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RECEIVED 15 November 2025

REVISED 11 December 2025

ACCEPTED 22 January 2026

PUBLISHED 12 February 2026

CITATION

Davé S, Donmez A and Gkatzimas I (2026)
Tokenization and the reshaping traditional
finance: institutional adoption.
Front. Blockchain 9:1747208.
doi: 10.3389/fbloc.2026.1747208

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Tokenization and the reshaping traditional finance: institutional adoption

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This paper examines the growing institutional adoption of tokenization. Drawing on examples such as BlackRock's BUIDL fund, we show how traditional financial institutions are experimenting with blockchain-based issuance, settlement, and custody models. We also outline the lifecycle of a hypothetical tokenized bond and demonstrate how it employs smart contracts and data oracles at each stage of the process. The paper contributes to current discussions by explaining how tokenization interacts with existing financial infrastructure and by identifying areas in which tokenization may influence market structure and regulation.

KEYWORDS

blockchain, digital assets, distributed ledger technologies, financial market infrastructure, institutional finance, regulatory framework, smart contract, tokenization

1 Introduction

Tokenization is the process of transforming ownership rights in a real or financial asset into a decentralized, digital representation that can be transferred and managed on a blockchain. In practical terms, it is akin to converting a physical house deed into a secure digital file, or transforming a traditional paper stock certificate into a digital token that can be traded and settled in seconds, with ownership instantly verified and updated on a blockchain ledger (Bala, 2022). While the underlying asset remains the same, the way its ownership is recorded, transferred, used, and serviced is fundamentally reimaged.

This transformation works by anchoring the real asset, such as a bond, a fund share, or a deposit, within a legally recognized framework, and then creating digital tokens that represent claims on that asset (Carapella et al., 2023). These tokens may be governed by smart contracts that encode the legal and financial terms and facilitate actions such as ownership transfers, interest payments, redemptions, and compliance with key regulatory requirements (Agur et al., 2025). Critically, unlike traditional financial instruments, tokenized assets can settle in almost real-time, be divided into highly granular units, and interact programmatically with other on-chain services, all with the promise of a lower overall cost of transacting in the assets (Juan et al., 2023; Cisar et al., 2025).

Despite the growing body of research on tokenization, much of the existing literature remains focused on either theoretical models or technical discussions, emphasizing protocol architectures and smart contract design. An integrated analysis of how major financial institutions are incorporating tokenization into existing market infrastructure, and the attendant operational, legal, and regulatory challenges, remains largely unaddressed. This article addresses that gap by reviewing emerging tokenization initiatives and examining how they are beginning to reshape core industry operations. It also examines how tokenization may influence market structure, trading activity, valuation practices, risk management, and regulation.

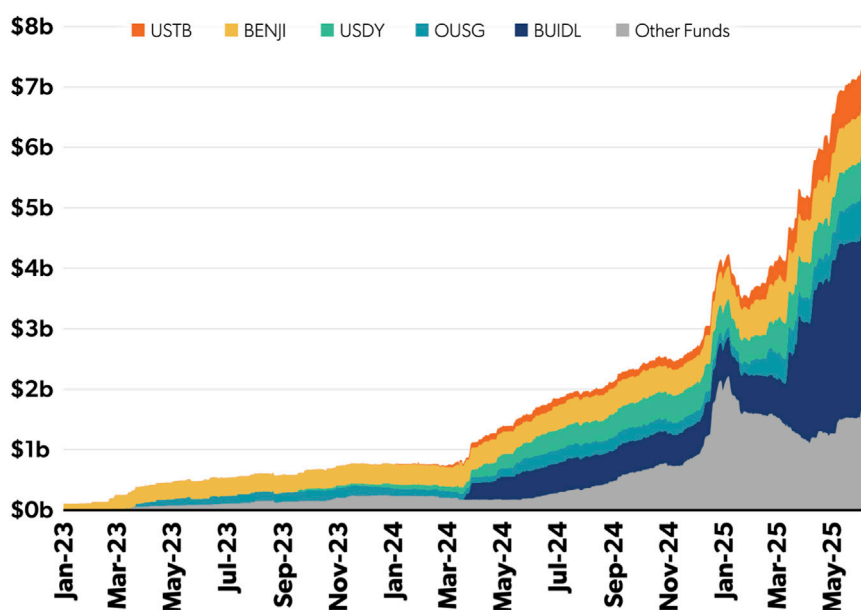


FIGURE 1

Dollar values of tokenized money market funds. Data are retrieved from <https://app.rwa.xyz/>.

2 Institutions are fueling asset tokenization

Tokenization has gained significant momentum in recent years, marked by both explosive growth in on-chain volumes and increasing participation from traditional financial institutions and market participants. The appeal of tokenization lies not in reinventing financial products but in enhancing their efficiency, transparency, accessibility, liquidity, and flexibility. A tokenized bond still pays interest; a tokenized mutual fund still holds a portfolio of securities. What changes is the infrastructure and operational processes: faster settlement, more precise and transparent ownership tracking, enhanced borderless accessibility—subject to local regulations in each jurisdiction—and a programmable interface that reduces administrative friction and operational errors (Lee et al., 2024).

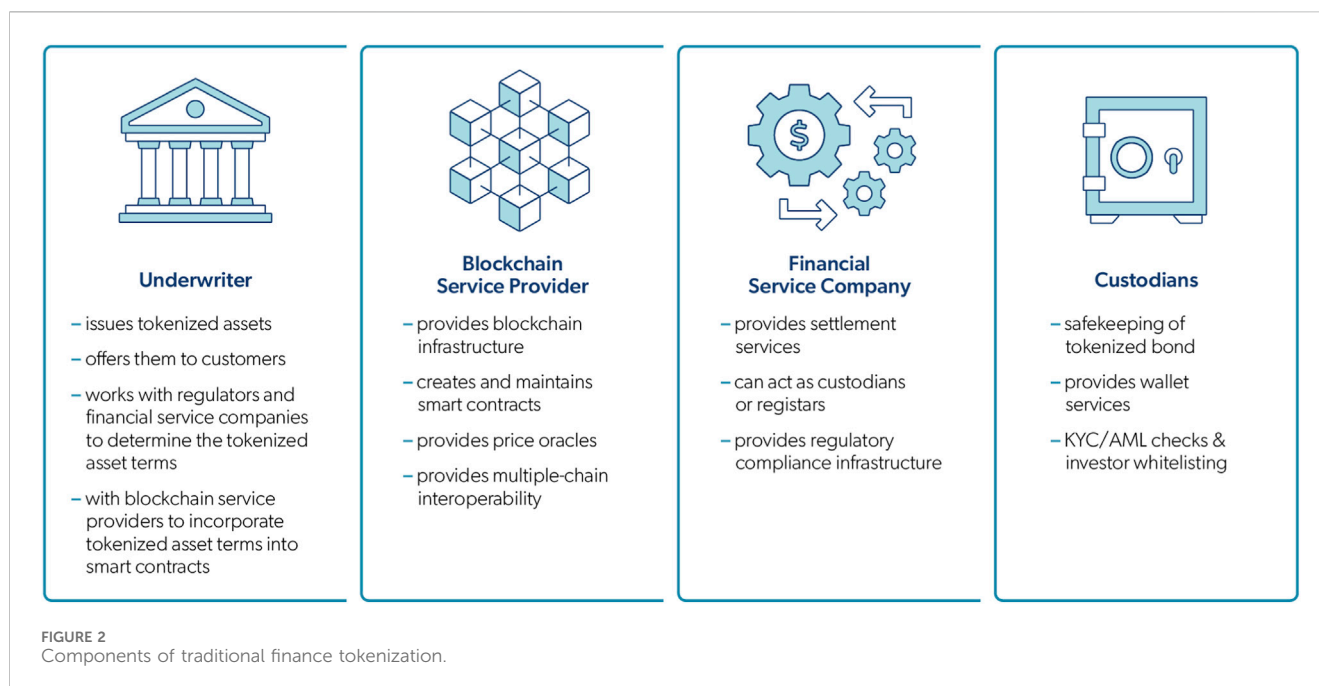
While stablecoins continue to dominate activity, with a combined market capitalization reaching \$300 billion and monthly trading volumes nearing \$5 trillion as of November 2025, the institutional footprint is expanding rapidly across other asset classes (Real World Asset, 2025a). One area of particular growth is tokenized U.S. money market funds (MMFs), which have grown to a market size of \$8.7 billion as of November 2025 (Real World Asset, 2025b). This surge began with the launch of Franklin Templeton's OnChain U.S. Government Money Fund (BENJI) in April 2021.

More recently, BlackRock entered the space with its BUIDL fund in March 2024, in partnership with BNY Mellon. Now the largest tokenized MMF by market share, BUIDL seeks to broaden investor access to on-chain offerings, support instantaneous and transparent settlement, and enable cross-platform transfers. Other notable entrants include Ondo

Finance, whose Short-Term US Treasuries Fund (OUSG) and US Dollar Yield Token (USDY) have drawn institutional interest, as well as Superstate's Short Duration US Government Securities Fund (USTB), signaling growing confidence in blockchain-based fund infrastructure. The growth of tokenized U.S. Treasuries can be observed in Figure 1.

Beyond tokenized funds, a growing number of initiatives highlight how established institutions are partnering with blockchain service providers to develop infrastructure for tokenized finance. DTCC, a central node in U.S. securities infrastructure, launched its Smart NAV pilot in partnership with Chainlink to demonstrate how mutual fund net asset value (NAV) data can be securely published on-chain using Chainlink's Cross-Chain Interoperability Protocol (CCIP). The pilot involved multiple global asset managers and showed how blockchain-based data delivery can support future tokenized fund operations by enhancing data accessibility and standardization. More recently, DTCC unveiled a platform for real-time, tokenized collateral management, designed to enhance capital efficiency, improve liquidity deployment, and enable greater interoperability between traditional and digital asset markets.

Meanwhile, JP Morgan, one of the largest and most influential financial services firms in the world, continues to scale its Kinexys platform (originally branded as Onyx), a blockchain-based payments solution that facilitates real-time, cross-border movement of funds across the JPMC network of branches. In one recent collaboration, Chainlink, Kinexys by JP Morgan, and Ondo Finance announced plans to integrate their technologies to connect tokenized asset markets with traditional bank payment systems, enabling real-time settlement and seamless interoperability between institutional blockchain infrastructure and on-chain funds.



3 The tokenization ecosystem

Expanding institutional collaborations in tokenized finance underscore the emergence of a hybrid architecture, where traditional financial market infrastructure (FMI), blockchain-native technologies, and regulated institutions intersect to support new forms of asset issuance, settlement, and transfer (Guo and Zhou, 2023). Figure 2 illustrates this emerging architecture consisting of four principal layers: i. asset originators and financial institutions, ii. blockchain infrastructure providers, iii. financial market infrastructure and trade service providers, and iv. custodians.

Asset originators and financial institutions are creating and distributing tokenized products, leveraging their established credibility in traditional finance to bring these offerings to institutional investors. JP Morgan, for example, plans to launch “deposit tokens” that will serve as a digital representation of commercial bank money. Franklin Templeton operates its OnChain U.S. Government Money Fund on both Stellar and Ethereum, delivering daily NAV updates via blockchain. BlackRock’s BUIDL fund, launched in partnership with Securitize, offers tokenized exposure to short-term U.S. Treasuries across Ethereum and Layer-2 networks. These examples reflect how tokenization is being applied to mainstream financial instruments in regulated contexts.

Blockchain infrastructure providers such as Chainlink, Digital Asset, and Polygon develop the foundational technologies, including oracle networks, interoperability protocols, and private blockchain networks tailored for institutional adoption (Belchior et al., 2021). For instance, Chainlink’s Cross-Chain Interoperability Protocol allows secure data and asset movement across different blockchain ecosystems, while Digital Asset’s Canton Network supports Daml-based smart contracts for controlled environments. Polygon’s Chain Development Kit is used to create customizable Ethereum-compatible rollups for issuing and managing tokenized assets.

Financial market infrastructure and post-trade service providers are adapting their systems to support blockchain-based operations. DTCC’s AppChain uses a permissioned Ethereum-based framework to facilitate real-time delivery-versus-payment and tokenized collateral transfers. Euroclear has launched its Digital Financial Market Infrastructure (D-FMI), enabling issuance and settlement of digitally native notes. These institutions preserve the regulatory and operational safeguards of traditional finance while introducing new efficiencies in settlement speed and automation.

Finally, custodians play a critical role in bridging blockchain systems with traditional asset servicing and record-keeping infrastructure. Institutions such as BNY Mellon and State Street are building custody solutions that support both on-chain and off-chain holdings, integrating wallet infrastructure with compliance workflows, reporting systems, and investor communications. These custodial platforms ensure safekeeping of tokenized assets while enabling seamless transfers, regulatory oversight, and compatibility with legacy fund administration systems.

4 Blockchain designed for compliance and operational integration

While early blockchain designs introduced new ways to digitize and transfer value, the tokenization of traditional financial assets has led to the emergence of new architectures that are more compatible with existing legal frameworks, regulatory obligations, and the characteristics of traditional financial instruments.

For example, SEC Commissioner Hester M. Peirce recently emphasized that tokenized securities are still securities and remain subject to federal securities laws, underscoring that regulatory compliance would apply equally to digital representations of assets as it does to their conventional counterparts (Peirce, 2025). Many early blockchain systems, designed with openness and decentralization in mind, lack native

features needed to support compliance functions such as know-your-customer (KYC) protocols and anti-money laundering (AML) requirements (Hannan et al., 2023).

As a result, blockchain service providers and financial institutions have been exploring ways to adapt existing blockchain infrastructure for tokenized assets to better accommodate the regulatory and operational needs within established regimes. At the heart of this shift is the adoption of permissioned systems developed on public blockchains and purpose-built private blockchain architectures, both of which restrict network access to vetted participants, such as banks, custodians, transfer agents, and regulators, while preserving on-chain programmability and transparency (Piper et al., 2025; White House, 2025).

These network models allow issuers to encode compliance logic directly into token contracts, including identity-based transfer restrictions, whitelisting, jurisdictional constraints, and holding period enforcement (ASIFMA, 2024). On-chain activity can be tightly integrated with off-chain identity verification systems, so that only eligible and pre-approved investors are permitted to transact, thereby satisfying core KYC/AML and securities law requirements.

In parallel, tokenized instruments need to satisfy operational needs such as precise income calculations, high-frequency settlement, redemption flexibility, and transparent record-keeping (European Central Bank ECB Money Market Contact Group MMCG, 2024). These demands may require blockchain systems that support continuous valuation updates, sub-daily payment execution, and deterministic event scheduling. Smart contracts underpinning tokenized funds or bonds can compute yields in real time, initiate dividend or coupon distributions without manual intervention, and log all actions immutably for audit purposes (Zhitomirskiy et al., 2023). Integrated oracles stream real-time market data, such as interest rates or NAVs, into the contract layer, ensuring calculations remain current and aligned with off-chain benchmarks.

5 Lifecycle of a tokenized asset

To better understand how this infrastructure functions in practice, consider a hypothetical tokenized corporate bond. Suppose a bank, such as JP Morgan, underwrites a \$250 million, 5-year bond and tokenizes the issuance on its Kinexys platform. The tokenized version of the bond is created as a smart contract-compliant token using a blockchain-compatible standard, such as ERC-1400 and ERC-3643, which embeds legal terms, transfer rules, and a coupon payment schedule directly into the token logic (BIS, 2021; Dossa et al., 2018; ERC3643 Association, 2025).

Next, pricing data is integrated into the smart contract. Chainlink provides oracles that feed current interest rates and bond yields directly to the blockchain, allowing for accurate computation of accrued interest and asset valuation. Typically, these data are available not only to the token contract itself but also to custodians, investors, and auditors.

Once the bond is issued and tokenized, settlement can be handled by a post-trade utility such as Euroclear. The bond

tokens are distributed directly to investors in exchange for traditional fiat payments¹, with delivery-versus-payment (DvP) settlement occurring through a bridge between the blockchain and Euroclear's systems (Corporate Finance Institute, 2025). This ensures that tokens and payments are exchanged simultaneously (Watsky et al., 2024).

Institutional investors then hold the tokenized bonds through global custodians, such as BNY Mellon, which integrate wallet infrastructure and perform regulatory checks. These custodians maintain accurate records of beneficial ownership and interface with traditional reporting systems. Secondary trading can take place on regulated alternative trading systems or within approved on-chain liquidity venues, with trade matching and ownership updates processed in real-time, including typical calculations needed for secondary trading like accrued interest.

Figure 3 shows the lifecycle of this hypothetical tokenized bond. Over the bond's life, corporate actions such as coupon payments and early redemptions are handled automatically through smart contracts (Cisar et al., 2025). Oracles update reference rates, triggering scheduled payments or maturity workflows. The bond contract ensures compliance with redemption terms and initiates repayment flows to investor wallets.

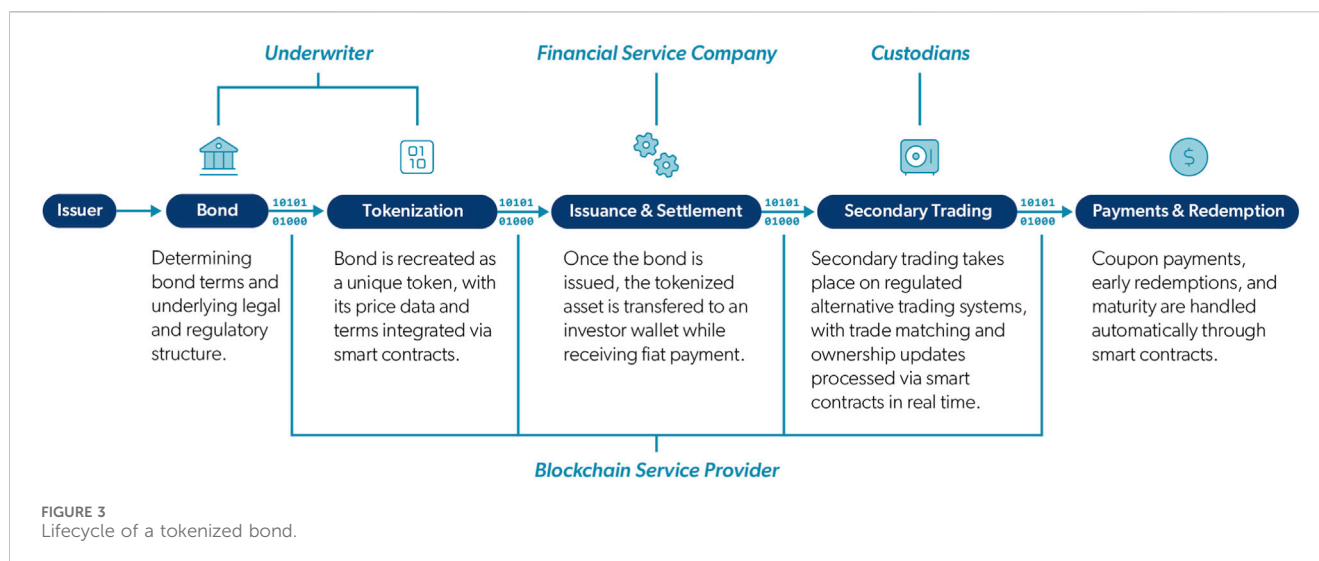
Tokenized finance, though technologically novel, does not abandon the fundamental components of traditional financial markets. Instead, it shifts the operational logic into programmable, synchronized systems that facilitate faster settlement, reduce reconciliation costs and operational errors, and improve transparency. Recent empirical evidence supports the presence of these operational efficiencies. In its review of recent tokenized bond issuances, the Hong Kong Monetary Authority documents reductions in underwriting costs as well as tighter bid-ask spreads relative to comparable traditional bonds (Leung et al., 2023).

6 Implications for market structure, risk management, and regulation

The expansion of tokenized asset infrastructure will have significant implications for market structure and access, trading activity, valuation practices, operational and risk controls, and regulation. Standard valuation models may still apply in theory, but they will need to account for new types of data. Inputs such as NAV, pricing, and trade execution timing will increasingly come from on-chain sources via oracle networks and will require validation and reconciliation across multiple layers of infrastructure. For example, latency or manipulation in data feeds could materially affect the valuation of a tokenized instrument.

Market liquidity metrics will also evolve. Trading volumes, depth, and pricing efficiency may be split between permissioned blockchains, traditional exchanges, and decentralized protocols. This fragmentation complicates price

¹ In some tokenized offerings, underwriters may receive the tokens first and subsequently allocate them to investors, especially when the issuer requires assistance with managing distribution, onboarding participants, or meeting minimum investment thresholds.



discovery and challenges analysts and litigators to develop methodologies that reflect market reality across multiple venues (Agur et al., 2025).

Legal questions concerning ownership and finality are also likely to evolve (Lavayssière, 2024). Immediate settlement through smart contracts reduces the window for error correction and raises questions about how to assign liability in the case of disputes. If conflicting data sources or a forked chain cause an erroneous transfer, courts will need to assess whether established legal doctrines for negligence and fiduciary duty apply in real-time environments.

The irreversible nature of blockchain transaction recording may introduce additional forms of settlement risk (FSB, 2024). On public blockchains, once a tokenized asset transaction is confirmed, it typically cannot be reversed (Brealey et al., 2020). While this immutability enhances transparency and auditability, it also magnifies the legal consequences of execution errors, unauthorized transfers, or settlement misalignment. Unlike traditional systems, where trades can sometimes be cancelled or reversed, blockchain-based settlements may permanently lock in mistakes, creating novel litigation risk around transaction finality and responsibility.

In parallel, cybersecurity vulnerabilities present a growing source of exposure for tokenized systems. As financial infrastructure migrates on-chain, it becomes a more attractive target for malicious actors. Smart contract bugs, compromised wallets, or consensus-level attacks could lead to the loss or theft of digital assets (Soin et al., 2025). Such incidents could trigger lawsuits alleging failures in cyber risk governance, negligent supervision of vendors or custodians, or breaches of fiduciary duty tied to insufficient safeguards.

Despite the promise of near-instantaneous execution, network congestion remains a potential bottleneck. Transaction finality on blockchains can be delayed due to validator outages, fee-driven prioritization, or underlying protocol inefficiencies (Donmez and Karaivanov, 2022). These delays, particularly when transactions are expected to settle in real time, may give rise to disputes over

performance failures or regulatory breaches involving time-sensitive obligations.

Finally, cross-border enforcement will become more complex. A tokenized asset can potentially be issued in one country, settled in another, and traded globally within seconds. This cross-border aspect may bring multiple jurisdictions into play, exposing the same tokenized asset to differing regulatory regimes. For example, a tokenized asset treated as a “commodity” under one regime may be considered a “security” elsewhere. Long-term successful deployment may thus require frameworks to reconcile myriad jurisdictional requirements for issuance, registration, settlement, and investor protection (Soin et al., 2025).

7 Conclusion

Tokenization is becoming an important structural feature of financial markets by enabling faster settlement, lower operational friction, and more transparent and streamlined operational processes. It provides incentives to innovators to develop robust offerings that can capture new market demand and reward providers who implement tokenization models effectively. Institutional pilot programs illustrate that these efficiencies may support new models of issuance, settlement, and custody that differ from traditional market infrastructure. This article highlights how these developments are reshaping core financial processes and may affect market structure, trading activity, risk management, and regulatory oversight. As adoption of tokenization expands, navigating these innovations will be essential for both policymakers and market participants.

Author contributions

SD: Writing – review and editing, Writing – original draft. AD: Writing – original draft, Writing – review and editing, Visualization. IG: Writing – original draft, Writing – review and editing.

Funding

The author(s) declared that financial support was not received for this work and/or its publication.

Conflict of interest

Authors SD, AD, and IG were employed by The Brattle Group.

Generative AI statement

The author(s) declared that generative AI was not used in the creation of this manuscript.

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