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Unlocking Financial Innovation: The Role of Permissionless Architectures

¹ Carstens, A. & Nilekani, N. *Finternet: the financial system for the future*, BIS Working Paper No. 1178 (April 15, 2024), <https://www.bis.org/publ/work1178.htm>.

The global financial system is ready for an update.¹ Despite decades of improvements in digital technology, many systems remain outdated and disconnected, with persistent barriers to inclusion. Transactions can take days to finalize, relying on slow and complex messaging, clearing, and settlement processes. This paper sets out a vision for a more responsive, effective, and resilient financial infrastructure, built on permissionless systems.

The deficiencies of the current financial system are sometimes masked by consumer-friendly innovations, such as the introduction of mobile payment apps. But while they are digital, and may feel instant, these innovations still rely on traditional banks and settlement rails to actually move money. And because they are closed systems, they limit users to sending money within their own networks. For example, a PayPal user cannot send directly to a CashApp user, just as WhatsApp users cannot message Apple's iMessage users.

Tokenization of assets on permissionless blockchain networks can change this. Permissionless networks are open systems that anyone can join and use without special permission. These networks are built on what is called a "base layer"—a foundation that provides security and basic transaction capabilities, similar to how a city's infrastructure, like roads and power lines, supports everything built on top of it.

The history and success of the internet offer a powerful precedent. Its foundational protocols were designed to be open and accessible to all. This permissionless architecture enabled unprecedented innovation by eliminating gatekeepers and reducing barriers to entry and experimentation. The ethos of openness and interoperability of the early internet is essential for updating our financial system today. Governments and regulators should actively support a new generation of open protocols—permissionless blockchain networks. While cryptocurrencies like Bitcoin are often simply viewed as advances in computer science, the underlying technology offers a far greater transformation in how society organizes economic activity and designs markets.²

² Catalini, C., and Gans, J.S., *Some simple economics of the blockchain*, Communications of the ACM 63.7, 80-90 (2020), <https://dl.acm.org/doi/abs/10.1145/3359552>.

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What is Tokenization and Why Does it Matter?

Tokenization can represent many different types of assets, both financial and non-financial: cash, gold, stocks and bonds, royalties, art, real estate, and more. Essentially, tokenization allows people to buy, sell, and manage these assets more efficiently, using blockchain technology to reduce costs, speed up transactions, and increase transparency.

Tokenization leverages specific software called smart contracts, which can be programmed with rules for creating, issuing, and trading tokenized assets. These methods allow parties to transact directly peer to peer, eliminating (or redefining) the role of intermediaries. The code ensures that transactions are accurate and efficient, while keeping transaction data permanent and visible on the blockchain. For traditional financial instruments, there are well-documented opportunities in terms of operational efficiencies, reduced costs (as a result of reducing intermediaries), lower risk, and improved liquidity which have the potential to democratize access to typically hard-to-access markets and products and broaden investment opportunities through fractional ownership.

Tokenization's potential extends far beyond financial services. It can unlock value and generate liquidity for previously immobile assets like intellectual property, digital content, and physical goods. But realizing tokenization's full potential will depend on developing well-crafted regulatory frameworks that can effectively address the dual nature of these emerging digital assets.

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The Benefits of a Permissionless Architecture

Tokenized assets on permissionless networks have the power to drive improvements in economic outcomes across several critical dimensions, including economic efficiency, transparency, and privacy.

The infrastructure governing the creation and trading of tokenized real-world assets typically takes one of two forms: (i) a permissioned platform, where a single entity—such as a government agency, a major technology company, or a consortium of financial institutions—maintains ownership and control over the system, dictating who can participate and how transactions occur; or (ii) a permissionless platform, which operates as an open network where anyone globally can join, contribute to its operations, and participate in governance, fostering decentralization and inclusivity.

Permissionless networks solve traditional problems of slow, complex, and ineffective governance by deploying technology that is general-purpose and equally accessible to all. These networks can also fully comply with regulations through controls implemented at the application layer.

The adoption of stablecoins for cross-border payments highlights how permissionless networks are tackling inefficiencies in global value transfer. In the first half of 2024 alone, stablecoins settled over \$2.6 trillion in value, with surveys revealing diverse use cases such as savings as well as significant growth in transforming key remittance corridors.³ Using stablecoins, the average cost of a cross-border remittance can be reduced from 6% to less than 1%.⁴

Specific benefits of permissionless networks include:

Interoperability

Permissionless systems challenge closed financial and digital platforms that limit competition and benefit only a few large companies. By enabling users to own and transfer tokenized assets freely, they promote greater control, flexibility, and market competition.

Programmability and Modular Innovation

Smart contracts automate tasks based on set rules, reducing the need for manual work and ensuring transparency. Their modular design allows different parts to work together like building blocks, encouraging innovation. Decentralized Finance (DeFi) uses these features to offer open, user-focused financial services that are efficient and give more value back to users.

Onchain Security, Privacy, and Risk Management

Permissionless networks offer new ways to keep records securely and privately using shared ledgers and cryptographic tools. For example, Coinbase Verifications let users create secure onchain proofs of their identity, like country of residence, without sharing personal data. These proofs can be used across different platforms, protecting privacy while improving security and functionality.

Onchain Governance

A common misperception is that permissionless networks cannot comply with regulation. But this view fails to account for the transformative potential of smart contracts and programmability, which are already cutting costs, automating processes, and changing how businesses and transactions work. By combining decentralized networks with traditional governance at the application level, these systems can achieve compliance while avoiding the pitfalls of permissioned systems.

³ https://castleisland.vc/wp-content/uploads/2024/09/stablecoins_the_emerging_market_story_091224.pdf

⁴ <https://utila.io/blog/the-rise-of-stablecoins-in-payments/>

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The Path Forward:
Policy Considerations
and Regulatory
Principles

The transformative potential of permissionless networks depends on policymakers fostering an environment that enables the technology to thrive. This requires adopting regulatory frameworks grounded in the principle of “same risk, same regulatory outcome,” while ensuring that the regulatory approach is tailored to the unique characteristics and capabilities of the technology. Five key principles and considerations are essential for realizing this potential.

Ensure Base Layer Neutrality: Regulators should ensure permissionless networks remain neutral by focusing their rules and oversight on intermediaries operating at the application layer, such as exchanges or custodians. They should avoid regulating the base layer. They should enforce fair treatment for all activities and users, similar to net neutrality principles for the internet.

Combat Illicit Finance While Protecting Privacy

Policymakers should allow service providers to adopt tools like zero-knowledge proofs (ZKPs) to enhance privacy while detecting illicit activities. They should implement these technologies to screen for illegal transactions while safeguarding users’ personal data.

Support Crypto Integration with Traditional Finance

Regulators should focus on regulating outcomes in order to avoid impeding new innovative approaches. This means permitting the building of financial infrastructure on permissionless networks to enable seamless integration of traditional and crypto services. They should collaborate with developers and users to ensure smooth interoperability between the two sectors.

Accelerate Tokenization of Traditional Financial Assets

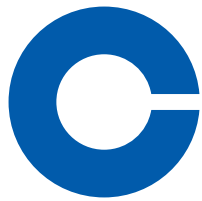
Governments and regulators should promote innovation around tokenizing traditional financial assets, such as equities and fixed income, to reduce costs and increase market efficiency. They should leverage existing compliance tools to facilitate tokenization and unlock greater capital efficiency in global markets.

Recognize the Right to Self-Custody

Regulators should protect users’ right to self-custody by ensuring they can control their private keys and digital assets. This action will empower individuals, reduce reliance on intermediaries, and increase financial inclusion.

Conclusion

Permissionless networks are critical for fostering competition and innovation across financial services and beyond. Unlike closed, proprietary systems that favor incumbents, an open architecture lowers barriers to entry and empowers innovators to create truly novel products and services. At the heart of this transformation is base layer neutrality, a prerequisite for any meaningful change in market structure. By embracing permissionless networks and safeguarding base layer neutrality, policymakers can foster an environment where innovation thrives, users retain greater control over their assets and data, and the transformative potential of tokenization is fully realized.



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