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Tokenization 2030

Wall Street On-Chain

Citi Institute

Global Perspectives & Solutions

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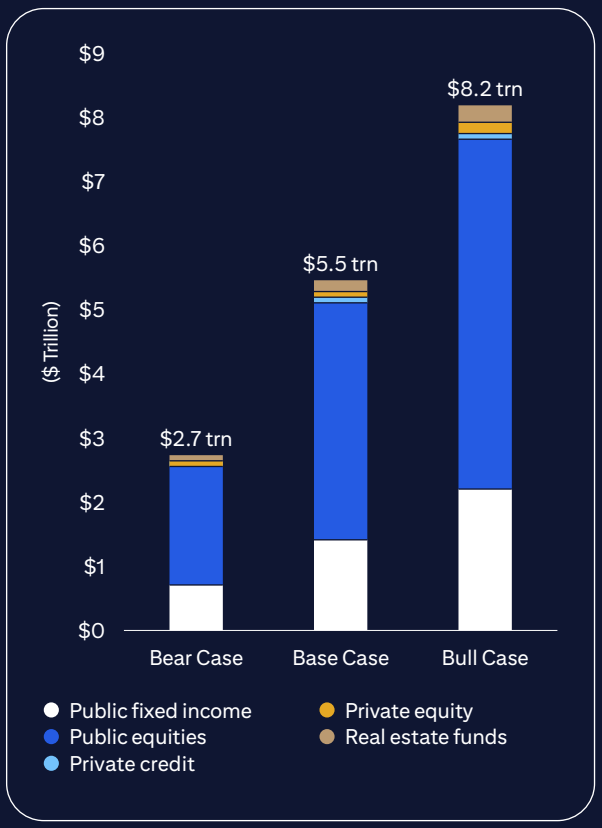
The tokenization of financial assets – the representation of securities as digital tokens on blockchain infrastructure – is moving from pilot stage toward operational deployment. After years of slow progress held back by regulatory uncertainty, fragmented infrastructure and the absence of on-chain settlement money, adoption is now accelerating.

The current global tokenized asset market stands at approximately $17 billion. Citi Institute projects this to reach $5.5 trillion by 2030 in a base case scenario, with a bear case of $2.7 trillion and a bull case of $8.2 trillion.

Estimating tokenization market size by 2030 ($ trillion)



Sources: Citi Institute

Growth is expected to be led by public market securities – particularly U.S. equities and treasuries – rather than private markets, where adoption remains early-stage and structurally constrained.

Three forces underpin this shift. First, major financial market infrastructure providers, including the Depository Trust & Clearing Corporation (DTCC), New York Stock Exchange (NYSE), and Nasdaq, are integrating tokenization into core issuance, trading and settlement workflows, moving well beyond experimentation. Second, the growth of regulated on-chain money, including stablecoins (projected at $1.9 trillion by 2030) and tokenized deposits, is providing the settlement foundation that earlier tokenization efforts lacked. Third, regulatory clarity is improving across key jurisdictions, with the U.S. Clarity Act continuing to move toward a full Senate vote.

The transition will be gradual. Hybrid models – where tokenized and legacy systems operate in parallel – are expected to dominate in the near term. This is likely to introduce operational complexity before efficiency gains are fully realised. Interoperability across platforms, standards and settlement assets remains a prerequisite for scale.

This report identifies a reconfiguration across capital markets, with the emergence of institutions that control both asset issuance and settlement rails – termed "Structural Orchestrators". Traditional post-trade intermediaries face structural pressure as settlement becomes faster and more automated. New market participants are also emerging across issuance, trading, custody, and identity layers.

The path forward for tokenization may depend less on technological capability and more on regulatory alignment, liquidity coordination and the ability to manage hybrid complexity.

Key Takeaways

1 **Growth predictions:** We forecast a $5.5 trillion base case for tokenized assets by 2030, rising to $8 trillion in a bull case.[1] Public market securities and liquid collateral, particularly U.S. equities and treasuries, are likely to drive early adoption and expand distribution to digitally native investors.

2 **Liquid assets on-chain:** Modern, digitally native investors increasingly expect 24x7 access to financial assets. Equities, bonds and commodities could move on-chain as younger retail investors drive adoption. If 10% of U.S. retail investors use on-chain solutions by 2030, this could create about $2.6 trillion of demand for tokenized public equities.[2]

3 **Institutional catalysts:** Major market infrastructure providers, including DTCC, NYSE, and Nasdaq, are beginning to integrate tokenization into their core platforms. As pilot programs transition into production, supported by evolving regulation, adoption among traditional financial institutions could accelerate from 2026 onwards.

4 **Digital money is the foundational enabler:** Tokenization of financial assets is the companion to tokenized cash. Regulated stablecoins and tokenized deposits can help engender trust in on-chain settlement for Delivery-versus-Payment (DvP), improving capital efficiency and reducing settlement risk.

5 **"Structural orchestrators" emerge:** Tokenization could create new revenue pools through programmability, composability and vertically integrated business models. Institutions may look to control issuance, distribution and settlement rails (e.g., select banks, asset managers, stablecoin issuers) in order to capture value.

6 **Evolution, not revolution – hybrid models set to dominate:** The transition will be gradual. We expect a "messy" period where tokenized and legacy systems operate side by side. Hybrid models and interoperability between on-chain and off-chain worlds are critical to scaling.

1.5/10

Tokenized financial assets on the adoption curve, measured on a scale of 0 to 10.

Source: Peter Bain, Chief Marketing Officer, Blockstream

$5.5 trillion

Projected tokenized asset market size by 2030 (base case), driven primarily by public market securities and liquid collateral.

Source: Citi Institute

$1.9 trillion

Projected stablecoin market size (base case), enabling on-chain settlement and instant, programmable transfers.

Source: Base case Citi Institute estimate from report 'Stablecoins 2030 – Web3 to Wall Street' published in September 2025

Uneven Progress, But an Undeniable Shift

Tokenization of securities is part of a broader shift toward programmable assets, digitally native settlement, and more always-on finance.

The convergence of tokenized assets with on-chain money underpins the future of finance: on chain finance, where settlement, collateral management and liquidity flows operate in real time and across borders based on 'atomic settlement'.[3]

Institutional participation is now moving beyond experimentation with tokenization being used in issuance, trading, and post-trade workflows. Regulatory clarity is improving across major jurisdictions, providing some legal certainty for institutional adoption.

A key catalyst is the emergence of digitally native money which enables on-chain settlement. This has been a key constraint of earlier tokenization efforts. Digital asset market infrastructure is also evolving, with advances in custody, compliance, and interoperability.

Evolution, Not Revolution

Importantly, we think this transformation will not arrive as a single disruptive change. We do not expect a sudden flip from traditional markets to fully tokenized ones.

Adoption remains early and uneven across asset classes and jurisdictions, constrained by interoperability challenges, legal frameworks, liquidity coordination, investor behavior and market conventions.

As with previous infrastructure shifts, the benefits of tokenization are likely to accrue gradually rather than immediately.

Institutions will seek to integrate issuance, trading and settlement at scale within regulated frameworks and existing client relationships, since control of these layers can drive a larger share of the transaction lifecycle.

The value of scaling depends on interoperability, common standards, regulatory alignment, trusted digital identity frameworks and coordination across a complex ecosystem, which will take time. Specialist native on-chain firms will also look to gain market share as on-chain transactions increase in size and scope.

> The tokenization of financial assets is more than just technology; it is unlocking Wall Street for the digitally-native generation.
>
> *Artem Korenyuk, Head of Enterprise Digital Assets, Citi Client Business Development*

> The transition to tokenized markets is best understood through the E-ZPass[4] tollbooth analogy.
>
> We didn't move to full automation overnight. Parallel systems run first, the road got wider with lanes for automated and legacy flows, adding cost and complexity before convergence. The key question is how quickly can we reach the automated end state?
>
> *Blue Macellari, Head of Digital Assets Strategy, T. Rowe Price*

Towards Operational Reality

Tokenization is not new. We first outlined its potential in Citi GPS: Money, Tokens, and Games: Blockchain's Next Billion Users and Trillions in Value (2023), noting it could unlock trillions in value by enabling more efficient and programmable financial markets.

Many early industry forecasts on the growth of tokenization markets, including some of the more bullish ones with target market size in the tens of trillions of dollars, have proven too aggressive.

Previous tokenization waves struggled to scale meaningfully due to a variety of factors. Regulatory uncertainty constrained implementation and enforceability, secondary market liquidity was limited, infrastructure was fragmented, and critically, there was no regulated on-chain cash.

These constraints are now beginning to ease. Several independent catalysts are now aligning to move tokenization from experimentation towards broader adoption.

What is Tokenization?

Tokenization refers to the digital representation of ownership, rights, or claims on assets as tokens recorded on a blockchain or distributed ledger. Tokenization can involve either the on-chain representation of an existing asset or the native issuance of a new asset directly on distributed ledger infrastructure.

These tokens are pieces of code that embed information about an asset's attributes, ownership, transaction history, and rules governing its transfer. Unlike traditional records, tokenized assets enable direct, peer-to-peer transfer of value with near real-time settlement and a single, shared source of truth.

Tokenization can apply across a wide spectrum of assets. This includes financial assets such as equities, bonds, investment funds, and deposits, as well as real-world and less liquid assets such as real estate, private credit, infrastructure, and even intellectual property or carbon credits.

Beyond digitization, tokenization introduces programmability. Rules and logic can be embedded directly into the asset via smart contracts, enabling automated actions such as coupon payments, compliance checks, collateral management, and corporate actions.

1. Rising institutional participation

Asset managers have been launching tokenized funds for several years. Now systemic financial market infrastructure firms are launching tokenization offerings.

- Depository Trust & Clearing Corporation (DTCC) received regulatory clearance in late 2025 to offer a tokenization service for DTCC-custodied assets, with a three-year pilot planned for late 2026. The scope includes highly liquid instruments such as Stocks, ETFs and U.S. Treasuries, enabling tokenized representation while preserving existing legal ownership and investor protections.[5,6]
- New York Stock Exchange (NYSE) announced plans for a tokenized securities platform by late 2026, subject to regulatory approval. This would enable 24x7 trading of U.S.-listed equities and ETFs with near-instant settlement and stablecoin-based funding, potentially operating alongside or outside traditional clearing infrastructure.[7]
- Nasdaq has received SEC approval to enable certain stocks and ETFs to be issued, traded and settled in tokenized form, embedding tokenization within existing market structure with securities continuing to leverage established post-trade infrastructure.[8]

> You're seeing the full weight of American financial power and the global reserve currency moving on-chain at scale. When DTCC and the NYSE embed tokenization into capital markets, this marks a tipping point.
>
> *David Cunningham, Global Head of Institutional Business, Consensys*

Why is this significant? These organizations are not crypto-native firms pushing blockchain, but some of the oldest and largest financial institutions adopting new infrastructure. These examples represent only part of a broader set of uses emerging across markets.

Rather than build parallel, crypto native systems, incumbents such as DTCC and NYSE are integrating tokenization into core issuance, trading and settlement rails.

This approach prioritizes legal certainty, investor protection and institutional adoption over speed of disruption, positioning existing market rails as a bridge to digitally native, on-chain financial systems.

2. On-chain money enabling native settlement

Earlier tokenization implementations had to rely on fiat rails for settlement, limiting efficiency gains and introducing operational friction. This is now changing with stablecoins gaining broader acceptance and increasingly being integrated info financial flows.

As highlighted in Citi GPS: Stablecoins 2030 – Web3 to Wall Street (2025), we forecast stablecoin issuance value could be $1.9 trillion by 2030. Major banks are also developing tokenized deposit infrastructure, which could be even larger in size.

The coexistence of stablecoins and tokenized deposits enables seamless settlement and provides the liquidity foundation required for tokenized securities to scale, enabling atomic Delivery-versus-Payment (DvP) and supporting continuous market operations.

We expect on-chain money in the United States to be a mix of stablecoins and tokenized deposits. In other geographies, including Europe, India and Mainland China, we believe CBDCs and tokenized deposits will be the digital money policy focus, not stablecoins.

3. Increasing regulatory clarity

A gradual shift toward clearer and more coordinated regulatory frameworks is strengthening the legal foundation for institutional adoption. However, this progress is uneven and increasingly highlights a double-edged dynamic.

While greater clarity supports scalability and market confidence, the emergence of divergent regional rules risks fragmenting markets, increasing compliance costs, and diluting some of the efficiency gains that tokenization promises.

Figure 1. Regulatory developments across key jurisdictions

Europe: The Markets in Crypto-Assets (MiCA) Regulation has introduced a harmonized, EU-wide framework for crypto assets.

For tokenized securities, existing capital market rules and the EU's DLT Pilot Regime further support testing of issuance, trading and settlement models.

Recent developments from trade bodies suggest that while the EU DLT pilot regime represents an important step towards regulatory clarity, its limited scope and design are limiting its effectiveness for scaling tokenized capital markets.[9]

U.S.: Securities and Exchange Commission (SEC) has provided clarity on the application of federal securities law to tokenized securities in January 2026, reaffirming technology neutrality, i.e., digital wrapper on an asset does not change its regulatory treatment.[10,11] This clarity enables institutions to treat tokenization as a market infrastructure question rather than a regulatory experiment.

Proposed market structure reforms also aim to establish a clearer framework for digital assets, distinguishing commodities and securities, clarifying SEC and Commodity Futures Trading Commission (CFTC) oversight.

U.K.: The Bank of England and the Financial Conduct Authority (FCA) have launched the Digital Securities Sandbox, enabling firms to test DLT-based issuance, trading and settlement in a live, regulated environment.[12]

On 30 April 2026, the FCA published Policy Statement 26/7, Progressing Fund Tokenization (PS26/7), building on its earlier consultation work and aligning with its 2025–2030 Strategy.

Asia: Financial hubs like Hong Kong and Singapore are advancing through licensing regimes. Hong Kong completed tokenized bond issuances under oversight.

Initiatives such as the Monetary Authority of Singapore's Project Guardian have also progressed to live pilots involving various banks testing tokenized deposits, foreign exchange, and liquidity use cases.

Source: Citi Institute.

4. Growing retail access and digital brokerage evolution

Retail brokers are helping raise awareness of on-chain securities. For example, digital brokers have introduced tokenized representations of U.S. stocks and ETFs for EU customers.[13] However, demand today remains primarily driven by crypto-native users.

Nonetheless, these developments are shaping investor expectations around fractional access, extended trading hours and near-continuous liquidity. The work described above by the DTCC, NYSE and Nasdaq, fits into this broader underlying trend.

> In 2026, momentum is accelerating behind tokenized public equities and other liquid assets driven by regulatory clarity and maturing market infrastructure. Exchanges, brokerages and fintech platforms are converging on 24x7 blockchain infrastructure.
>
> *Solomon Tesfaye, Chief Business Officer, Aptos Labs*

5. Improving market Infrastructure maturity

Efforts to improve interoperability across networks are progressing and will be critical in enabling asset mobility across platforms. Institutional blockchain maturity is progressing – but this remains a work in progress.

A central theme of this report is that tokenization scaling depends on digitally native money and interoperable infrastructure. DTCC's push into digital asset custody, clearance and asset mobility, alongside NYSE's move toward continuous trading and near-instant settlement, begins to establish that foundation.

An Asset Manager's Perspective on Tokenization Uses, Obstacles and Adoption Drivers

Blue Macellari, Head of Digital Asset Strategy, T. Rowe Price

How do you see the tokenization journey and what is the missing piece to realizing full benefits?

Tokenization is a sequenced journey. It begins with bringing existing products on-chain as an efficiency overlay and evolves into a more fundamental transformation driven by programmability and mass customization. A key pre-requisite is the development of a broad library of tokenized securities. Without this, the benefits of tokenized funds remain limited if underlying holdings stay in traditional form.

What are the key use cases and preferred implementation strategy?

One of the most interesting use cases for a large, diversified asset manager is the automation of multi-asset and target-date fund portfolio management. Tokenization can streamline the incredibly onerous workflow of rebalancing and creating these complex products.

From an implementation standpoint, tokenization is increasingly viewed as a commoditized capability. Partnering with external providers allows firms to retain flexibility and avoid lock-in to proprietary systems that may not align with emerging industry standards.

What are the key obstacles to mass adoption and how will adoption be driven?

Three primary obstacles have historically constrained mass adoption:

1. The inefficiency of retrofitting legacy infrastructure versus building natively on-chain
2. The lack of clear, widely accepted industry standards for interoperability
3. A distribution gap, with tokenized products yet to reach mainstream, non-crypto native clients

Near-term adoption is unlikely to be driven by client demand. Instead, it will be driven by cost pressure across intermediaries and distribution platforms, as firms look to reduce operational complexity and improve efficiency.

Why Do We Need Tokenization?

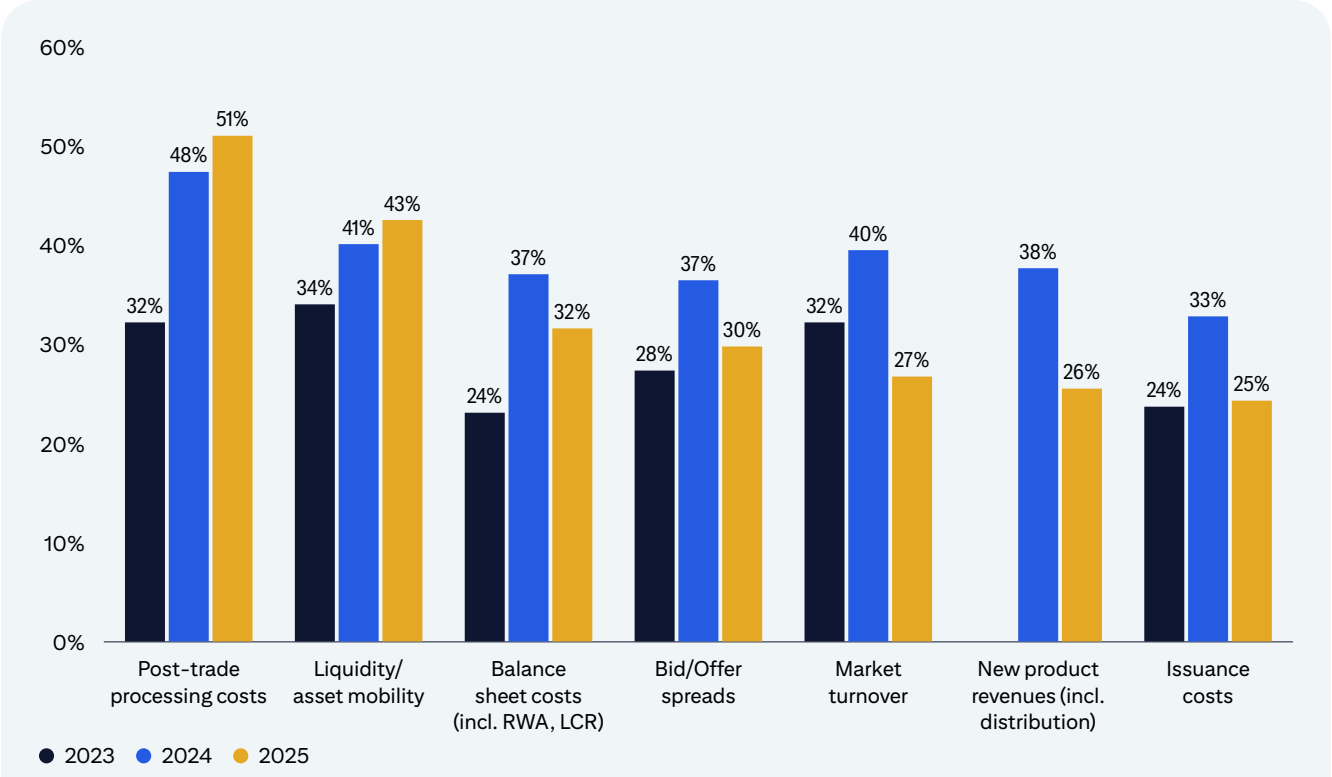
Market participants are questioning whether existing post trade and settlement models are fit for purpose in an always on financial system. Today's infrastructure remains capital intensive, operationally complex, and slow to adapt to changing liquidity and balance sheet demands.

At the same time, investor behavior and distribution models are shifting. There is growing demand to bring assets closer to investors, expanding access to digital-native capital pools, corporate treasurers, and new wealth segments seeking diversification across traditional asset classes.

Tokenization has emerged as a credible response to these structural constraints, offering a framework to improve how assets are settled and distributed. This sets the stage for broader change across both public and private markets.

Survey findings reinforce this direction of travel. Findings from Citi GPS: The Future of Post Trade - Custody and Settlement in an Always-On World, based on responses from 537 market participants, highlight rising expectations that DLT-based market structures can reduce post-trade processing costs, improve liquidity and asset mobility, and enhance balance sheet efficiency (Figure 2).

Figure 2. DLT-based market structures could improve cost efficiency and collateral mobility (% of respondents)



Note: [1] Survey question – Please rate the extent to which you think a DLT-based market structure could impact the following variables in the next three years? [2] Total 537 market participants across asset managers (23%), broker-dealers (22%), banks (20%), institutional investors (18%), custodians (14%) and others (3%).

Source: Citi Securities Services Evolution 2025 Whitepaper.

Beyond efficiency, tokenization also aligns with a shift toward always-on markets. Investors increasingly expect continuous trading, real-time settlement, and seamless, wallet-based access. This is beginning to influence market structure, pushing exchanges and infrastructure providers to explore on-chain models.

Early adoption, however, remains concentrated in specific uses where benefits are most immediate, particularly in collateral and liquidity management.

Against this backdrop, tokenization is not just an efficiency play, but a response to evolving user expectations. It enables more continuous market access, reduces friction across time zones, and supports a more responsive financial system.

And tokenization could expand access and unlock liquidity in traditionally illiquid asset classes such as private equity, infrastructure and real estate. Fractional ownership and near-continuous settlement could broaden participation and improve capital allocation.

Tokenization could also enable second-order benefits across the value chain, including new revenue models, efficient use of collateral and balance sheet, and over time, a more resilient and responsive financial system architecture.

> “At the institutional level, we are seeing early proof points of tokenization at scale, particularly in repo and collateral.
>
> But broader adoption will depend on liquidity, participation, and more aligned infrastructure and regulation.”
>
> *Germán Soto Sanchez, Chief Product and Strategy Officer, Broadridge*

Figure 3. Benefits of tokenized securities across value chain

Participant	Core Benefits	
Issuer	**Automated treasury and dynamic financing:** Tokenized securities enable self-executing features. For example, a corporate bond could trigger buybacks when cash reserves exceed thresholds or adjust coupons based on real-time data. This turns static liabilities into active capital management tools, improving allocation and returns.	**Direct investor access and data analytics:** Real-time visibility into investor base, trading patterns, and geography supports investor relations and capital raising, while reducing reliance on intermediaries.
Underwriters/Banks	**Lower underwriting risk via real-time book building:** Smart contracts automate syndication and allocation, reducing settlement failures, disputes and capital lock-up. Faster settlement lowers counterparty risk and capital requirements.	**Composable, cross-asset structured products:** Tokenization enables bundling of multi-asset exposures (e.g., private equity, real estate) into a single token, supporting customized strategies and new revenue streams.
Trading Venues	**Reduced counterparty risk via atomic settlement:** On-chain Delivery-versus-Payment (DvP) enables simultaneous asset and cash exchange, mitigating risks embedded in T+1/T+2 cycles.	**Hyper-personalized market access and compliance-as-a-service:** Permissioned liquidity pools for different client segments and wallet level rules can enable tailored market access, automated compliance and new monetization models.
Depositories and Custodians	**Automated servicing of complex corporate actions:** Smart contracts could automate dividends, coupons, corporate actions and voting, reducing operational overhead and reconciliation errors.	**Digital custody and self-custody services:** Institutions can offer wallet infrastructure, key management and advisory, creating new high-value service lines.
Asset Managers	**Lower fund administration costs:** Recordkeeping is done on a single ledger, enabling real-time, automated Net Asset Value (NAV) reporting, and reduced back-office cost.	**Customisable, actively managed on-chain funds:** Rule-based portfolios and dynamic rebalancing enable active strategies beyond traditional ETFs.
End-Investors	**Transparency and immutable proof of ownership:** Investors have cryptographic proof of ownership on a public ledger, verifiable without intermediaries. This reduces ownership disputes and creates a single source of truth.	**Enhanced yield generation via on-chain lending:** Tokenized securities can be lent in on-chain money markets to generate additional yield, unlocking the productive use of idle assets beyond traditional brokerage account.

Source: Citi Institute.

How Big is the Market?

The global tokenization market for financial assets is estimated at $17 billion, according to DefiLlama in April 2026, up about 3x from just a year ago. U.S. T-bills, bonds and MMFs accounts for over 55% of the pie, followed by gold and commodities (c.34%).

> Tokenization is very early on the adoption curve... one or two on a scale of ten.
>
> But that's different from the technology development curve, where progress is further along.
>
> Without convergence across platforms and infrastructure, adoption will remain gradual.
>
> *Peter Bain, Chief Marketing Officer, Blockstream*

BlackRock's Larry Fink (CEO) and Rob Goldstein (COO) likened the current stage of tokenization to the early internet era of 1996. The bullish view is that adoption could scale faster than many expect, with significant growth over the coming decades.[14]

The technology of tokenization is becoming more mature now. Rules and laws are being put in place. But the organizational infrastructure is still a work in progress.

Projections for the size of tokenized asset market vary significantly, with more conservative estimates placing the market around $1-2 trillion by 2030, while more optimistic forecasts suggest it could in the tens of trillions of dollars by the early 2030s.

> Tokenization's path to scale is simple in principle: better returns at lower cost.
>
> Deliver that, and a $1-5 trillion market by 2030 is plausible, with regulation shaping the pace.
>
> *Adi Ben-Ari, Founder & CEO, Applied Blockchain*

Figure 4. Global tokenized asset market – selected third-party forecasts

	Market Size	Year
McKinsey & Company[15]	$1.0-4.0 trn	2030
Deutsche Bank Research Institute[16]	$1.5-2.0 trn	2030
Ripple and Boston Consulting Group (BCG)[17]	$9.4 trn	2030
Roland Berger[18]	$10.0 trn	2030
ARK Invest[19]	$11.0 trn	2030
Boston Consulting Group (BCG) and ADDX[20]	$16.1 trn	2030
Ripple and Boston Consulting Group (BCG)[21]	$18.9 trn	2033

Source: Company Reports.

Most estimates, however, cluster around the $10 trillion mark for 2030-2033. However, the range of forecasts for 2030 from advisory firms is very large, highlighting the uncertainty around the timing of the expected growth.

In Citi GPS: Money, Tokens, and Games - Blockchain's Next Billion Users and Trillions in Value we estimated $4-5 trillion of tokenized financial assets by 2030. While the growth of tokenized financial assets has been slow to date, we believe this could change soon.

We still believe our overall forecast for 2030 is in the right ballpark, but we now expect a different mix of tokenized assets. We expect greater contribution from public market securities and highly liquid collateral instruments, reflecting growing activity and announced initiatives across market infrastructure providers such as DTCC, NYSE and Nasdaq. In contrast, private market tokenization remains early stage and is likely to scale more gradually.

Based on our revised framework, we estimate a base case tokenized asset market of about $5.5 trillion by 2030 (Figure 5). Our bear case assumes tokenization adoption reaches nearly half the base case by 2030, reflecting the possibility of slower regulatory harmonization, limited interoperability across platforms, delayed institutional participation, and continued reliance on legacy market infrastructure.

Conversely, our bull case assumes faster institutional adoption, regulatory progress and market infrastructure development, resulting in tokenization adoption reaching 1.5x the base case by 2030.

Scaling tokenization remains complex. Aligning incentive and infrastructure across market participants is challenging. Also, tokenization is not a magic wand – the underlying asset class must be in demand. U.S. public equity markets have a proven global demand.

Figure 5. Estimating tokenization market size by 2030 ($ trillion)

	Total Market, 2030	Bear Case (0.5x Base)		Base Case		Bull Case (1.5x Base)	
		% Tokenized	Tokenized TAM	% Tokenized	Tokenized TAM	% Tokenized	Tokenized TAM
Public fixed income	$168 trn	0.4%	$0.7 trn	0.9%	$1.4 trn	1.3%	$2.2 trn
U.S. T-bills	$8 trn	5.0%	$0.4 trn	10.0%	$0.8 trn	15.0%	$1.3 trn
MMFs	$12 trn	2.5%	$0.3 trn	5.0%	$0.6 trn	7.5%	$0.9 trn
Public equities	$191 trn	1.0%	$1.8 trn	1.9%	$3.6 trn	2.9%	$5.4 trn
U.S.	$86 trn	1.5%	$1.3 trn	3.0%	$2.6 trn	4.5%	$3.9 trn
Rest of the World	$105 trn	0.5%	$0.5 trn	1.0%	$1.0 trn	1.5%	$1.6 trn
Private credit	$5 trn	1.1%	$0.1 trn	2.2%	$0.1 trn	3.3%	$0.2 trn
Private equity	$12 trn	0.4%	$0.1 trn	0.8%	$0.1 trn	1.3%	$0.2 trn
Real estate funds	$17 trn	0.5%	$0.1 trn	1.1%	$0.2 trn	1.7%	$0.3 trn
Total TAM	$392 trn		$2.7 trn		$5.5 trn		$8.2 trn

Source: Citi Institute.

1. Public fixed income

In the near term, tokenization is likely to concentrate in highly liquid, short-duration collateral assets where programmability, atomic settlement, and 24x7 transferability provide the clearest operational benefits.

We assume 10% penetration of U.S. treasury bill market and 5% penetration of MMFs by 2030. Treasury bills are operationally well suited for tokenization given their deep liquidity, broad collateral usage, standardization, and central role in repo and liquidity markets. Current adoption has been led by crypto-native treasury and stablecoin ecosystems, while DTCC and other market infrastructure providers have begun exploring tokenized treasury collateral, digital settlement, and collateral mobility initiatives.[22]

Our forecasts also align with the framework outlined in Citi GPS: Stablecoins 2030 – Web3 to Wall Street (2025), which estimated stablecoin growth could generate approximately $1 trillion of incremental demand for U.S. treasuries by 2030, as issuers increasingly hold short duration government securities as reserve assets. We believe a growing portion of this demand could ultimately migrate toward tokenized treasury and on-chain collateral structures over time, supporting broader forecasts for tokenized treasury bill adoption.

MMFs could also emerge as an important area of adoption given their growing role as institutional cash-equivalent and collateral instruments. Large U.S. asset managers have already launched tokenized government liquidity and MMF products. However, tokenized MMFs remain operationally and regulatorily more complex than direct tokenization of treasuries, given their reliance on fund structures and existing market infrastructure. Regulatory scrutiny following liquidity stresses in 2020/2023 could also slow adoption.

While tokenization and fractionalization may improve market accessibility and support secondary market development over time, they do not fundamentally guarantee liquidity or create market makers, active trading demand, or deep secondary markets. As a result, broader fixed income markets are likely to migrate more gradually despite the longer-term potential benefit of tokenization.

2. Public equities

We assume approximately 3% of the U.S. public equity market is tokenized by 2030. Our framework assumes tokenization initially occurs primarily at the access and distribution layer. Retail participation in U.S. equity markets has increased materially in recent years, with retail trading accounting for approximately 20-25% of total market activity in 2025 and reaching roughly 35% during periods of elevated volatility such as April 2025.[23]

We assume approximately 10% of this retail segment gradually migrates toward tokenized distribution models over time, reflecting the growing influence of digitally native investors, particularly millennials and Gen Z, alongside the continued rise of app-based brokerage and crypto-native financial ecosystems.

We believe that younger, digitally native investors, both in and outside the U.S., will continue to expect 24/7 convenience in everything they do, from food delivery to e-commerce, banking and trading. This is not necessarily the case for older generations, which is why we are also cautious with a c.2% base-case estimate in public equities.

We assume materially lower penetration outside the U.S., with approximately 1% adoption across the rest of the world by 2030, reflecting more fragmented market structures, lower retail participation, and slower-moving regulatory and post-trade modernization efforts. Institutional equity tokenization is also likely to evolve more slowly and may ultimately depend on permissioned blockchain infrastructure, interoperability standards, and consortium-led market structures that remain early-stage.

> “By 2030, you could see 50% of public equities tokenized, at least in some markets.
>
> Convenience, not just speed, will drive adoption. If it’s easier to access and use, people will come.”
>
> *Rob de Rozario, Founder and CEO, Alphaparty Capital*

3. Private credit and equity

We assume approximately $100 billion each of tokenized private credit and private equity exposure globally by 2030. While private markets are viewed as a major long-term opportunity for tokenization, near-term adoption could remain modest given the illiquid, relationship-driven, and operationally complex nature of many private assets.

Private credit may be relatively better suited to tokenization than other private market segments given the greater standardization of transactions, legal documentation, and covenant structures, particularly at the larger end of the market. The income-generating and often asset-backed nature of private credit may also lend itself more naturally to smart contracts and programmable infrastructure.

In contrast, private equity and venture capital structures may prove harder to tokenize given longer holding periods, the J-curve effect of returns, and potentially lower appetite from private companies and asset managers for secondary market trading.

Tokenization may improve investor access, operational efficiency, fractional ownership, and secondary market transferability over time. However, it cannot fundamentally alter the underlying liquidity profile or long-duration nature of many private market investments. Current private credit tokenization activity also remains relatively concentrated, driven by largely a small number of firms and transactions rather than broad-based market adoption.

4. Real estate funds

We assume approximately $200 billion of tokenized real estate exposure globally by 2030, equivalent to roughly 1% of the projected $17 trillion real estate fund market. Current tokenized real estate markets remain relatively small, at approximately $165 million globally, but have experienced rapid early-stage growth, expanding by roughly 50x in 2024 and a further 6x in 2025 from a low base.[24]

Our estimates assume growth moderates meaningfully over time, with tokenized real estate continuing to scale at an average rate closer to 4x annually between 2025-2030 as infrastructure, distribution, and investor familiarity gradually improve.

> Tokenized assets require efficient movement of cash and liquidity to operate at scale, making on-chain payments infrastructure a foundational enabler of broader tokenization.
>
> *Ryan Rugg, Global Head of Digital Assets, Citi Services*

Why Tokenization Lagged

Several structural and operational barriers have historically slowed tokenization's progress. Understanding these past challenges is crucial to appreciating why the current environment is now ripe for acceleration.

1. Lack of native issuance and end-to-end lifecycle support

A primary obstacle has been the chicken-and-egg problem surrounding the issuance of native digital assets securities that are born and managed entirely on-chain. Early tokenization efforts often focused on creating digital representations of existing, off-chain assets, which failed to capture the full efficiency gains. The slow start for native issuance can be attributed to several factors:

- **Incomplete Infrastructure:** Early platforms often lacked the comprehensive, end-to-end lifecycle support required for a security. This includes managing everything from initial issuance and distribution to servicing complex corporate actions (like dividend payments, stock splits, and voting), and finally, redemption or maturity. Without this full-service capability, issuers were hesitant to commit to a new, unproven process.
- **Absence of an On-Chain Settlement Asset:** A critical missing piece was a reliable, regulated, and liquid on-chain asset to facilitate the final payment leg of a transaction (Delivery versus Payment). The absence of central bank digital currencies (CBDCs) or widely adopted, bank-grade deposit tokens meant that while the asset could be transferred on-chain, final settlement often had to revert to traditional, off-chain payment rails, creating friction and negating the benefits of real-time settlement.
- **Regulatory Uncertainty:** Issuers have been cautious due to a lack of clear and consistent regulatory frameworks. Ambiguity around the legal status of digital securities, disclosure requirements, and the responsibilities of network participants created significant compliance risks, discouraging widespread native issuance.

2. Insufficient secondary market liquidity

While primary issuance is the first step, the true value of a security is often realized in the secondary market, where it can be traded freely. Tokenized assets have struggled to develop deep and liquid secondary markets for several reasons:

- **Fragmented, OTC-Dominated Trading:** The market for tokenized securities has been fragmented and operated primarily Over-the-Counter (OTC), rather than on regulated exchanges. This environment provides insufficient incentives for market makers to provide continuous liquidity, as there is no central limit order book to display depth and attract trading volume.
- **High Entry Barriers and Limited Investor Access:** Many tokenized offerings, particularly in private markets, still carry high minimum investment thresholds. While fractionalization helps, administrative and compliance costs can still make servicing a large number of very small investors uneconomical. Furthermore, access has often been restricted to institutional or accredited investors, limiting the overall size of the potential buyer pool.
- **Regulatory and Technical Hurdles:** Regulatory restrictions on cross-border trading and the use of digital assets as collateral have prevented the free flow of capital.

  The European Securities and Markets Authority (ESMA) has highlighted that such barriers, along with a lack of standardization, could hinder the development of liquid secondary markets.[25]

  Additionally, the costs and complexities associated with listing on multiple venues have discouraged issuers from pursuing dual-listing strategies that could otherwise boost liquidity.

> Tokenization moved from a back-office efficiency story in 2018 to a front-office growth opportunity in 2026. A more favorable U.S. regulatory backdrop, alongside advances in AI and stronger equity market interest, has accelerated momentum.
>
> *Ajit Tripathi, Founder, Asango Limited*

3. Cross-chain interoperability challenges

The proliferation of blockchain networks has created a fragmented digital landscape. As of May 2025, financial services entities had adopted at least 72 different distributed or programmable ledgers.[26] These 'digital islands' are not inherently interoperable, limiting the ability to trade, settle, and move assets seamlessly across networks.

Interoperability also emerged as a consistent constraint in our discussions with industry stakeholders, reinforcing broader market observations. Fragmentation across networks restricts liquidity, increases operational complexity, and forces participants to manage assets and workflows across multiple systems. As a result, achieving seamless cross-network settlement and transfer is increasingly seen as a prerequisite for building efficient, global tokenized market.

However, the market is beginning to shift. The industry is converging around a smaller set of networks and interoperability solutions that better balance throughput, cost and privacy. At the same time, progress is being made to securely bridge networks and mitigate risks such as honey-pot attacks associated with poorly designed cross-chain infrastructure.

- **Chainlink's Cross-Chain Interoperability Protocol (CCIP):** Open-source standards such as CCIP are helping to facilitate secure cross-chain communications. A 2023 collaboration between ANZ Bank and Chainlink demonstrated how CCIP can connect private, permissioned blockchain with public networks such as Ethereum, enabling settlement of tokenized assets across institutional and decentralized environments.

Are Private Markets a Natural Fit for Tokenization?

Private markets are often cited as a core use case for tokenization, given their operational complexity and limited accessibility. Yet the experience to date has been mixed.

Why do many observers believe that private markets are a natural fit for tokenization? Transactions are typically slow, document-heavy, and reliant on fragmented data, creating clear inefficiencies that tokenization could- in theory- help address.

Tokenization can streamline administrative workflows and automate processes such as compliance checks, capital calls, and distributions via smart contracts.

In a segment of the investment industry that also values privacy and protection of information, blockchain could be used to tokenize data, allowing for more data to be protected, permissioned and shared in a more controlled and efficient way.

Another potential benefit is expanding access to private assets. Tokenization could support broader distribution, particularly through wealth channels, as managers look to tap new segments via new technology-enabled platforms.

Tokenization could support new product structures that were previously uneconomical. It could also unlock new forms of utility, such as enabling investors to access income streams (e.g., royalties) or use assets as collateral.

These more specialized uses may represent the early frontier for tokenization. For example, asset-backed credit makes up around $2 billion of the $5 billion total tokenized credit assets, versus corporate credit which accounts for nearly $700 million.[27]

Over time, tokenization could also support more flexible portfolio construction, enabling investors to manage exposures, liquidity and collateral more dynamically across private and public assets.

Slow adoption to date

Some alternative managers such as Hamilton Lane, KKR and Apollo offer private equity and private credit to qualified wealth investors via tokenized feeder funds. These funds, however, currently represent a very small percentage of total assets compared to overall fund size.[28]

While liquidity and access to private markets have broadened in recent years, tokenization is not yet a central driver. Regulatory constraints and accreditation requirements continue to shape participation, with most access still facilitated through traditional distribution channels.

End investors often rely on advisors and established networks, limiting the role of fully digital access models. Those who may benefit most from tokenized access, such as retail investors, remain largely outside the regulatory perimeter for many private assets.

The underlying structure of private markets also limits the impact of tokenization. Transactions are typically large and concentrated, with a small number of companies accounting for a significant share of volume.

Liquidity remains structurally constrained. Even in semi-liquid fund structures, redemptions are restricted and often supported by holding liquid assets alongside private investments. While tokenization may support incremental improvements, meaningful secondary liquidity and price discovery remain limited.

Implications for Capital Markets

Tokenization has the potential to reshape capital market structures. However, benefits are unlikely to be immediate, with fragmentation across platforms, hybrid operating models, and regulatory uncertainty shaping the transition.

We expect a focus on control of issuance and settlement rails, favoring institutions that integrate both within trusted frameworks. While new entrants tend to drive innovation, incumbents with scale, balance sheet strength, and client relationships could benefit if they adapt and capture emerging opportunities.

> Tokenization is not just a technological upgrade. It's a change in market structure redesigning access, distribution and transparency.
>
> *Matthew Blumenfeld, Global Digital Assets Lead, PwC*

Reshaping Capital Market Structure

Tokenization is unlikely to eliminate core market functions, but has the potential to change how they are delivered, connected and priced.

The points below highlight how settlement models, collateral dynamics, intermediation, and value distribution across the market stack could evolve as tokenized markets develop.

- **Lowering the cost of capital, albeit with near-term fragmentation:** In traditional markets, multiple intermediaries perform post-trade functions such as clearing, settlement, reconciliation, and custody, often due to fragmented record-keeping and delayed settlement cycles.

  Tokenized systems introduce a shared ledger where ownership transfer and settlement can occur in near real-time. This reduces reconciliation-heavy processes and compresses post-trade layers.

  Full disintermediation is unlikely. Core functions such as settlement finality, risk management, and regulatory oversight will persist, though their form and economics are likely to evolve.

  Estimates of efficiency gains vary. Some suggest an issuer handling $1 billion in annual bond issuance could save approximately $2-3 million in costs through on-chain issuance.[29] Other studies indicate transaction cost reduction of around 24%, alongside faster execution and reduced manual involvement.[30]

  However, these benefits may take time to materialize, given upfront investment requirements and need for operational and regulatory alignment. Tokenization may initially increase fragmentation as assets are issued across multiple, non-interoperable platforms, protocols, and liquidity pools.

  Achieving scale will depend on interoperability, common standards, and cross-network connectivity. These will be critical to realizing the full efficiency gains over time.

- **Shift from asset-for-cash to asset-to-asset exchange:** Traditional markets tend to be structured around asset-for-cash exchanges, where cash acts as the intermediary in most transactions.

  Tokenization could facilitate a shift towards asset-to-asset transactions, including collateral swaps, securities-for-securities exchanges and multi-asset transactions executed atomically. This reduces reliance on cash as an intermediary and supports more efficient collateral utilization.

- **Fee compression, but also emergence of new revenue pools:** Operational efficiencies may compress traditional fee pools linked to processing and intermediation.

  Offsetting this, new revenue opportunities are likely to emerge in areas such as token issuance and structuring, collateral optimization and financing, data and analytics, and smart contract lifecycle services.

  The net impact is likely a reallocation of value across the stack, rather than a simple reduction.

- **Vertical integration across the value chain:** Tokenization enables tighter integration across issuance, trading, settlement, and custody, allowing platforms to capture more of the value stack and streamline workflows.

  As processes become programmable and settlement moves closer to real time, traditional handoffs between intermediaries may compress, shifting control points toward infrastructure providers and platform operators. This may favour vertically integrated models that combine multiple functions on a single infrastructure layers and benefit from data, liquidity and collateral efficiencies.

  However, this does not imply closed or siloed systems. Interoperability across networks, standards, and asset classes will remain critical to ensure liquidity, avoid fragmentation, and support broad market adoption.

- **Settlement asset as a strategic anchor:** The form of money rails used for settlement, whether stablecoins, bank tokens (tokenized bank deposits/ deposit tokens), or central bank digital currencies (CBDCs), is likely to play an important role in market structure.

  The choice of settlement is likely to affect liquidity concentration, counterparty risk, regulatory acceptance, and interoperability across platforms.

  In practise, we believe institutions are likely to align issuance and trading activity with settlement rails they trust and can access at scale. Final outcomes are likely to be shaped as much by regulatory and policy choices across jurisdictions, and by balance sheet trust as by technology.

- **Real-time collateral management:** Tokenization could enable real time collateral mobilization, supporting intraday funding and dynamic pricing. For example, in intraday repo markets, interest can be calculated and charged on a minute-by-minute basis rather than over full-day periods, improving liquidity.

The net impact is not only greater efficiency, but also a reconfiguration of liquidity, control points, and competitive dynamics across the market.

Liquidity and interoperability will shape scale

While tokenization improves efficiency, early markets are likely to remain fragmented across platforms, protocols, and liquidity pools. This could limit the ability to move assets to where demand exists and weaken network effects in the near term.

Initial blockchain-based bond issuances demonstrated technological feasibility but often operated as isolated transactions, requiring investors to onboard on new platforms for a single trade. This highlights the limits of fully parallel, build-from scratch models.

A more pragmatic path is emerging through hybrid models. Structures such as the Digitally Native Note (DNN) combine digital issuance with existing post-trade settlement rails, allowing institutions to benefit from programmability and faster settlement without replicating the full market stack on-chain.

Interoperability is therefore not just about connecting blockchains. It is about linking tokenized assets with existing custodians, exchanges, settlement systems, workflows and liquidity pools. Approaches that reduce investor friction and align with current infrastructure are more likely to scale than fully standalone ecosystems.

Over time, we think participants will look to aggregate liquidity and enable connectivity across networks, shaping how trading activity consolidates.

The hybrid reality before scale

The path to tokenized markets is unlikely to be linear. The near-term reality is a hybrid environment where assets, cash, and records sit across legacy systems, private ledgers, and public blockchains.

This creates operational complexity around reconciliation, risk management, and compliance, alongside unresolved legal questions on ownerships, liability and cross-chain failures.

As a result, adoption is likely to be shaped less by technological capability and more by the ability to manage this hybrid complexity. Solutions that minimize disruption to existing workflows are likely to scale faster than fully standalone models.

Beyond technology and infrastructure, execution will depend on talent and operating model evolution. Tokenized markets require a blend of traditional capital markets expertise and digital asset capabilities, spanning engineering, product, risk, and compliance. Integrating these skill sets within established institutions may prove as challenging as the technology itself, particularly as operating models shift toward more continuous, data-driven, and programmable processes.

These structural shifts will ultimately determine where value accrues across issuance, distribution and settlement layers.

The Critical Enablers of Market Structure Change

Chris Rayner-Cook, Chief Investment Officer, Brevan Howard Digital

What is one undeniable 'killer use' for tokenized real-world assets or securities that will compel trillions of dollars of traditional assets to move on-chain?

The undeniable 'killer use' is capital efficiency. Tokenization enables not just faster, settlement but atomic settlement. T+0 alone compresses timelines, but as long as instruction and payment are separate steps, some sequencing risk remains. Tokenization fundamentally changes how balance sheets are managed by removing the counterparty risk that forces institutions to hold significant capital buffers.

Crucially, these benefits are amplified with programmability. Atomic settlement helps free-up capital; programmability determines how efficiently that capital can be redeployed through automated collateral management, real-time rebalancing, and conditional settlement logic. That combination is what drives the transformation.

From your perspective as a global asset manager, which single layer of the technology stack be it (a) a universal digital identity standard, (b) a truly scalable and regulated settlement asset (like a CBDC or deposit token), or (c) a secure interoperability protocol represents the most significant bottleneck today?

If I had to pick one, it would be a universal digital identity standard, particularly when combined with privacy.

For regulated institutions, the key constraint isn't the ability to transact, it's the ability to know who is on the other end of a transaction. Regulated firms have obligations to KYC counterparties and must ensure that they are not interacting with sanctioned or non-compliant actors. Public blockchains and many of the DeFi applications built on top of them do not yet fully satisfy these requirements.

There is a bit of chicken and egg dynamic. Institutions won't move on-chain without robust identity infrastructure, but that infrastructure is unlikely to be built to institutional standards without demand.

That said, there have been multiple approaches to this challenge, from permissioned networks (which solve compliance but sacrifice decentralisation) to privacy-preserving technologies such as zero-knowledge proofs. However, these capabilities are still evolving and will take time to mature to institutional scale.

To unlock wide-spread institutional adoption, we need a system where participants can verify that counterparties meet regulatory standards without exposing sensitive information on-chain. Until the appropriate balance between identity, compliance, and privacy is achieved, large-scale institutional participation will remain constrained by regulation rather than technology.

How do you aim to solve the 'last mile' of distribution to a global investor through tokenization?

The main bottleneck here is not technology, it's regulation and investor protection frameworks. Access to alternatives is typically restricted for suitability reasons, not necessarily because of distribution infrastructure constraints. Tokenization makes broader access possible from a technical perspective, but it doesn't override those constraints.

Tokenization can also improve secondary market liquidity. While for some segments of alternatives this might have limited impact given that they are structurally illiquid, it becomes meaningful in the more standardised areas of alternatives. For example, real estate or credit funds with well-understood risk profiles where tokenization removes operational frictions and costs. Liquidity in these markets is likely to develop gradually over time.

These benefits can be felt both by a larger number of end investors and by existing intermediaries. The solution therefore includes working on all three fronts: a new cohort of investors could benefit by having access whether through partnering with digital-native platforms that can handle onboarding, screening, and suitability in a scalable and compliant way or building direct-to-consumer channels. Existing investors benefit by incurring lower operational costs and in the long run, from more liquid secondary markets. In both cases the benefit is clear and partnership with regulators will be key to unlocking this.

Who Controls the Ecosystem?

As operational friction declines, we believe focus is likely to concentrate around two structural control points:

- Control of asset issuance and distribution, and
- Control of the monetary rails used for settlement

Figure 6 compares institutions that control the issuance of tokenized assets with those that control on-chain money and settlement rails.

In our view, institutions capable of integrating asset issuance and settlement rails at scale, within trusted regulatory frameworks, are likely to gain structural advantages including:

- **Internalize full transaction loop:** As highlighted earlier, tokenization could enable tighter vertical integration across the value chain. Institutions can increasingly internalize the full transaction lifecycle within a unified ecosystem, from origination through issuance, trading, settlement, custody, and collateral management.

  This could help reduce reliance on external intermediaries, lowers operational friction, and improves capital efficiency, while reinforcing control over key value pools and client relationships.

- **Capture broader share of the economic stack:** Integrated players can monetize across both the asset and monetary layers. On the asset side, through underwriting, structuring and management fees.

  On the monetary side, through reserve income, float, payments and financing-related revenues. The ability to participate across multiple layers expands revenue pools and reduces dependence on any single fee stream.

- **Cross-subsidization and cross-incentivization:** Control across layers could enable platform-style economics, with pricing in one segment used to drive adoption, liquidity or activity in another. For instance, fees in trading or settlement may be compressed to attract issuance and client flows, with monetization shifting to custody, financing, or balance sheet activities.

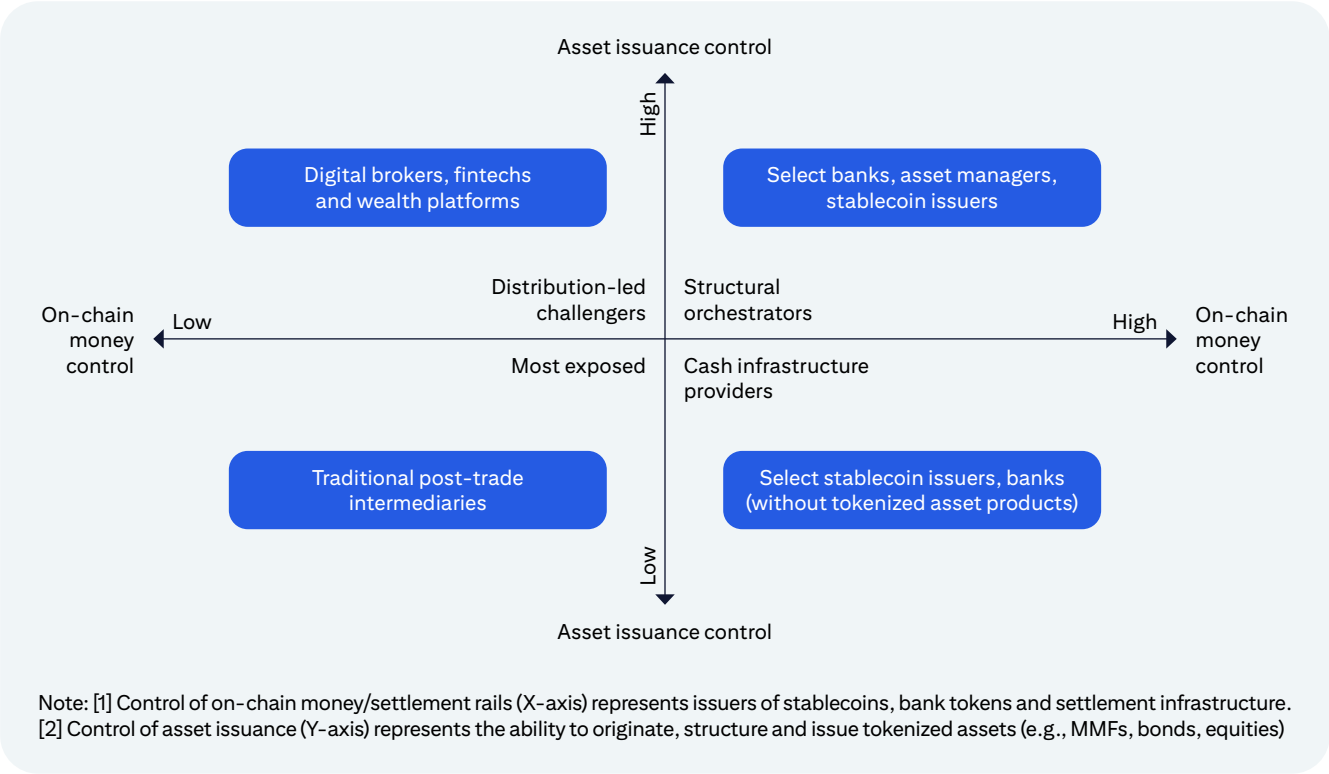
  This mirrors “everything app” models by large technology platforms across Asia, where payments, commerce and financial services are integrated to scale user activity and monetize selectively across lending, wealth, and data-driven services. Over time, such models can reinforce network effects, deepen client engagement, and concentrate vale among integrated players.

- **Define technical and interoperability standards:** Institutions operating at scale could influence interoperability frameworks, collateral eligibility, and smart contract design. This could position them to shape which assets gain liquidity, which standards are adoption, and which rails become default infrastructure.

  Control over standards can become a key competitive lever, particularly in fragmented or multi-network environments.

These advantages depend on network adoption and regulatory alignment. Institutions that achieve scale in issuance or settlement can drive network effects and accelerate uptake of tokenized assets.

Figure 6. Who controls the ecosystem in a tokenized market?



Note: [1] Control of on-chain money/settlement rails (X-axis) represents issuers of stablecoins, bank tokens and settlement infrastructure. [2] Control of asset issuance (Y-axis) represents the ability to originate, structure and issue tokenized assets (e.g., MMFs, bonds, equities)

Source: Citi Institute.

1) Structural orchestrators: Select banks, asset managers and stablecoins issuers

Institutions that combine control of asset issuance and settlement rails are positioned as structural orchestrators of tokenized markets.

This positioning enables influence over market design and the share of economic value across both asset and monetary layers. However, any advantage depends on achieving scale and regulatory acceptance on the settlement layer.

Large banks and asset managers are exploring bank tokens, alongside the issuance of tokenized capital market products, aimed at attaining a strategic advantage.

Similarly, stablecoin issuers are exploring issuance of tokenized money market funds to complement their product offerings.

2) Distribution-led challengers: Digital brokers, fintechs, and wealth platforms

Distribution-led platforms, particularly digital wealth and fintechs, are well positioned to capture market share as tokenization lowers issuance barriers. As assets become easier to originate and fractionalize, the bottleneck shifts from manufacturing to distribution, client access and engagement.

These players can aggregate tokenized assets across issuers, curate investor-friendly offerings, and become the primary interface for non-institutional investors. Fractional ownership, programmable features, and 24x7 liquidity align naturally with digital distribution models and can drive higher participation and asset velocity.

Over time, this could shift value pools towards those who control customer relationships and data, echoing dynamics seen in other financial segments. However, scale, trust and regulatory alignment remain critical.

3) Cash infrastructure providers: Stablecoins issuers and banks without tokenized asset products

Institutions that control on-chain money sit at the center of settlement flows and capture liquidity economics, including reserve income, float and transaction-related fees.

Scale and regulatory acceptance of their settlement rails can anchor liquidity and influence where trading activity concentrates. However, without asset origination or distribution capabilities, their role risks being confined to infrastructure.

Over time, competition and interoperability may compress margins, particularly if settlement becomes commoditized. Sustaining value capture will require expanding into adjacent areas such as asset issuance, collateral services, or distribution or deepen integration with broader product ecosystem and client relationships.

4) Most exposed: Traditional post-trade intermediaries

Intermediaries that control neither asset issuance nor settlement infrastructure are likely to face significant structural pressure. As settlement becomes faster, more automated, and increasingly atomic, revenue pools tied to reconciliation, processing, and operational complexity are likely to compress.

Tokenization reduces the need for duplicate record-keeping and manual interventions, challenging existing post-trade models. Core functions such as asset servicing, risk management, and compliance remain essential, but the basis of competition shifts.

This does not imply elimination of intermediaries. However, sustaining relevance will require moving toward higher-value services such as collateral management, and interoperability across legacy and tokenized systems.

Utility and Distribution as the Drivers of Adoption

Suzy Singh (Deputy COO) and Giang Bui (Head of Issuer Growth), Securitize

Beyond simply getting assets tokenized, what is the single most critical piece of infrastructure?

Tokenization itself is the easy part; the technology is already proven. The real question is what happens once the asset is on-chain. The focus needs to shift to utility and distribution, without which, tokenization remains a static record of ownership.

A token needs to be usable, not just held. That means enabling use cases such as collateral, integrating it into cash or treasury management, or building new trading strategies around it. At the same time, distribution is the harder problem and differs by asset class. The challenge is expanding access while remaining compliant, ensuring only eligible investors can hold the security, even as you open new channels.

What are the main challenges investors and issuers should be aware of?

Liquidity is the primary challenge. Investors care about how quickly they can enter and exit positions, and tokenization does not change the underlying liquidity profile of an asset. For example, while more liquid assets like treasuries can scale more easily, private credit or private equity remain constrained by their inherent structure. Tokenization can broaden access and potentially expand the investor base, but it cannot manufacture liquidity. The focus therefore shifts to building secondary markets and trading infrastructure, including partnerships with traditional venues, to improve tradability over time.

How might revenue models evolve as assets move on-chain?

It is still early, but some shifts are emerging. As settlement becomes instantaneous and markets move to a 24x7 model, revenue streams tied to settlement cycles and intermediated processes may compress. At the same time, new forms of utility and access are being created. Firms are starting to explore how to adapt their models to a more global, always-on environment, though secondary trading and monetization mechanisms are still developing.

What does the market look like in 10 years?

The likely outcome is a hybrid system where traditional and tokenized markets operate together. The goal is not replacement of existing infrastructure, but integration. Over time, regulatory clarity and more mature infrastructure should improve interoperability, reducing friction between systems. This enables broader participation, including access to investment strategies that were previously restricted.

The long-term direction is a more interconnected and efficient global market, with better access, faster execution, and greater engagement between investors and issuers.

Different Clients, Different Adoption Paths

Institutional clients: trust and scale to dominate

Institutional adoption is likely to be anchored in trust, regulatory alignment and operational resilience. Large asset managers and corporates are likely to favor familiar, regulated counterparties, particularly where balance sheet strength, credit exposure and execution certainty remain critical. Tokenization is likely to be layered onto existing relationships rather than displace them.

While blockchain infrastructure can improve settlement speed, transparency and programmability, adoption is likely to be driven by seamlessly integrating into existing workflows. Institutions are unlikely to migrate to fragmented or standalone platforms that introduce parallel processes or operational complexity.

Over time, competitive pressure will come from platforms that can match institutional requirements while delivering measurable gains in efficiency and execution.

Wealth clients: utility and experience to drive adoption

For wealth clients (high-net-worth and ultra-high-net-worth individuals), tokenization is likely more conceptual than essential today. Clients are not actively demanding tokenized equities or 24x7 markets and continue to operate within familiar advisory-led models.

Adoption is likely to depend on demonstrable benefits, such as improved access to private markets, enhanced liquidity, better tax or yield outcomes, or simpler usability. Where tokenized assets replicate traditional instruments without meaningful differentiation, client interest is likely to remain limited.

At the same time, the current hybrid environment adds complexity, with tokenized and non-tokenized assets co-existing. Adoption is therefore likely to be gradual and selective.

Potential is clearer in alternatives and digitally native assets, where tokenization enables new features such as fractional ownership, programmability and embedded rights.

Retail clients: access vs. Engagement

For retail investors, tokenization could help broaden access to a wider range of assets, including fractional ownership of traditionally illiquid markets. Digital platforms and brokerages are already lowering barriers to entry, and tokenization could extend this trend through smaller ticket sizes and more continuous market access.

However, increased access does not automatically translate into engagement. Adoption will depend on simplicity, clarity of value and ease of use. Complex structures, unclear benefits or fragmented user experiences are likely to limit uptake.

Over time, platforms that combine intuitive interfaces with clear value propositions such as better access, lower costs or integrated financial services are likely to gain traction. Retail adoption is likely to be driven less by tokenization itself, and more by how seamlessly it is embedded within everyday financial activity.

> We are in the middle of the largest wealth transfer in history. The next generation is tech savvy and digitally native. They expect value to be transferred at the same speed as data.
>
> *Deborah Querub, Head of Digital Assets, Citi Wealth*

Adoption will be driven by economics, not technology

We believe the primary constraint is not technology, but investor adoption. For investors, the economic rationale of an investment, including pricing, yield, liquidity and risk, remains the dominant consideration, rather than the underlying settlement mechanics.

Operational benefits such as reduced reconciliation or faster settlement, while meaningful, are unlikely to drive adoption on their own. Unless tokenized structures deliver clear economic advantages or integrate seamlessly into existing workflows, investor behavior is unlikely to change.

Across segments, adoption is likely to ultimately depend on whether tokenization delivers materially better outcomes, not simply new infrastructure.

Emergence of New Market Participants

New market structures are expected to enable a broader set of participants to operate across the asset lifecycle.

New entrants could build directly on modern, blockchain-native infrastructure without the burden of legacy systems. This could support faster product development cycles and more flexible experimentation with new asset classes and financial models.

Emerging participants are likely to cluster around a few core functions:

- **Issuance and structuring infrastructure:** Tokenization platforms, asset issuers, and developers enabling creation and lifecycle management of tokenized assets.
- **Trading and liquidity provision:** Digital asset exchanges, trading venues, and on-chain market makers supporting price discovery and secondary market liquidity.
- **Custody and asset servicing:** Digital custodians and wallet/key management providers responsible for secure storage, transfer and safekeeping of assets.
- **Identity, compliance and trust layers:** On-chain identity and compliance provider embedding KYC/AML, permissions, and regulatory controls into transaction flows.
- **Core infrastructure and interoperability:** Smart contract infrastructure providers, auditors, and cross-chain interoperability solutions enabling scalability, security, and connectivity across networks.

> America's leading financial institutions are now embracing decentralized infrastructure to deliver 24x7 on-chain markets. We're witnessing the foundation of a new financial system built on open protocols and shared infrastructure.
>
> *Joseph Lubin, Co-Founder Ethereum, and CEO and Founder at Consensys*

These roles reflect a shift towards a more modular and technology-driven market architecture, where functions are increasingly unbundled and recombined.

Despite lower technical barriers, new entrants could face material constraints. Regulatory requirements around licensing, custody and compliance remain significant, and institutional adoption continues to depend on trust, security, and operational resilience.

Key differentiator is unlikely to be just technology, rather the ability to combine infrastructure, regulatory alignment, and liquidity at scale.

Need for Incumbents to Evolve and Adapt

Existing financial institutions are likely to remain central to the ecosystem, but they will need to adapt in light of the competition faced from the new market entrants, we described above. Monetization in tokenized financial markets could likely be achieved through both existing and emerging services as illustrated below.

Near-term opportunities

- **Issuance platforms:** Providing technology and services for tokenized securities issuance.
- **Custody services:** Secure storage and management of digital assets.
- **Advisory services:** Legal, technical, and structuring expertise.
- **Broker-dealer services:** Facilitating primary issuance and secondary trading of tokenized securities.

Emerging opportunities

- **Market making and liquidity provision:** Supporting secondary market and earning bid-ask spreads.
- **Data and analytics:** Leveraging transaction-level transparency for insights and risk analytics.
- **Yield-generating products:** Structured products, lending, and collateralized financing using tokenized assets.
- **Asset management:** Managing portfolios of tokenized securities and digital assets.

A key near-term challenge is the coexistence of tokenized and legacy systems. Rather than a complete transition, institutions will likely need to operate across hybrid environments where on-chain and off-chain processes interact. This could introduce additional operational complexity, reconciliation requirements, and control challenges, particularly where data, ownership records, or settlement processes are split across systems.

Managing this hybrid state will require investments in integration layers, governance frameworks, and operational resilience. In the near term, this is likely to be cost-intensive, as institutions run parallel on-chain and legacy processes, build connectivity across systems, and manage new control, compliance, and reconciliation requirement, delaying the full realization of efficiency gains.

Infrastructure Design Choices

As adoption of tokenized assets grows, selection of the underlying infrastructure is likely to play a critical design role. The primary choices involve trade-off between openness (liquidity and distribution), speed (scalability and performance), and control (regulatory compliance and counterparty management).

We envisage emergence of three primary models, each suited to different asset classes and institutional needs. Key characteristics are summarized in Figure 7.

Figure 7. Comparing different blockchain design choices

	Public Permissionless	Private Permissioned	Public Permissioned
Access	Open to all participants	Shared or open infrastructure with permissioned access layer (identity, whitelisting)	Open infrastructure, access gated to authorized participants only
Governance	Decentralized, protocol-driven	Centralized or consortium-led	Distributed governance with regulatory oversight
Liquidity	Highest theoretical liquidity due to global access	Limited liquidity due to closed network and fragmented pools	Moderate liquidity; constrained vs public chains but broader than private networks
Interoperability	High; seamless integration with other protocols	Limited natively, but improving via interoperability layers and consortium linkages	Selective; interoperable with approved protocols only
Privacy	Low; all transactions are visible (pseudonymous)	High; data shared with authorized participants only	Configurable; using privacy layers (e.g., ZK proofs)
Scalability	Variable; increasingly address via Layer-2, rollups, and modular architectures	High; controlled throughput and predictable performance	Moderate to high; depends on architecture and permission layer
Examples	Ethereum, Solana	Hyperledger Fabric, R3 Corda	Canton Network, Provenance Blockchain

Source: Citi Institute.

Key Considerations Beyond Infrastructure Choice

A critical but often overlooked dimension is the settlement asset or money layer. The form of money used, whether stablecoins on public chains, tokenized deposits on bank-led networks, or CBDCs, can materially influence infrastructure choice. In practice, institutions often align asset issuance with the settlement rails they trust and can access, rather than selecting infrastructure in isolation.

At the same time, regulatory compliance is increasingly being implemented at the application layer, rather than directed solely by the underlying blockchain. Identity, KYC/AML controls, transfer restrictions, and permissioning can be embedded through smart contracts and middleware, allowing even public infrastructure to support regulated use cases. This hybrid structure reduces the traditional trade-off between openness and compliance.

Evolving Institutional Approaches

Most early institutional tokenization efforts have favored private permissioned or hybrid models, reflecting the need for control over counterparties, compliance, and integration with existing financial infrastructure. These environments offer predictable performance, privacy and alignment with established regulatory frameworks.

However, a growing number of issuances are emerging on public blockchains, particularly from standardized and liquid assets, such as money market funds and government securities.

For instance, BlackRock's tokenized U.S. Treasury fund (BUIDL) was launched on Ethereum and is now expanding across multiple blockchains,[31] while Franklin Templeton's on-chain U.S. Government money market fund (FOBXX) originated on Stellar network and has subsequently extended to networks including Ethereum.[32]

As adoption of tokenization matures, we believe the key design question is no longer purely public vs private but how to combine infrastructure, compliance layers, and settlement assets into a coherent operating model.

Risks Associated with Tokenization

Regulatory bodies have highlighted several vulnerabilities associated with tokenization. These risks are less about the underlying technology and more about how core financial principles, such as ownership, settlement integrity, and investor protection are preserved as assets are reconfigured on blockchain infrastructure.

- **Settlement risk from private money:** The use of stablecoins and other forms of private money to settle tokenized assets could introduce credit, liquidity, and redemption risks, especially in stress scenarios where convertibility to central bank money may be impaired.[33]

  Current generation stablecoins also present structural limitations for institutional use, including pre-funding requirements that constrain liquidity efficiency and limit alignment with existing market practices. As a result, market participants are exploring alternative settlement assets, including tokenized deposits issued by regulated banks and tokenized MMFs, which offer the potential for yield-bearing, high-quality, and more scalable on-chain liquidity.

  The coexistence of multiple forms of digital money challenges the 'singleness of money' that underpins trust in financial systems and risks fragmenting liquidity across competing settlement assets. Interlinkages between tokenized assets and diverse private settlement instruments could also amplify contagion risk, particularly in periods of market stress.

- **Unclear ownership rights:** Tokenization can separate economic exposure from legal ownership, where holding a token does not necessarily confer enforceable rights to the underlying asset. This creates ambiguity in insolvency, custody, and cross-border enforcement, especially where assets are structured via intermediaries or off-chain legal wrappers.

  Natively issued tokenized assets, where the token constitutes the primary legal record of ownership, can materially reduce this risk by aligning on-chain representation with legal title. However, this depends on jurisdictional recognition and legal frameworks.

- **Investor protection and disclosure gaps:** Tokenized assets can be presented as equivalent to traditional securities while lacking clarity on rights, risks, and underlying structures. This increases the risk of mis-selling, particularly where investors misunderstand liquidity, redemption, or ownership features.

  Regulatory efforts, including legislative proposals such as the CLARITY Act, aim to further clarify classification and reinforce that tokenized instruments must meet the same disclosure and investor protection standards as traditional financial products.

- **Risks from hybrid models and fragmentation:** Hybrid structures combining on-chain assets with off-chain processes can introduce opacity, operational complexity, and unclear accountability. These models may reintroduce traditional risks, such as counterparty exposure and settlement uncertainty.

  At the same time, fragmentation across platforms and infrastructures can reduce liquidity efficiency, limit netting benefits, and increase operational interdependencies across the system.[34]

  Markets today remain split across multiple venues, standards, and processes, with limited interoperability between liquidity pools. Without the ability to move securities seamlessly to where liquidity resides, tokenized markets risk replicating the inefficiencies of traditional systems rather than improving them.

- **Asset selection and liquidity risk:** Tokenization does not uniformly improve all asset classes. Early efforts have often focused on what is easy to issue rather than what naturally trades, reflecting technological feasibility more than market demand.

  If the underlying asset lacks liquidity, depth of buyers, or active turnover, tokenization alone does not change those fundamentals. In practise, this can lead to thin trading, fragmented pools of liquidity, and limited price discovery across platforms.

  Without strong distribution and secondary market activity, tokenized assets risk remaining siloed, which can slow adoption and weaken overall market momentum.

- **Emerging systemic risks in tokenized markets:** Tokenization could also introduce new forms of systemic risk as market structure evolves. As control over issuance, distribution, and settlement becomes more concentrated among a smaller set of platforms and infrastructure providers, there is risk that new forms of concentration emerge. Institutions that anchor liquidity or control settlement rails could become critical nodes, increasing the system's reliance on a limited number of participants.

  At the same time, greater interoperability across platforms may create new channels for contagion. While connectivity can improve efficiency, it can also allow stress in one network, asset class or settlement system to propagate more quickly across the ecosystem.

  Finally, while atomic settlement reduces certain counterparty risk, it also introduces dependencies on underlying infrastructure such as smart contracts, oracles, and cross-chain bridges. Failure in these components could disrupt settlement flows or create new forms of operational and market risk.

These risks highlight that the challenge in tokenization is not simply digitizing assets, but ensuring that legal, financial, and market structures remain robust as new forms of concentration, connectivity and dependency emerge.

Next Frontier: On-Chain Finance

As tokenized assets and on-chain money scale, the next frontier is their use within on-chain financial systems. To date, Decentralized Finance (DeFi) has relied largely on crypto-native assets and self-contained liquidity pools, resulting in fragmented and volatile liquidity.

Tokenized financial assets and on-chain money could change this. Higher-quality collateral such as bonds, funds, and deposits could support more stable liquidity, while atomic settlement and programmability allow assets and cash to move together. This could improve capital efficiency, enable real-time financial flows, and begin to bridge on-chain activity with traditional market structures.

However, DeFi s unlikely to replace traditional finance but rather complement it. Near-term adoption is likely to focus on high-quality, liquid assets and use cases such as collateral and treasury management, with broader applications emerging over time.

Crypto-Native DeFi to Institutional Adoption

As cited earlier in the report, digital assets are evolving beyond cryptocurrency trading towards a broader financial architecture that combines tokenized assets with on-chain money such as stablecoins, bank tokens and potentially CBDCs.

Together, these elements could extend decentralized finance (DeFi) from a niche ecosystem into a complementary layer of financial infrastructure, moving beyond the crypto-native collateral.

DeFi has witnessed meaningful, albeit volatile, growth. Total value locked (TVL) peaked at around $180 billion in 2021, before falling sharply through 2022, driven by a broader crypto market correction and a series of high-profile failures across the ecosystem. TVL has since recovered, peaking at about $170 billion in 2025 and currently close to $100 billion.

The next phase of development is likely to depend less on speculative activity and more on the integration of real world and financial assets on-chain. This could help expand the collateral base, enabling use in lending, borrowing, and liquidity provision and supporting more sustainable yield.

> For end users, the value is not just efficiency, it is access to yield (e.g., lending protocols), fractional ownership and access to asset classes that were previously inaccessible for many (i.e., private assets).
>
> *Germán Soto Sanchez, Chief Product and Strategy Officer, Broadridge*

How On-Chain Models Differ from Traditional Systems

Many of the benefits associated with DeFi, such as faster settlement, improved transparency, and better collateral efficiency, are also being pursued within traditional financial market infrastructure (for example, T+1 settlement, real-time payments, and enhanced collateral mobility).

However, certain features of DeFi reflect a different operating model that can be harder to replicate within existing systems:

- **Always-on, continuous markets:** DeFi operates 24x7 without market cut-offs or settlement windows, which is particularly relevant for global collateral, FX-linked flows, and treasury operations that currently face time-zone frictions.
- **Atomic settlement (delivery versus payment by design):** Transactions can settle simultaneously and conditionally, reducing settlement risk and reliance on intermediaries.
- **Programmability at the asset and money layer:** Financial logic (for example, margin calls, coupon payments, collateral triggers) can be embedded directly into assets or transactions, shifting certain functions from operational processes to code-based execution.

The shift from static holdings to actively deployable collateral is central to DeFi's value proposition, allowing assets to generate incremental yield and support a wider range of financial strategies on-chain.

That said, DeFi is unlikely to replace traditional finance. Instead, it is more likely to evolve as part of a hybrid model, where specific functions such as collateral management, settlement, and asset servicing migrate on-chain, while origination, distribution, and regulatory oversight remain anchored in existing systems.

Tokenization as a Driver of On-Chain Finance

DeFi has been dependent on crypto-native assets thus far, which introduces volatility and potentially limits broader adoption. Tokenization could help address this by expanding both the quality and diversity of assets available on-chain.

- **Expands the on-chain asset universe** by bringing bonds, equities, funds, and deposit on-chain, introducing more stable and familiar collateral.
- **Enables on-chain settlement loops** by pairing tokenized assets with on-chain money, allowing delivery-versus-payment and collateral flows to occur natively on-chain rather than relying on off-chain reconciliation. This could improve capital efficiency by reducing settlement lags, lowering collateral buffers, and enabling more dynamic intraday liquidity management.
- **Facilitates institutional participation** by offering assets that resemble existing instruments, even if the underlying rails differ.

While applications to date remain relatively narrow and volumes modest, technical and regulatory constraints are likely to evolve.

In the U.S., the Digital Asset Market Clarity Act signals a more structured regulatory framework, including cleaner classification of digital assets and a delineation of oversight between the SEC and CFTC. While the legislation is still progressing through the Senate, it points to increasing regulatory clarity, which could support broader institutional participation over time.

At the same time, ongoing debates around stablecoin yield and on-chain incentives highlight the trade-offs between innovation and financial stability, which could shape how DeFi models evolve within regulated frameworks.

However, fragmentation across blockchains, standards and settlement assets could limit seamless interoperability, meaning adoption is likely to scale gradually.

Near-term traction will likely focus on high-quality collateral and treasury uses, where the benefits are most immediate. Over time, this could extend into broader credit markets, including areas such as securitization and structured finance.

Appendix

Global Standard Setters Perspectives on Tokenization

Global standard-setting bodies have increasingly focused on tokenization as part of the next phase of market structure evolution. Their work reflects a growing need to develop a shared understanding of how tokenized markets function, where current adoption stands, and what risks and constraints could shape future scale. While perspectives differ in emphasis, there is broad alignment that tokenization remains at an early stage, with outcomes dependent on how infrastructure, regulation, and settlement frameworks evolve.

The Financial Stability Board (FSB) focuses on the financial stability implications of tokenization. It defines tokenization as the use of new technologies, such as DLT, to issue or represent assets in digital form as tokens. These tokens may represent existing assets or entirely new assets that represent a claim on the issuer.

The FSB's work in this area remains at an early stage. In its 2024 report, it notes that tokenization is currently small in scale and does not pose material risks to global financial stability.[35] However, it highlights the potential for such risks to emerge if adoption accelerates. Accordingly, the FSB emphasizes the need for close monitoring by national authorities, standard-setting bodies, and the FSB itself as the market develops.

The International Organization of Securities Commissions (IOSCO) focuses on current market developments.[36] It notes that activity remains concentrated in a small number of uses and jurisdictions, with efficiency and transparency benefits not yet realised at scale. The report highlights fragmentation across platforms, lack of interoperability, and the absence of widely used on-chain settlement assets. It also emphasizes that risks are largely consistent with traditional markets, but arise in new forms, particularly around legal certainty, operational resilience, and investor protection.

The Bank for International Settlements (BIS) takes a system-level view.[37] It describes tokenization as the next logical progression in the evolution of the monetary and financial system, integrating messaging, reconciliation and settlement into a single, seamless operation. A tokenized unified ledger combining central bank reserves, commercial bank money and government bonds could support this shift. At the same time, tokenized systems must preserve the core principles of singleness, elasticity and integrity that underpin sound money and financial stability.

The International Monetary Fund (IMF) frames tokenization as a structural shift in financial architecture, rather than a marginal efficiency improvement.[38] Programmable assets and shared ledgers can enable faster settlement, improved liquidity management, and automation. However, these benefits depend on public trust supported by clear policy frameworks, legal certainty, safe settlement assets, and strong governance. Without these, tokenization risks amplifying financial instability through speed, concentration, and fragmentation.

The trajectory is clear, but the path to scale remains conditional. Across IOSCO, BIS and IMF, a consistent set of constraints emerges – interoperability, legal certainty, and settlement design. Without progress on these, adoption is likely to remain uneven, with benefits realized only in pockets rather than system-wide.

Tokenization Standards and Interoperability

As tokenization markets evolve, technical standards a becoming increasingly important in enabling interoperability, compliance, and scalability across platforms and asset classes. These standards define how digital assets are issued, transferred, settled and governed across different blockchain and distributed ledger environments.

In blockchain ecosystems, standards such as ERC-20 and ERC-721 established common frameworks for fungible and non-fungible tokens on Ethereum networks. Most recent standards, including ERC-1400 and related security token frameworks, seek to support regulated financial assets by incorporating features such as transfer restrictions, identity verification, investor permissions, and compliance controls.

Standardization efforts are also emerging beyond blockchain-native markets. In payments, the PCI Security Standards Council (PCI SSC) has developed tokenization guidelines for replacing sensitive payment card data with tokens to improve security and reduce fraud risks.

Over time, greater standardization could help reduce fragmentation across tokenized ecosystems, improve interoperability between platforms and settlement assets, and support broader institutional adoption. However, standards remain at an early stage of development, with multiple frameworks competing across jurisdictions, networks, and use cases.

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Endnotes

1 Citi Institute calculated three scenarios for this report. See Figure 5 p19

2 See Figure 5 of this report (p19). 30% of the total US Public Equities Market is retail and we assume 10% of this retail market to be tokenized by 2030, leading to a figure of $2.6 trillion

3 A simultaneous and instantaneous exchange of assets where there is no lag between the agreement to trade and ownership exchange

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IMPORTANT DISCLOSURES

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