traceable. Second, smart contracts can automatically execute important steps such as locking exchange rates, releasing funds and passing compliance tests, eliminating operation delays and human mistakes. Third, RegTech tools should be applied to set up a dynamic monitoring system that can identify anomalous transactions in real time without sacrificing efficiency. In addition, two technical upgrades that look into the future are worth considering. Meng Tian and their co-authors recommended building hybrid consensus and embedding quantum-resistant cryptographic modules into the system to resist cyber attacks in the future.

4. Institutional Coordination Mechanisms

Due to the attributes of decentralization, pseudonymity and borderlessness, stablecoins usually operate in a legal gray area. The emergence of hybrid smart contracts aggravates regulatory challenges, especially in anti-money laundering (AML) and counter-terrorist financing (CFT). In order to accommodate the orderly coexistence of sovereign and private digital currencies, institutions are indispensable. Lu Minfeng and their co-authors develop a closed-loop regulatory model consisting of rule formulation, behavioral monitoring and enforcement decision-making, and propose a two-dimensional sandbox mechanism that allows regulators to iteratively test rules in practice.[4] Wu and Lu extend their analysis to a "institution – technology–market" tripartite framework serving China's dual circulation strategy. [6] Their proposed architecture "central bank ledger → institutional sub-ledgers → user wallets" allows layered supervision in cross-border scenarios, especially in Hong Kong. The design keeps the

central bank in the top position, allows private sector to innovate in the design and issuance of stablecoins, and balances financial stability and market enthusiasm.

Beyond building domestic frameworks, international coordination is also needed. As a matter of fact, given the cross-border nature of stablecoins, single-country regulation is inadequate. There is an urgent need to reach a global consensus on standards for issuance, reserve information transparency and consumer protection. An ideal solution might be the establishment of an international stablecoin oversight body, perhaps under the aegis of the Financial Stability Board (FSB) or the Bank for International Settlements (BIS), to harmonize regulatory practices, curb regulatory arbitrage and mitigate system-wide risks. The international financial institutions such as the International Monetary Fund (IMF) and the World Bank should also be more proactive in calling for multilateral discussions on the governance of digital currencies. By assessing the macroeconomic impacts of stablecoins and issuing policy guidance, they can help achieve a stable, inclusive and interoperable global digital financial architecture.

5. Cross-Border Cooperation Mechanism

Digital currency bridges such as mBridge facilitate direct, secure, and efficient interlinkages between central bank digital currencies (CBDCs) without the need for correspondent banking participation. Their flexibility, interoperability, and built-in compliance design features make them a natural home to connect the digital yuan into the global payment flow. [8] Lu et al. put forward the concept of a "dual-core" approach in which the digital yuan and regulated stablecoins play as the two pillars of China's digital financial extension to the world. [9] Shi et al. proposed a "stablecoin–digital currency bridge–institutional anchoring" mechanism in which mBridge provides regulatory controls to mitigate the risks of decentralized stablecoin systems. [3] Shi et al. identified a "co-opetition" relationship between mBridge (sovereign path) and stablecoins (market path) and called for a two-tier cross-border payment network based on the digital yuan.

Even with all these efforts, the digital yuan's adoption is still far behind popular third-party payment systems. The adoption challenge for stablecoins is even more significant. A layered integration model is necessary to bridge these gaps. By leveraging the strengths of mBridge and regulated stablecoins, a new type of hybrid cross-border payment network can be constructed: digital yuan acts as the anchor currency for its regulatory monetary sovereignty, while stablecoins can operate in certain niche, market-driven scenarios, e.g., cross-border e-commerce or remittances. The "two-layer" design not only improves efficiency and financial inclusion but also avoids system-wide risks.

6. Conclusions

In this paper, we studied the prospects of a coordinated development framework between China's digital yuan and offshore stablecoins from technological, institutional, and cross-border perspectives. Technologically, both currency types share the distributed ledger technology as a foundational component. The technical similarity enables both types of currency to co-exist in an integrated digital financial system. The technological compatibility not only enables seamless value transfer between different currency types but also paves the way for joint innovation in payment systems and financial services in the future. At the institutional level, a balanced regulatory model characterized by controlled experimentation through regulatory sandboxes and robust oversight mechanisms can provide an effective model for nurturing innovation while maintaining system stability. The experimental design is particularly important in Hong Kong where efforts to develop regulatory sandboxes for offshore stablecoin pilots are underway under a dual-regulatory regime aligned with international standards.

In the world of cross-border transactions, the combination of digital yuan and regulated stablecoins through the Multilateral Central Bank Digital Currency Bridge (mBridge) offers an attractive substitute to correspondent banking networks. As settlement be comes a streamlined process with the elimination of intermediary reliance, costs associated with transactions decrease while processing time decreases. Global payments become more efficient.

Under this new dual-track model, the digital yuan acts as an anchor currency, which protects monetary sovereignty and ensures policy controls while stablecoins can play a supporting role in market-based scenarios as instruments. This arrangement not only paves the way for greater efficiency in the use of the RMB in international trade and finance but also contributes to a more resilient and diversified global monetary system.

Putting this vision into practice will require a phased and pragmatic implementation. Advancing cross-chain interoperability (e.g. through XBIT exchanges) may allow the digital yuan and mutually compliant stablecoins to recognize and interact with each other and other chains, thereby paving the way for a new digital asset ecosystem. A pragmatic and dynamic supervision framework should also be developed to allow real-time monitoring of transaction flows, periodic risk assessments, and the derivation of policy insights from the results. Expanded cross-border pilots should then be carried out in international financial centers such as the Special Economic Zone of Shanghai PRC and Hong Kong SAR using mBridge infrastructure, with major cross-border enterprises such as JD.com as partners to develop real-world applications.

These initiatives should be supported by continuous regulatory oversight and technological anticipation. Active international collaboration is also critical. The coordinated evolution of sovereign and private digital currencies is not a passing trend but a long-term strategic evolution. As the international community grapples with the challenges posed by stablecoin innovation, China must ensure that its digital financial ecosystem remains guided by a spirit of prudence, security, and inclusiveness. Only then can the internationalization of the yuan gain momentum and sustainability in the global financial system.

References

[1] Koemtzopoulos D, Zournatzidou G, Sariannidis N. Can Cryptocurrencies Be Green? The Role of Stablecoins Toward a Carbon Footprint and Sustainable Ecosystem [J]. Sustainability (2071-1050), 2025, 17(2).

[2] Meng Tian, Ouyang Wenjie, Shi Yadong, et al. Development Strategies for Chinas Stablecoin in the Digital Yuan Era: Building a New System of Risk Prevention, Value Anchoring, and Cross-border Payments [J/OL]. Rural Finance Research, 1-13 [2025-08-23].

[3] Ren Yiyin, Wang Jian, Zhu Yifan, et al. Dual-track Evolution of Cross-border Payment Systems: The Competitive and Cooperative Dynamics Between Currency Bridges and Stablecoins [J]. International Finance, 2025(08):15-19.

[4] Lu Minfeng, Wu Long. Empowerment Pathways of the Real Economy Based on Digital RMB and Hong Kong Licensed Stable Currencies ——— Research on Digital Currency Coordination Mechanism under Chinas Dual-track System with Distinctive Features [J/OL]. Journal of Xinyang Normal University (Philosophy and Social Sciences Edition), 1-14 [2025-08-23].

[5] Tu Yonghong, Zhang Chang, Liu Jiawei, et al.mBridge: Innovation in the International Payment System in the Digital Economy Era [J]. International Finance Research, 2024(01):73-85.

[6] Wu Long and Lu Minfeng. Regulatory Paradigm Innovation for Stablecoins in the Dual-Circulation Framework ———: Institutional Design Based on Central Bank Digital RMB and Cross-Border Stablecoin Synergy [J/OL]. Journal of Qinghai Normal University (Social Sciences Edition), 1-9 [2025-08-23].

[7] Wang Chenglong. Challenges and Countermeasures for the Cross-border Payment and Settlement System of Digital Currency Bridge [J]. China Business Review, 2025, 34(08):133-137.

[8] Lu Minfeng, Shi Zhihui, Zhou Huihui. The Strategy of Financial Powerhouse in the Process of Chinese Modernization and RMB Internationalization—— Dual-Core Analysis of Digital RMB and Multilateral Payment System [J]. Journal of Chongqing Technology and Business University (Social Sciences Edition), 2025, 42(01):1-14.

[9] Shi Zhihui, Lu Minfeng. From Stablecoins to Digital Currency Bridges: Institutional Restructuring of Cross-border Payment Systems and Response Strategies of Chinese Enterprises [J/OL]. Reform and Strategy, 1-10 [2025-08-23].