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FinTech Infrastructure for Cross-Border Payments and Digital Asset Monetization: Integration of Blockchain, Regulatory Technologies, and Smart Contracts in the Modern Financial System

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Abstract

This article examines contemporary approaches to building FinTech infrastructure for high-value cross-border payments and the monetization of digital assets amid the transformation of the global financial system. It analyzes the role of blockchain technologies, regulatory technology (RegTech) solutions, and smart contracts in reducing transaction costs, increasing transparency, and ensuring compliance with financial supervisory requirements.

Particular attention is given to the integration of crypto assets with the traditional U.S. financial system and the development of hybrid crypto-to-fiat models in the real estate, travel, and premium services sectors. The paper substantiates the economic impact of implementing digital payment infrastructures and assesses their influence on international capital flows.

Keywords: Fintech; Cross-Border Payments; Blockchain; Crypto Assets; Smart Contracts; Regtech; Digital Economy; Financial Infrastructure.

1. Introduction

The global financial system is undergoing a phase of structural transformation driven by the digitalization of payment processes, the growth of cross-border transactions, and the proliferation of crypto assets. Traditional international settlement mechanisms based on the SWIFT system and correspondent banking are characterized by high costs, long settlement times, and limited transparency. In the context of business globalization and expanding international trade, these limitations have become a significant factor reducing corporate competitiveness.

Next-generation FinTech platforms are creating alternative infrastructures capable of delivering faster settlement, lower fees, and increased automation of financial processes. The integration of blockchain, smart contracts, and regulatory technologies not only optimizes payment operations but also enables the construction of a systemic compliance model aligned with financial oversight requirements—an especially critical factor for the U.S. market and other highly regulated jurisdictions.

The purpose of this article is to analyze the key components of modern FinTech infrastructure for cross-border payments and to demonstrate the economic and institutional advantages of hybrid models integrating crypto assets and fiat currencies.

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2. Cross-Border Payments as a Structural Challenge of the Global Economy

According to international financial institutions, the annual volume of global cross-border payments exceeds USD 150 trillion. Despite this scale, the infrastructure supporting these transactions remains fragmented and inefficient. The average processing time for payments via traditional banking channels ranges from two to five business days, while total transaction fees may reach 6–10% of the payment amount.

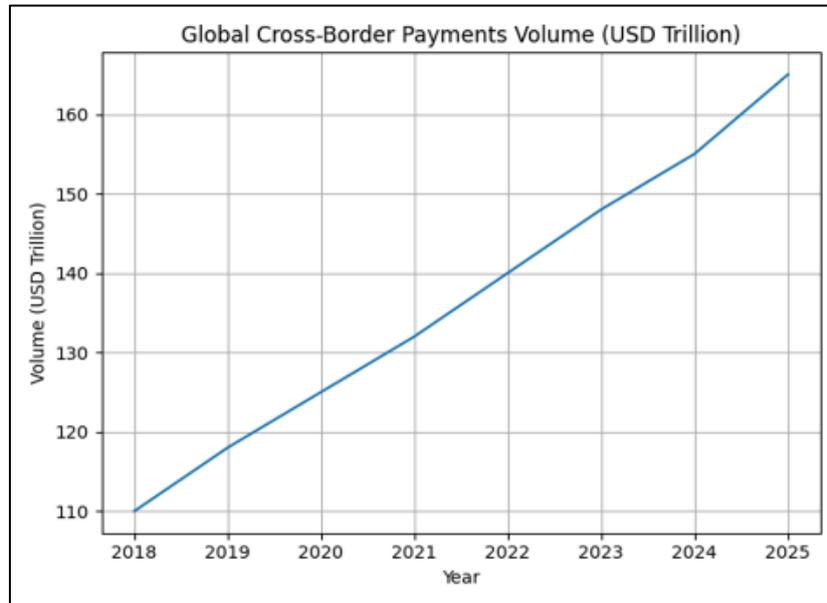


Figure 1 Dynamics of Cross-Border Payment Volumes and Transaction Processing Time

The main systemic constraints include:

- multiple intermediaries;
- currency risks;
- manual compliance procedures;
- information asymmetry among participants.

Blockchain-based FinTech infrastructures make it possible to transform the settlement model by replacing a linear chain of intermediaries with a decentralized ledger that enables automated transaction validation.

3. Blockchain as the Technological Foundation of Financial Infrastructure

Blockchain technology provides data immutability, cryptographic security, and the ability to process transactions in near real time. For cross-border payments, the key advantages include:

- Reduction of clearing times to minutes;
- Transparency of fund flows;
- Lower operational and legal risks.

Hybrid models that utilize private or permissioned blockchain networks allow regulatory and financial institution requirements to be integrated without sacrificing the benefits of decentralization. This approach is particularly relevant for B2B payments and high-value transactions.

4. Integration of Crypto Assets and the Fiat System

One of the key challenges of the digital economy remains the volatility of cryptocurrencies. In this context, the crypto-to-fiat model is particularly promising, in which digital assets are used as an intermediate liquidity instrument, followed by conversion into fiat currencies or stablecoins.

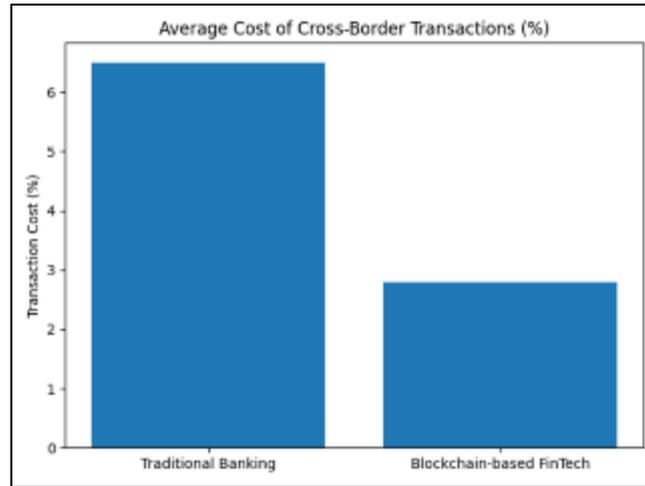


Figure 2 Comparison of Traditional and FinTech Payment Costs

The economic impact is reflected in:

- A reduction in transaction costs by up to 40–50%;
- Increased predictability of cash flows;
- Expanded access to international markets for small and medium-sized enterprises.

5. Smart Contracts and the Automation of High-Value Transactions

Smart contracts enable the automated execution of transaction terms without the involvement of third parties. In the segments of real estate, luxury goods, and corporate assets, this results in:

- Shorter settlement cycles;
- Reduced legal costs;
- Minimization of conflicts and disputes.

Automated escrow mechanisms based on smart contracts establish a new trust model in which control is ensured by code and transparent algorithms rather than institutional intermediaries.

6. RegTech and Tax Transparency

The growing use of digital assets increases requirements for tax compliance and AML/KYC procedures. Modern FinTech platforms integrate RegTech solutions that provide:

- automated transaction monitoring;
- calculation of tax liabilities;
- submission of regulatory reports to supervisory authorities.

This model reduces the risk of legal violations and creates a sustainable foundation for the lawful use of crypto assets in international trade.

7. Conclusion

The analysis demonstrates that next-generation FinTech infrastructures are becoming a key element in the transformation of the global financial system. The integration of blockchain, smart contracts, and regulatory technologies makes it possible to address systemic challenges in cross-border payments, reduce costs, and enhance the transparency of international financial flows.

Hybrid crypto-to-fiat models show strong potential for practical application and may serve as a foundation for sustainable growth in the digital economy. Further research should focus on analyzing the macroeconomic effects of deploying such platforms and on developing international regulatory standards.

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