

Unlocking a Trillion Dollar On-Chain Economy Through Institutional Participation & Tokenization

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Abstract

The global financial system is approaching an inflection point where blockchain infrastructure is no longer just an experimental layer but an emerging settlement and ownership substrate for institutional capital. This paper examines how institutional participation can unlock a trillion-dollar on-chain economy by migrating core financial primitives like ownership, settlement, collateralization, and liquidity onto programmable, interoperable networks. Rather than focusing on speculative crypto markets, the analysis centers on real-world asset tokenization, on-chain funds, stablecoins, and tokenized money-market instruments as the primary transmission mechanisms for institutional adoption.

We explore the structural incentives driving institutions on-chain, including capital efficiency, real-time settlement, composable liquidity, and programmable compliance, while contrasting these advantages with the constraints of legacy market infrastructure. The paper evaluates current adoption pathways such as ETFs, custodial tokenization platforms, and permissioned-to-public chain bridges and identifies the conditions required for scaling from pilot programs to systemic deployment. Key risks and frictions, including regulatory clarity, custody standards, liquidity fragmentation, and market integrity, are assessed alongside emerging mitigation frameworks.

Ultimately, this research argues that the trillion-dollar opportunity will not be unlocked by retail speculation, but by institutions treating blockchains as financial infrastructure rather than asset classes. As capital markets, asset managers, and payment networks progressively integrate on-chain rails, the on-chain economy is positioned to evolve into a parallel financial system, one that is more transparent, efficient, and programmable than its traditional counterpart.

Introduction

Before we can truly understand the role of an on-chain financial system and its role in the tokenization of real-world assets, we must first define some fundamentals. At its core, an institution is characterized by authority, durability, and rule-based coordination. Wikipedia defines tokenization as the process of substituting a sensitive data element with a non-sensitive equivalent, referred to as a token, that has no intrinsic or exploitable meaning or value. The token is a reference (i.e. identifier) that maps back to the sensitive data through a tokenization system, this is relevant in the context of a blockchain as it allows for the creation of digital representations of real world financial instruments (equities, bonds, funds etc) on the blockchain, these representations can be transferred, pledged or settled on-chain in a way that is enforceable and auditable.

The first recorded case of a public offering dates as far back as 215 BC in Rome, where publicans sold parts on Via Sacra to fund mega projects like war. It later disappeared when Rome shifted from a Republic to an Empire; the Emperors wanted total control. They took over tax collection and public works, which effectively killed the private “public” company for 1,000 years. Modern history accounts that The Dutch East India company (VOC) was the first to have a public issuance alongside the first formal stock exchange “The Amsterdam Stock Exchange” in 1602, it wasn’t until 1773 that the London Stock Exchange was founded as an informal meeting of stockbrokers in coffeehouses, over the following decades it grew into a highly organized and structured stock exchange before the New York Stock Exchange was established in 1792 and has since become the world’s largest Stock Exchange.

The global financial market has undergone a rapid digitization of economic activities. While financial markets have become faster and more interconnected at the surface level, the underlying systems responsible for issuing, settling, and servicing assets remain fragmented, slow, and operationally complex. These structural inefficiencies that have long been accepted as unavoidable are becoming increasingly misaligned with the demands of a digitally native economy. This paper examines the drivers behind institutional interest in on-chain finance and tokenization, situating these developments within the broader context of financial market evolution. It argues that tokenization represents a structural response to infrastructure constraints rather than a departure from institutional finance and may form the foundation of a more efficient, programmable, and resilient financial system.

2-A Problem Statement: Legacy Financial Infrastructure

Current market infrastructure is characterized by siloed ledgers, latent settlement, and time-consuming reconciliation, this system uncovers obvious limitations as settlement relies on processes that are time delayed and subject to working hours, corporate action and reconciliation still done through batch processing rather than shared states, the result of this is a highly latent settlement with most transactions operating on a T+1 or T+2, with the latency being a structural byproduct of the needed time to move data across silos creating a waiting time which exposes parties to “counterparty risk”. Due to the disconnected nature of these ledgers, financial institutions invest billions of dollars annually in margin reconciliation, creating capital inefficiencies as these legacy systems require extensive prefunding and conservative collateral buffers, resulting in large amounts of idle capital that could otherwise be invested for yields, as well as a structurally inaccurate balance sheet.

3-A On-chain Finance & Tokenization Framework

On-chain finance denotes the domain of financial instruments and associated processes encompassing issuance, settlement, and ongoing servicing that are natively executed on distributed, programmable blockchain ledgers. Within this paradigm and consistent with the previously established conceptualization of tokenization, we can represent real-world assets (Bonds, Mutual funds, etc.) via cryptographically secure digital tokens on the blockchain. Today's tokenized asset market is composed of \$300B in stablecoins, \$8.7B in US treasury debt, \$3.6B in commodities, and \$2.7B in alternative funds



Fig 1. Total RWA tokenized value. Source: RWA.xyz

A 2023 Citi Global Perspectives & Solutions report, titled *Money, Tokens, and Games: Blockchain's Next Billion Users and Trillions in Value*, projects that the market for tokenized digital securities encompassing financial instruments and real-world assets could reach \$4 trillion to \$5 trillion by 2030, with private market tokenization alone potentially growing to approximately \$4 trillion. This forecast underscores tokenization's potential to emerge as a transformative “killer use case” for distributed ledger technology, facilitating greater efficiency, fractionalization, and accessibility in global financial markets.

Total RWA Value

Distributed

Represented

All

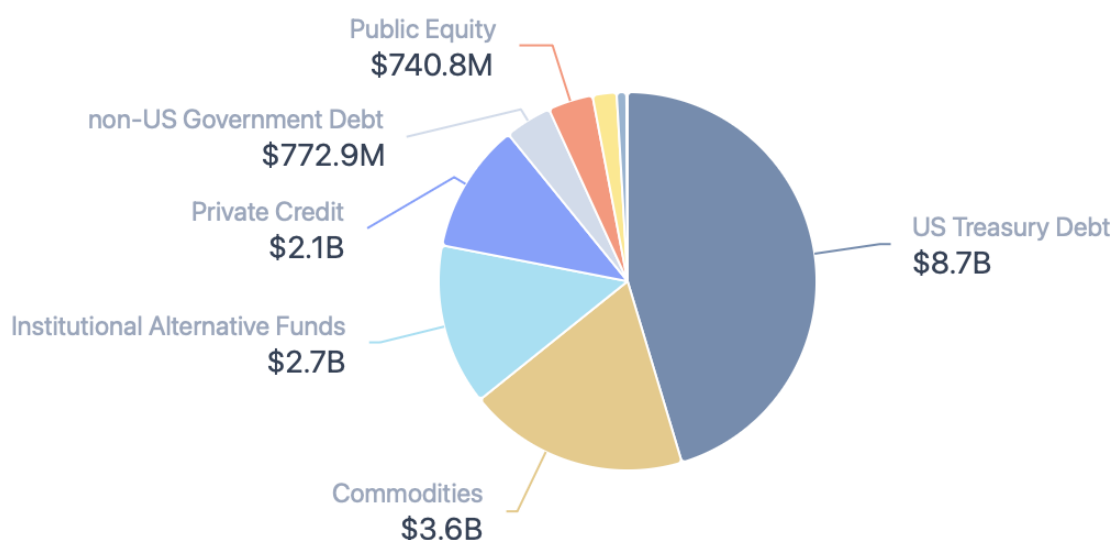


Fig 2. Distribution of tokenized real-world assets. Source: RWA.xyz

Empirical observations and industry analyses indicate a gradual displacement of traditional financial infrastructures by on-chain systems, driven primarily by the latter's superior operational efficiency, native programmability, and enhanced transparency and auditability. Furthermore, on-chain architectures facilitate a marked reduction in settlement latency from multi-day cycles characteristic of conventional systems (e.g., T+1 or T+2) to near-instantaneous or atomic settlement, wherein transfer of ownership and payment occur irrevocably and simultaneously within a single transaction.

4-A Evidence of Institutional Adoption

Building upon the demonstrated advantages of on-chain infrastructure relative to legacy systems, an examination of institutional participation and adoption is warranted, given their pivotal role in catalyzing the subsequent phase of scalability within the on-chain economy. In recent years, institutional engagement with on-chain finance has markedly accelerated, transitioning from exploratory research to regulated pilots and initial production implementations. Major global banks are actively piloting tokenized bonds, funds, and deposits to enhance settlement efficiency and optimize liquidity management. Asset managers, in turn, have introduced tokenized investment vehicles to improve fund administration and provide real-time transparency.

A notable recent development is the December 2025 arrangement by J.P. Morgan of a tokenized U.S. commercial paper (USCP) issuance for Galaxy Digital Holdings LP on the Solana public blockchain, one of the earliest debt issuances executed on a public blockchain and among the first in the U.S. to leverage blockchain for issuance and servicing. Scott Lucas, Head of Markets Digital Assets at J.P. Morgan, described the transaction as “an important step toward understanding the role blockchain will play in the future of financial markets,” underscoring demonstrated institutional demand for digital asset integration.

Concurrently, institutions such as Citigroup continue to advance research and infrastructure in digital assets, blockchain, and tokenization, with ongoing publications and platforms (e.g., Citi Token Services) emphasizing practical applications in regulated settings. Critically, these efforts frequently operate within compliance frameworks and entail direct balance-sheet commitments, indicating that institutional adoption of tokenization is primarily motivated by operational efficiencies and economic benefits, rather than speculative motives.

5-A Comparative Lens: ETFs as a Transitional Instrument

Exchange-traded funds, particularly Bitcoin ETFs, offer a useful lens through which to understand institutional engagement with digital assets. Bitcoin ETFs provide regulated, familiar exposure to a natively digital asset, enabling institutional participation without requiring direct interaction with on-chain infrastructure.

While ETFs address access, custody, and compliance concerns, they remain embedded within legacy market structures. Settlement cycles, intermediary reliance, and reconciliation requirements persist, limiting the extent to which ETFs can capture the efficiencies of

digital-native assets. As such, ETFs function as a transitional mechanism demonstrating institutional demand while simultaneously exposing the constraints of existing infrastructure.

In this sense, Bitcoin ETFs could help validate the appetite for digital assets but also highlight why institutions are increasingly exploring tokenization as a more comprehensive solution.

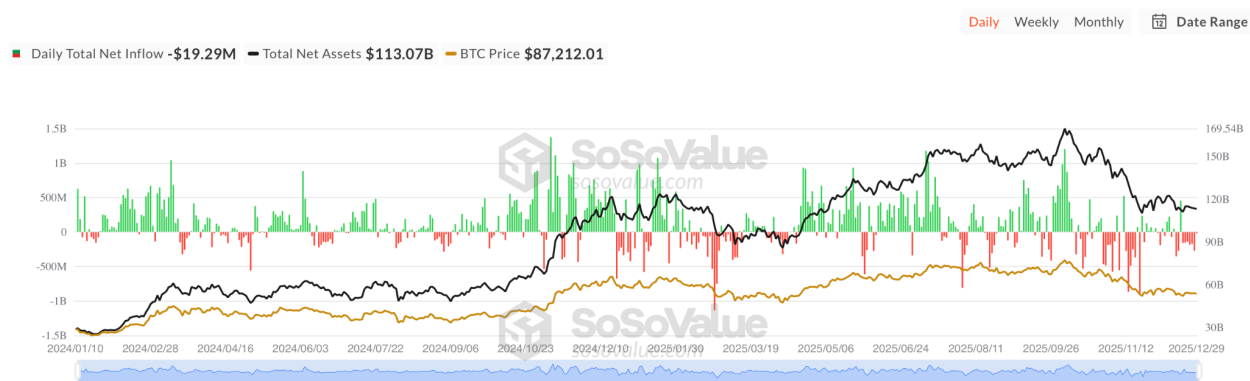


Fig 3. Total spot Bitcoin ETF net inflow. Source: Sosovalue

The accompanying chart illustrates daily net inflows into spot Bitcoin exchange-traded funds (ETFs). Analysis reveals a pattern of progressively increasing liquidity inflows throughout 2025, culminating in a peak single-day net inflow of approximately \$1.2 billion. This sustained and accelerating capital commitment provides empirical evidence consistent with growing institutional interest and allocation toward Bitcoin as an established asset class within regulated investment vehicles.

6-A Risks, Constraints & Institutional Frictions

Notwithstanding its considerable potential, on-chain finance encounters persistent challenges that impede widespread institutional adoption. Key impediments include uncertainties surrounding the legal enforceability and recognition of tokenized assets, ambiguities in custody and control frameworks, and inconsistencies in regulatory approaches across jurisdictions. A notable recent advancement in regulatory facilitation is the U.S. Securities and Exchange Commission's Division of Trading and Markets issuance, on December 11, 2025, of a no-action letter to The Depository Trust Company (DTC), a subsidiary of The Depository Trust & Clearing Corporation (DTCC). This conditional relief authorizes DTC to initiate a three-year pilot of its Tokenization Services in the second half of 2026, enabling voluntary tokenization of security entitlements for select high-liquidity assets on approved blockchains while retaining DTC's centralized ledger as the authoritative record.

Institutions must additionally reconcile the inherent transparency of public blockchains with requirements for transactional confidentiality, particularly in competitive or sensitive markets.

Operational vulnerabilities such as smart contract exploits, oracle dependencies, and governance complexities further compel a prudent approach to deployment. Consequently, the prevailing institutional strategy favors hybrid or permissioned architectures that incorporate on-chain elements within established compliance, risk management, and oversight structures.

These barriers do not undermine the fundamental viability of tokenization; rather, they delineate its evolutionary path, emphasizing the necessity of phased, risk-mitigated progression toward broader integration.

7-A Outlook: The Future of Institutional Finance

Institutional adoption of on-chain finance is anticipated to unfold incrementally on a functional basis, rather than via a comprehensive systemic overhaul. In the near to medium term, tokenized investment funds, fixed-income securities, and settlement instruments are projected to proliferate within regulated and controlled environments, such as permissioned networks or institutional pilots.

As these components mature, the progressive integration of tokenized cash equivalents, collateral assets, and repurchase agreement (repo) markets could facilitate more continuous, real-time, and capital-efficient financial workflows, thereby reducing frictional costs and enhancing liquidity management.

Over the longer horizon, the convergence of broadly tokenized asset classes, programmable settlement mechanisms, and interoperable shared infrastructure has the potential to profoundly reconfigure market structures and plumbing. Far from supplanting traditional financial institutions, on-chain finance is more likely to augment their operational paradigms, enabling enhanced efficiency, transparency, auditability, and systemic resilience within an increasingly digital-native economic landscape.

Conclusion

Institutional interest in on-chain finance and tokenization reflects a rational response to structural inefficiencies embedded in legacy financial infrastructure. As siloed ledgers, delayed settlement, and reconciliation costs become increasingly misaligned with modern economic activity, institutions are exploring shared, programmable systems as a path forward.

Tokenization does not represent a departure from institutional finance, but an evolution of it. By re-architecting how assets are issued, settled, and serviced, on-chain finance has the potential

to modernize financial markets while preserving the trust, governance, and regulatory foundations upon which they are built.

Disclaimer

This report is based on information available as of October 27, 2025, and is intended for use within three (3) months after its publication date. Market conditions, regulatory environments, and project-specific factors may change over time, which can affect the accuracy and relevance of the analysis. Due care and rigorous research methodologies have been exercised in preparing this document. However, no representation or warranty, express or implied, as to the completeness or accuracy of the information beyond the stated validity period is made. Any decisions made based on this report should consider the most recent data and developments available at the time of implementation. Additionally, all interpretations and conclusions are made for academic and informational purposes only and should not be construed as financial advice or definitive assessments of project performance. All rights are reserved.

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