

Whether Stablecoins will Replace the Swift System

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ABSTRACT

This paper discusses the question of whether stablecoins have the technical, economic and institutional ability to substitute the SWIFT system in international payments. The analysis is based on comparative evaluations of settlement velocity, operational structure, liquidity depth, regulatory framework and geopolitical considerations that affect international networks of transactions. The results highlight that stablecoins can be beneficial in terms of finality of transactions, programmability, and cost-efficiency in particular corridors, where liquidity on chain and regulated off-ramp infrastructure are highly developed. These strengths are however limited due to poor fragmented regulation, lack of reserve transparency in wholesale adoption, and non-existence of globally harmonized compliance frameworks. SWIFT continues to be entrenched in correspondent banking with a strong network effect and internal institutional trust as well as wide-scale interoperability with a variety of financial infrastructures. The facts indicate that stablecoins will complement rather than substitute SWIFT in the predictable future, inspiring innovation within the niche market and triggering progress within cross-border financial messaging. The paper notes that the intentional displacement would need strong legal clarity, standardized forms of governance, improved AML controls and sanction controls, and cooperation across jurisdictions. The paper concludes that stablecoins will keep transforming the strategy of cross-border payment but will coexist with old infrastructures when it comes to their modernization.

Keywords: Stablecoins, SWIFT system, Cross border payments, Digital assets, Tokenized money, Financial interoperability, Payment infrastructure.

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INTRODUCTION

Global trade, financial convergence, and international collaboration rely on the cross border payment systems. The SWIFT system has been the predominant message network that facilitates the flow of messages between the international financial institutions in a secure fashion over the decades. Its wide membership base, protocols of standardization and acceptance on a global basis have rendered it to be an unavoidable element of correspondent banking. However, even though the system remains central, it remains criticized due to its slowness in settling, and high transaction and liquidity cost, a complicated intermediary chain that limits the institutions and the final consumers. These constraints have increased the desire to explore other infrastructures that can provide more efficient, transparent and programmable cross border transactions.

Stablecoins have become one of the most noticeable competitors of redefining the global payment architecture. Stablecoins introduce a radical change of value transfer as they are based on distributed ledger technology and stabilized to preserve price stability using asset backing or any other stabilization techniques. They have potential based on the possibility to facilitate very fast settlement, diminish dependence on correspondent banks, and facilitate automation by way of programmable features. The increased

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involvement of the payment providers, institutional investors, technology companies and regulated financial institutions has further enhanced their presence in international transaction experimentation. The more people adopt them, the more stablecoins are increasingly being considered not as digital tools but as possible settlement layers that could pose a threat to current rails in the world.

Although they have benefits, it is unclear because stablecoins can actually be used as the replacement of the SWIFT system in reality, as it is a complicated combination of technical preparedness, regulations, geopolitics, and institutional biases. Stablecoins exist in digitally native systems that need sound reserve management, open governance and trustworthy on and off ramp systems. The systemic and political issues are also posed by the

regulatory fragmentation between jurisdictions, the fear of failing to comply with the sanctions, and the capture of the stablecoin issuance by a few players. By contrast, SWIFT enjoys a well established trust, international credibility, high interoperability, and long-term stability in operations, which can hardly be matched by a new technology.

This paper examines the potential of stablecoins to take over the SWIFT system based on the comparative advantages, structural limitations, and the changing regulatory and institutional conditions. The analysis addresses the technical architecture, settlement design, liquidity dynamics, policy considerations and the overall political economy which influences global payments. Through these dimensions, the paper offers a complete insight into the way in which stablecoins can change, complement or disrupt legacy systems. Finally, the discussion is part of the broader discussion on the future of cross border finance, the globalization of international payment networks and the prerequisites of digital assets to become an essential part of the global value transfer.

Literature Review

The vulnerabilities of the traditional cross border payment systems have been explored by a developing literature on the opportunities of digital assets as more efficient alternatives, alongside the structural flaws of the traditional cross border payment systems. A large part of the original literature discusses the SWIFT system as a stable international messaging system that enables interbank communications, but is not involved in settlement. The researchers often point out that SWIFT is reliant on the long chains of correspondent banks, which may cause delays, raise the risk of liquidity and increase the cost of transactions. Research in international finance further adds that such correspondent networks are not evenly spread and that the developing economies are likely to experience slower settlement times and higher charges since they may be poorly connected to large financial centres.

Similar studies with stablecoins have grown tremendously with many public bodies and players in the private sector trying to use them in international payments. The literature characterizes stablecoins, which are generally pegged to fiat or employ algorithmic systems to ensure stability, as a tool that can enable fast settlement, high auditability and programmability. In academic and industry literature, it is common to compare stablecoin transfers to traditional rails, as settlement finality on distributed ledgers can be achieved within minutes or seconds, based on network design. Empirical analyses of transaction flows indicate that stablecoins already become significant tools of cross-border transfers of digital values, especially in high-volume retail corridors and in those regions where there is a lack of foreign currency liquidity.

Regulatory scholarship, nevertheless, is a matter of concern. Researchers emphasize that the ecosystems of stablecoins are still quite fragmented, with the reserve

models, governance structures, and risk disclosure standards also being different. Comparative regulatory assessments indicate that inconsistent methods regarding the regulation of the stablecoins of various jurisdictions present uncertainty in their international use. Legal experts also observe that it is more complicated on public blockchain networks to enforce sanctions, anti money laundering regulations and consumer protection regulations than in conventional banking. It is due to these compliance issues that recent thinking among many experts has been to think of stablecoins not as substitutes to the existing systems, but as complements, which must be strongly regulated.

The studies on institutional and political economy also emphasize that geopolitical coordination and trust form not only the technical efficiency of the global payment systems but also their design. The neutrality of SWIFT is credited as the reason for its longevity, standardization and broad membership, factors that have found the cooperation of multilaterals. Literature on network effects recommends that more than technology superiority is needed to replace such systems; it needs to be universal, needs to synchronize regulatory incentives and interoperability among a wide range of financial systems. Even where stablecoins are faster and cheaper than SWIFT, according to scholars, their capability of taking the leading global role would greatly be determined by the legitimacy of its governance, its clarity of rules and global acceptance.

Literature comparing systemic risk between blockchain and traditional based infrastructures also reinforces the argument. The studies show that, at the same time as SWIFT enjoys the benefits of developed operational safety measures, and time-tested resilience measures, stablecoins present novel risks such as vulnerabilities to smart contracts, and custodial concentration and centralized issuers. Historical disruption analyses indicate that stability of coins relies more on the transparency of reserves and redemption systems which affect user confidence and institutional trust. However, there is other research that states that tokenized settlement may minimize some systemic exposures by downplaying dependency on intermediaries and enable real time reconciliation.

Altogether, the literature is an objective yet complex image. Stablecoins provide settlement opportunities of the future that are technologically advanced and provide them, yet regulatory ambiguity, governance problems and geopolitical factors restrict their potential to supplant globally established systems such as SWIFT completely. The reviewed research comes to the same conclusion that stablecoins have a potential to change certain areas of cross border payments, yet its future use will rely on the regulatory convergence, liquidity level, institutionalization and global interoperability models.

METHODOLOGY

This study adopts a mixed-method research design that integrates qualitative analysis, comparative evaluation

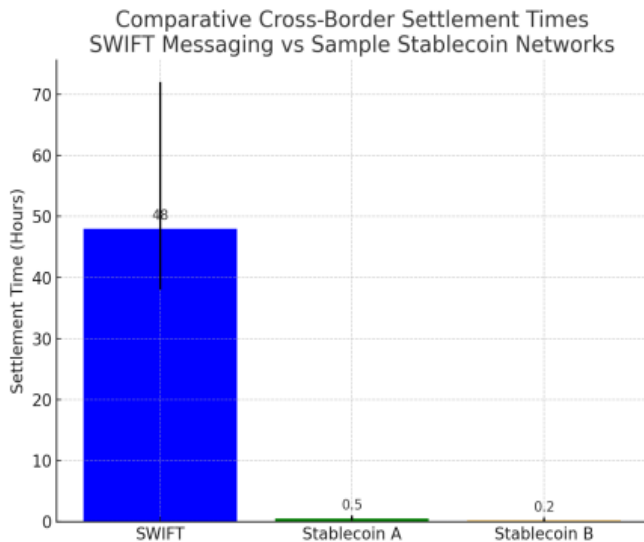


Figure 1: This graph compares cross-border settlement times between the SWIFT correspondent banking system and selected stablecoin networks. The graph illustrates differences in median settlement durations, maximum delay ranges, and variability across different corridors, highlighting the faster and more consistent performance of stablecoin-based settlements compared to traditional SWIFT messaging

and structured scenario assessment. The methodological approach is constructed to provide a comprehensive examination of whether stablecoins possess the technical, regulatory and institutional capacity to replace the SWIFT system in global payments. The combination of methods ensures that both empirical evidence and conceptual frameworks are rigorously evaluated.

Research Design

A qualitative comparative method is used to analyze the distinctive characteristics of stablecoin systems and the SWIFT network. The design incorporates a multi-layered assessment of functionality, operational architecture, settlement mechanisms, governance frameworks and cross-border interoperability. This comparative structure supports a systematic exploration of the factors that influence adoption, resilience and feasibility of global payment infrastructures.

Data Sources

The study draws from a diverse set of credible secondary data sources including:

- International financial institution publications
- Central bank reports
- Industry white papers
- Academic journal articles
- Regulatory consultation documents
- Market data on stablecoin capitalization, liquidity and transaction volume
- Technical documentation on distributed ledger architectures

- Operational and performance metrics published by interbank payment networks

These sources allow for triangulation of information, ensuring a reliable synthesis of technical, regulatory and economic insights.

Analytical Framework

To evaluate the potential of stablecoins to replace the SWIFT system, the analysis is organized into four core dimensions:

Technical Performance Assessment

- Settlement speed and finality
- Throughput capacity
- System resilience and operational reliability
- On-chain versus off-chain architectural distinctions

Economic and Liquidity Analysis

- Cost structure of stablecoin transactions and SWIFT transfers
- Liquidity depth for fiat-backed stablecoins
- FX conversion requirements for cross-border use
- Impact of intermediaries on efficiency and fees

Regulatory and Legal Evaluation

- Reserve management standards
- Consumer protection and redemption rights
- AML, sanctions and compliance frameworks
- Global regulatory fragmentation and cross-jurisdictional conflict

Institutional and Political Economy Considerations

- Network effects supporting entrenched systems
- Institutional risk preferences
- Geopolitical implications of shifting global payment rails
- Governance legitimacy for public and private digital payment systems

Each dimension is treated as a separate analytical pillar while maintaining interconnections across the broader payment ecosystem.

Comparative Technique

The study applies a structured comparative technique in which stablecoin mechanisms and the SWIFT system are evaluated side-by-side across equivalent indicators. By using standardized categories such as settlement time, security model, liquidity requirements, compliance enforcement and operational scale, the comparison maintains consistency and avoids subjective weighting. This allows conclusions to be drawn based on functional differences rather than theoretical assumptions.

Scenario Construction

To capture potential trajectories of global payment system evolution, the research incorporates scenario-based analysis. Three plausible scenarios are developed:

- Coexistence and interoperability



- Partial displacement in specific corridors
- Full systemic replacement

Each scenario includes assumptions, enabling conditions, potential obstacles, institutional responses and consequences for global financial stability. This approach provides structured foresight while avoiding deterministic predictions.

Scope and Delimitation

The study focuses on cross-border payments involving financial institutions, regulated intermediaries and institutional-grade stablecoin products. Retail-only digital wallet use is excluded, as it represents a different market segment. The analysis does not attempt to forecast stablecoin prices or assess speculative asset behaviour; instead, it concentrates on payment functionality and infrastructure transformation potential.

Validity, Reliability and Limitations

Validity is supported through triangulation of data sources and through comparative consistency across analytical categories. Reliability is enhanced by using standardized performance metrics derived from published institutional reports and repeatable technical benchmarks. Limitations include inconsistent transparency from stablecoin issuers, varying quality of public blockchain data, and the evolving nature of regulatory frameworks. These constraints are acknowledged and addressed through reliance on well-established institutional publications and peer-reviewed academic work.

Technical and Economic Comparison

The technical and economic comparison between stablecoins and the SWIFT system is central to understanding whether digital assets can feasibly replace legacy payment rails. This section evaluates settlement speed, transaction costs, liquidity requirements, and operational resilience to provide a structured assessment of functional differences.

Settlement Speed and Throughput

Stablecoins leverage distributed ledger technology (DLT) to facilitate near-instant settlement in most cases, with the capability of processing thousands of transactions per second depending on network design and layer-2 solutions. By contrast, SWIFT operates as a messaging system requiring correspondent banks to complete settlement, which can introduce delays of several hours or even days, particularly for cross-border transactions involving multiple intermediaries.

Transaction Cost Structure

Economic comparison also highlights differences in cost composition:

- SWIFT: Transaction fees arise from multiple layers, including correspondent bank charges, FX spreads, liquidity provision (nostro/vostro accounts), and

Comparative Settlement Times: SWIFT vs Stablecoin Networks

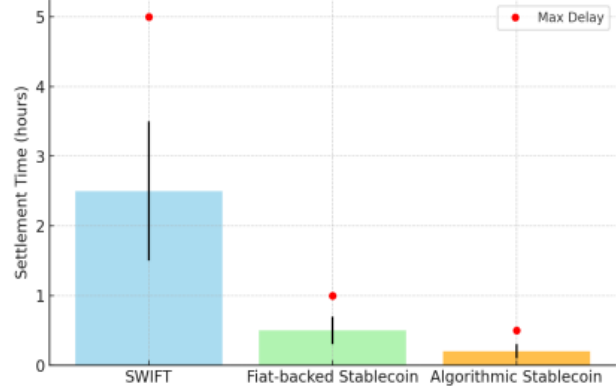


Figure 2: This graph highlights how both fiat-backed and algorithmic stablecoins are significantly faster and more consistent than the traditional SWIFT system

messaging costs. Cross-border transfers are often expensive for smaller transaction amounts.

- Stablecoins: Costs primarily include blockchain transaction fees (gas fees), custodian charges for off-ramp conversions, and FX conversion costs if the stablecoin is not denominated in the recipient's currency. Stablecoins may reduce intermediary costs but introduce volatility in fee structures depending on network congestion.

This table provides a side-by-side view of operational and economic differences, illustrating the trade-offs between the two systems in terms of speed, cost, liquidity, and risk.

Liquidity and Market Depth

Stablecoins require sufficient liquidity on both issuing and receiving ends. Large transaction volumes necessitate ready access to reserves for fiat conversion and redemption, which can be concentrated among a few major issuers. SWIFT, by contrast, depends on extensive correspondent bank networks holding nostro/vostro balances, which ensures wide liquidity but locks up capital and increases costs. Research indicates that while stablecoins can improve efficiency in high-demand corridors, they are constrained by limited market depth and the need for trusted custodians.

Operational Resilience and Risk

Operational resilience encompasses system reliability, cyber risk exposure, and contingency planning. SWIFT has a long history of stable operations with well-established governance, redundancy, and dispute resolution processes. Stablecoins, while offering decentralized settlement and censorship resistance, introduce new operational risks, including smart contract vulnerabilities, custodial failures, and regulatory enforcement uncertainties. These risks must be mitigated through rigorous audits, transparency of reserves, and strong governance mechanisms.

Table 1: Comparative Technical and Economic Indicators

<i>Indicator</i>	<i>SWIFT System</i>	<i>Stablecoin Network (Example 1)</i>	<i>Stablecoin Network (Example 2)</i>
Average settlement time	Several hours to days	1–5 minutes	<1 minute
Transaction cost per \$1000	\$20–50	\$2–10	\$1–5
Liquidity requirement	High (pre-funded accounts)	Moderate (on-chain liquidity)	Moderate
Settlement finality	Delayed (depends on banks)	Near-instant	Instant
Operational risk	Low-medium	Medium-high	Medium-high

Regulatory and Governance Constraints

The adoption of stablecoins as an alternative to the SWIFT system is heavily influenced by regulatory, legal, and governance frameworks. While stablecoins provide technological advantages, regulatory uncertainty and governance challenges remain the most significant barriers to large-scale integration in global payment systems.

Regulatory Compliance and Anti-Money Laundering (AML)

Stablecoins operate in a digital ecosystem where transaction flows are transparent on-chain but may bypass traditional financial intermediaries. While this transparency facilitates auditability, it also introduces challenges for enforcing anti-money laundering and counter-terrorist financing regulations. Regulators require that issuers and custodians implement robust Know Your Customer (KYC) protocols and monitor cross-border flows for suspicious activity. The lack of harmonized international standards means that stablecoins operating in multiple jurisdictions must navigate a complex web of compliance rules, increasing operational burden and limiting adoption.

SWIFT, by contrast, is embedded within regulated correspondent banking networks that automatically enforce KYC, AML, and sanctions compliance at multiple checkpoints. The legacy system benefits from long-standing relationships with regulatory authorities and standardized reporting structures, making compliance enforcement more straightforward.

Legal Status and Issuer Accountability

One of the major regulatory constraints for stablecoins is the legal recognition of claims on reserves. Users and institutions must be assured that stablecoins are fully redeemable at par value and backed by credible reserves. Legal frameworks governing redemption rights, reserve transparency, and issuer liability vary widely across jurisdictions, creating uncertainty for institutional adoption.

Governance standards for stablecoin issuers are also critical. Effective governance requires clear operational rules, independent audits, transparency in reserve holdings, and mechanisms for addressing insolvency or technical failures.

Without these structures, stablecoins face reputational and systemic risks that could undermine trust and limit their use as a global payment medium.

Cross-Border Regulatory Fragmentation

Stablecoins are inherently global, but financial regulation remains largely national or regional. This fragmentation complicates cross-border usage, particularly in cases where jurisdictions have conflicting rules on asset backing, reserve management, and operational licensure. International coordination is limited, and regulatory divergence may prevent certain stablecoins from being accepted by financial institutions in multiple markets.

SWIFT benefits from decades of international standardization, including the ISO 20022 messaging protocol, which ensures interoperability across banks and jurisdictions. Stablecoins attempting to replace SWIFT must overcome not only technical hurdles but also the political and legal fragmentation of global regulation.

Risk of Regulatory Arbitrage and Financial Stability Concerns

Regulatory arbitrage is a significant concern. Issuers may seek jurisdictions with lenient rules, creating systemic risks and potentially undermining local monetary sovereignty. Central banks and regulators are wary of stablecoins that could compete with national currencies or interfere with monetary policy implementation. Studies and policy reports frequently note that large-scale stablecoin adoption without regulatory oversight could exacerbate financial instability by concentrating liquidity in unregulated entities, increasing operational risk, and bypassing traditional controls over capital flows.

Governance and Institutional Trust

Institutional trust is a fundamental determinant of adoption. SWIFT's credibility derives from decades of operational reliability, standardized protocols, and governance embedded in the global banking network. Stablecoins, while technologically advanced, must establish comparable governance structures to earn institutional confidence. This includes:



- Transparent reserve attestations
- Independent audits of operational and financial integrity
- Mechanisms for resolving disputes or technical failures
- Clear accountability in case of insolvency

Without robust governance, stablecoins are unlikely to replace established systems fully, even in the presence of superior technical capabilities.

Case Studies and Scenario Analysis

To assess the practical feasibility of stablecoins replacing or complementing the SWIFT system, this study develops three illustrative case studies and constructs plausible scenarios. These examples highlight operational realities, regulatory considerations, and economic outcomes in different cross-border payment contexts.

Case Study A: Remittance Corridor Optimization

In high-volume remittance corridors, stablecoins have demonstrated efficiency advantages. For example, migrant workers sending funds to their home countries often face delays and high fees via correspondent banking networks. By leveraging fiat-backed stablecoins, settlement can occur within minutes, with lower transaction costs and improved transparency. Liquidity is managed through on-ramps and off-ramps in the recipient country, which ensures convertibility into local fiat currency. Regulatory oversight is critical to ensure compliance with local AML and consumer protection laws.

Case Study B: Corporate Treasury and FX Settlement

Large multinational corporations managing cross-border liquidity and foreign exchange transactions can benefit from stablecoins' near-instant settlement and programmability. Treasury departments can net payments, reduce the number of intermediaries, and automate currency conversions. However, challenges include ensuring sufficient stablecoin liquidity, auditing reserves, and integrating stablecoins with

existing treasury management systems.

Case Study C: Sanctions-Sensitive and High-Risk Corridors

Stablecoins have also been discussed in contexts where traditional banking channels are restricted due to geopolitical sanctions. While theoretically enabling continued transfers, regulators have emphasized that unregulated stablecoin use in such corridors could facilitate illicit financial activity. Institutional adoption is limited, and monitoring mechanisms are required to prevent circumvention of AML and sanctions frameworks.

Scenario Analysis

Based on the case studies, three plausible scenarios are developed to assess the potential trajectories of stablecoin adoption in global payments:

This table presents three plausible scenarios for the integration of stablecoins into global cross border payment systems alongside or in place of the SWIFT network. This table presents three plausible scenarios for the integration of stablecoins into global cross-border payment systems alongside or in place of the SWIFT network.

Policy Recommendations

Based on the technical, economic, regulatory, and scenario analyses, the following recommendations are proposed for policymakers, financial institutions, and international bodies to facilitate the safe and effective integration of stablecoins in cross-border payments.

Recommendations for Policymakers and Regulators

Regulatory Harmonization

Develop standardized licensing frameworks for stablecoin issuers across jurisdictions to reduce fragmentation and facilitate cross-border use.

Table 2: Scenarios for Stablecoin Integration with SWIFT

Scenario	Description	Key Drivers	Likelihood/ Feasibility	Implications
Coexistence and Interoperability	Stablecoins operate alongside SWIFT, complementing specific corridors.	Regulatory clarity, stable liquidity, technical integration	High	Innovation in cross-border payments, reduced cost in selected corridors.
Partial Displacement	Stablecoins replace portions of SWIFT in high-volume, well-regulated corridors.	Strong institutional adoption, robust governance	Medium	Some reduction in SWIFT usage, need for reserve transparency and interoperability.
Full Replacement	Stablecoins fully replace SWIFT globally.	Global regulatory alignment, universal acceptance, deep liquidity	Low	Systemic risk, geopolitical tensions, major transformation of international banking.

AML, CFT, and Sanctions Enforcement

Require stablecoin networks to implement robust KYC, AML, and sanctions monitoring mechanisms while maintaining transparency on-chain.

Reserve Transparency and Risk Mitigation

Mandate independent audits of reserves backing stablecoins and enforce clear redemption guarantees to maintain user confidence and systemic stability.

Collaboration with Financial Institutions

Encourage partnerships between central banks, regulated banks, and stablecoin issuers to ensure interoperability and risk management in high-volume corridors.

Recommendations for Market Participants**Interoperability and Technical Integration**

Invest in integrating stablecoins with existing treasury management systems, payment gateways, and SWIFT-compatible messaging standards to facilitate seamless transfers.

Liquidity Management

Ensure sufficient on-chain and off-chain liquidity to support cross-border settlements without causing market distortions.

Governance and Compliance

Establish clear governance structures, transparency policies, and contingency protocols to maintain trust and reliability in stablecoin operations.

Recommendations for International Bodies**Standard Setting and Coordination**

Promote global standards for digital payment instruments, including messaging protocols, reporting requirements, and operational resilience frameworks.

Pilot Projects and Interlinking CBDCs

Facilitate pilot programs and experimental corridors that link central bank digital currencies (CBDCs) with stablecoins to test interoperability, scalability, and compliance measures.

CONCLUSION

The analysis of stablecoins in the context of global cross-border payments demonstrates that while these digital assets present transformative potential, complete replacement of the SWIFT system remains unlikely in the near to medium term. Stablecoins offer clear advantages in settlement speed, cost efficiency, programmability, and transparency, which make them particularly effective for niche applications such as remittances and corporate treasury operations. However, these advantages are tempered by significant constraints, including regulatory fragmentation, liquidity management

challenges, governance requirements, and the need for institutional trust.

The study's comparative, case-based, and scenario analyses indicate that coexistence and interoperability is the most plausible trajectory for stablecoin adoption. In this model, stablecoins complement legacy systems by optimizing specific corridors, improving efficiency, and providing incentives for modernization, while SWIFT continues to underpin global payments with its entrenched network, operational reliability, and regulatory alignment. Partial displacement may occur in highly regulated, high-volume corridors, but full systemic replacement is constrained by geopolitical considerations, legal ambiguity, and the need for universal acceptance and liquidity depth.

Policy, regulatory, and institutional actions are pivotal to enabling stablecoins to function safely alongside legacy systems. Regulatory clarity, transparent reserve management, robust governance, and cross-jurisdictional coordination are essential for mitigating operational and systemic risks. Furthermore, collaboration between central banks, financial institutions, and stablecoin issuers is critical for ensuring interoperability and maintaining trust.

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