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Tokenization: Revolutionizing Finance in the Digital Age

By

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Executive Summary

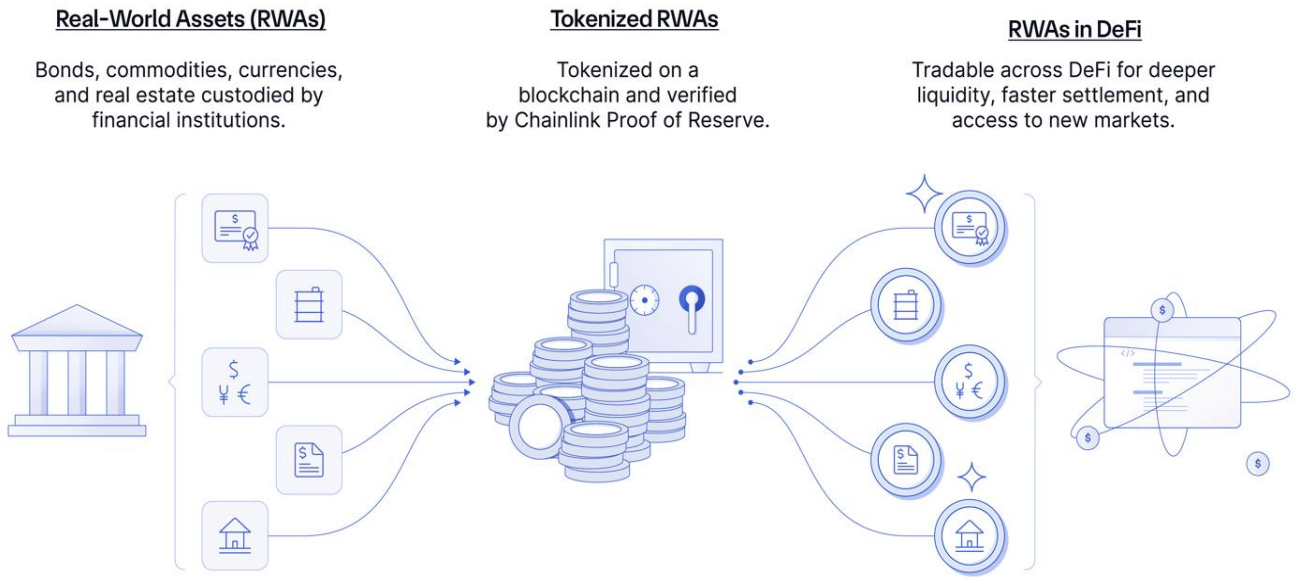
- Tokenization is rapidly shifting from proof-of-concept to live market infrastructure. Stablecoins began the shift by turning dollars into 24/7 settlement cash; tokenized money market funds have followed, growing 5× in 2024 as BlackRock, Ondo and Fidelity moved billions of on-chain dollars into Treasury bill backed tokens.
- Sovereigns are next: Slovenia has issued a euro-area digital bond, the UK and Thailand are preparing digital gilts, and Brazil and Colombia are piloting wholesale CBDCs that settle tokenized assets in central bank money.
- Market utilities are catching up – DTCC's AppChain, Broadridge/Fnality's real- time DvP and JPMorgan's Kinexys all aim to mobilise collateral and liquidity across chains.
- Forecasts vary from low- to high- trillion-dollar totals by 2030, yet the direction is clear: where tokenization delivers instant settlement, round-the-clock access and new yield channels, capital follows.
- The remaining hurdles – legal finality, secondary market depth and mainstream distribution – are logistical, not technological, and are now being addressed by regulators and large incumbents.

"I believe the next generation of markets, the next generation of securities, will be tokenization."

Larry Fink, CEO, BlackRock

December 1, 2022

Key Picture: Asset Tokenization on a Blockchain Network



Source: Chainlink.

1. What Is Tokenization?

Tokenization refers to *the process of converting the rights associated with an asset into a digital token on a blockchain or a comparable Distributed Ledger Technology* (DLT). Each token confers fractional or whole ownership of that asset, which may be physical – such as real estate or precious metals – or intangible, including intellectual property rights or loyalty points. By employing digital tokens, tokenization substantially streamlines the representation and transfer of value. Instead of managing paper certificates, navigating intermediation, or contending with multiple jurisdictional constraints, market participants rely on a single, verifiable on-chain record for establishing ownership and facilitating transactions.

Tokenization is best understood as the digital issuance of shares in virtually any asset, extending far beyond the publicly listed equities that dominate traditional markets. In practice, a building, a painting or a supply chain invoice can each be converted into cryptographically secure tokens recorded on a DLT platform. Those tokens circulate globally: they can be bought, sold or pledged as collateral with the same ease that conventional securities trade on electronic exchanges.

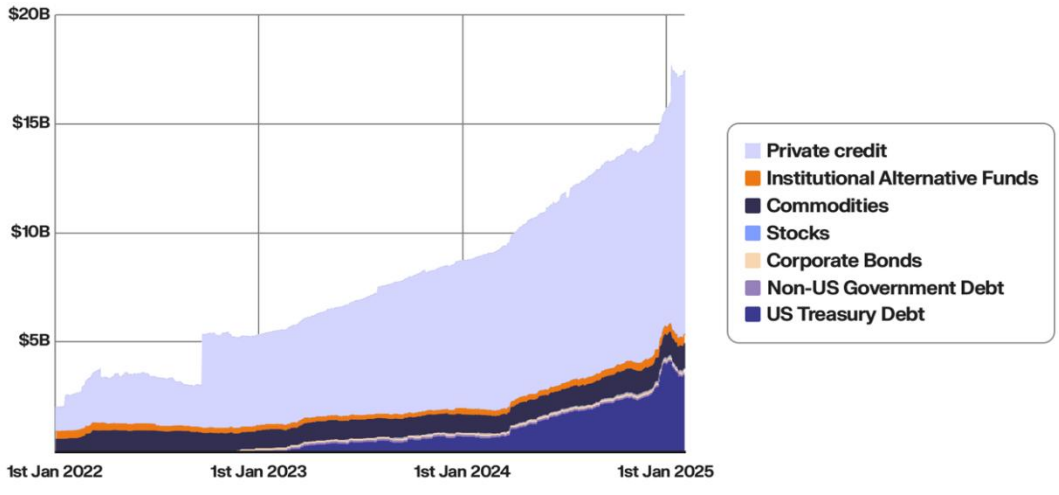
Crucially, the issuer decides how many tokens to mint against a given asset. One approach mirrors the legacy model, creating a one-to-one correspondence between a single security and a single to- ken. More often, however, the asset is subdivided into hundreds or thousands of units, establishing a one-to-many relationship that lets investors purchase fractions far smaller than the minimum lot size [1]. This fractionalisation has immediate commercial consequences. High-value instruments – commercial real estate interests, fine art, large-ticket private credit notes – become affordable to a wider set of buyers, expanding the potential investor base and, by extension, the pool of secondary market liquidity [2].

Tokenization is characterised by:

- Instantaneous settlement, eliminating costly delays in bond and equity transactions.
- Full transparency, where every beneficial owner and seller is recorded on a distributed ledger.
- More efficient market structures, reducing reliance on intermediaries and cutting costs.

The effect is a leaner market structure with lower frictional costs, faster capital recycling and, at scale, broader macro-level benefits: small and mid-sized enterprises gain cheaper access to capital markets, and retail savers can hold slivers of assets that once required institutional chequebooks. While much of this remains aspirational, the trend has already gained significant momentum. Stablecoins have exploded into a $230+ billion market, effectively functioning as digital dollars.

Figure 1: Growth of Real-World Asset Tokenization (TVL).



Source: Keyrock.

Beyond stablecoins, on-chain real world asset (RWA) value grew ~ 85% year-on-year in 2024 to reach $15.2 billion, spanning private debt, commodities, real estate, and bonds. Notably, tokenized U.S. Treasury products more than doubled from $1 billion to $2 billion in just five months in 2024 and surged past $4 billion by early 2025, driven by investors seeking on-chain yields from government debt [3] (see Fig. 1).

Tokenization's recent acceleration is driven by its capacity to turn almost any real-world asset – tangible or intangible – into a fast-settling, tradeable token that can be embedded in new DeFi products. Platforms such as Circle (advancing stablecoin infrastructure through its USDC), Centrifuge (leading institutional-grade tokenization for financial assets) and Figure (a major HELOC provider using blockchain to streamline lending) illustrate how both traditional finance and DeFi- native firms are now converging on the same opportunity. As DeFi infrastructure has matured, investors are shifting from zero-yield stablecoins and high-volatility crypto toward tokenized real-world assets, boosting demand for these initiatives. The model also delivers finer risk management: fractional tokens let portfolios distribute exposure across sectors, regions and custodians, enabling dynamic hedging and real-time collateral optimisation that were difficult to achieve with legacy structures [4].

1.1 The Driving Forces Behind Tokenization

When analysing the rapid ascent of tokenization, it is useful to pinpoint the main factors driving its increasing use. The following highlights the technological, market-driven, and regulatory elements that are influencing its course in international markets:

- **Blockchain Technology**
  Before the advent of blockchain, attempts to digitize ownership relied heavily on trust and the oversight of central registries. In contrast, a distributed ledger system affords several distinct advantages:
  - Immutable Records: Once ownership transfers, it is tracked permanently and cannot be arbitrarily altered.
  - Transparency: Because the ledger remains open for verification, the need for extensive audit processes is substantially reduced.
  - Programmability: Smart contracts execute rules automatically (e.g., dividend payments, interest payouts), dramatically reducing paperwork.
- **Investor Demand for Access and Liquidity**
  Historically, high-value assets such as prime real estate or private equity funds have remained accessible to only a narrow subset of investors.
  By enabling micro-ownership stakes, tokenization effectively lowers entry barriers, democratizing investment opportunities and enhancing market liquidity.
- **Cost Efficiency**
  Removing layers of intermediaries (e.g. brokers, clearing houses) potentially lowers operational costs, transaction fees, and settlement times. Tokenization can compress the value chain from days or weeks to minutes or even seconds.
- **Regulatory Shifts**
  A growing number of financial authorities worldwide are exploring frameworks for tokenizing traditional securities and other asset classes. The emergence of Security Token Offering (STO) guidelines provides both institutions and individual investors with a regulated avenue for capitalizing on the benefits of tokenization.

The Global Financial Markets Association (GFMA) released a report about the transformative potential of DLT for capital markets [5]. According to its findings, the implementation of DLT at scale could unlock cost-saving and efficiency benefits – potentially around $20 billion annually in global clearing and settlement – while also

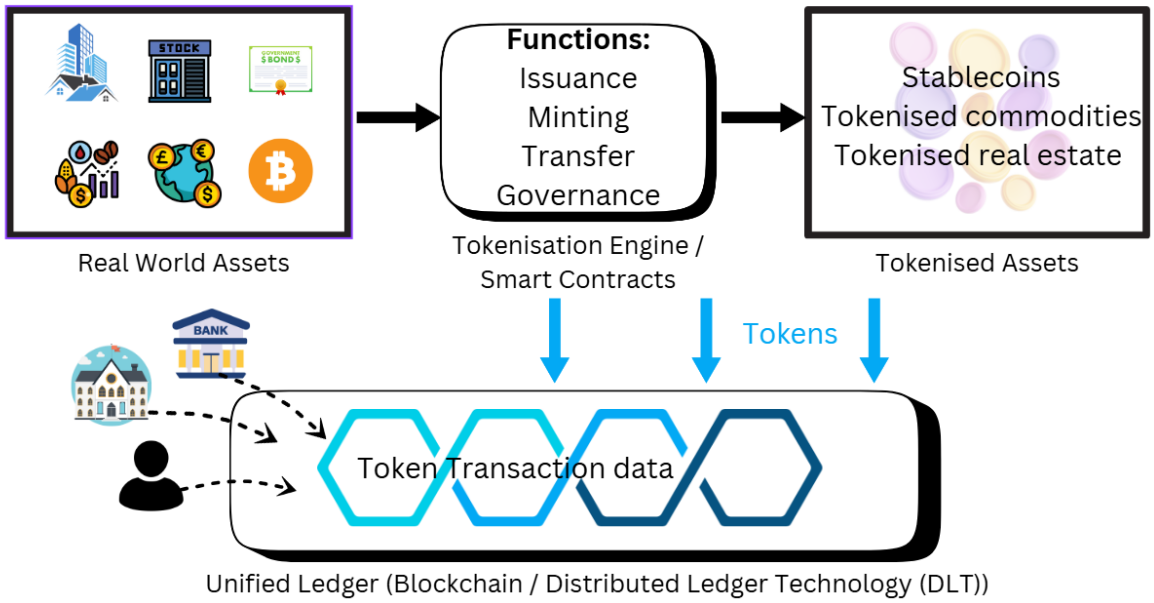
fostering innovation-led growth, wider market access, and new liquidity pools. Despite the potential benefits, several hurdles must be overcome in the meantime. Existing legal and regulatory frameworks require modernization to accommodate and integrate tokenized assets, a process that often lags behind technological progress. An additional complication arises in bridging traditional finance with tokenized assets, as many current market infrastructures and protocols are not immediately compatible with DLT.

1.2 How Tokenization Works

Despite its potential, the path to tokenization widespread adoption is obstructed by unresolved regulatory questions and technical issues, reflecting the transitional state of the digital economy. However, the principle behind tokenization remains: real world assets can be rendered into se- cure digital tokens that simplify acquisition, liquidation, and the broader storage of value. This shift holds the promise of rendering alternative investments more liquid, cost-effective, and widely accessible, provided the associated hurdles are carefully navigated.

From a technical standpoint, tokenization starts by identifying and structuring the asset to be digitized (see Fig. 2). Legal and regulatory analyses follow to ensure that the rights of ownership can be validly represented on a blockchain. Once these foundational aspects are confirmed, a smart contract is created on a suitable blockchain (commonly following standards like Ethereum's ERC- 20 or more specialized protocols). This smart contract encodes important details about ownership, transferability, and compliance, effectively acting as the rules engine that governs the tokenized asset. After the contract's deployment, the tokens – each representing a fractional share of the underlying asset – are issued (or "minted"). Minted tokens can either be fungible (interchangeable and divisible, like securities, cash, or commodities) or non-fungible (unique and indivisible, like real estate, fine art, and other non-financial assets).

Figure 2. Tokenization Creates A Digital Representation Of A Real-World Asset On A Blockchain Network



Source: Tokeny.

Depending on the legal framework, these tokens may be sold via a primary issuance platform, private placement, or regulated crowdfunding, subject to local securities laws. Once issued, the tokens are managed and traded on the blockchain. The smart contract automates critical lifecycle events such as dividend or interest distribution, voting rights, or redemption options if the token is structured around a project with a defined timeline. This reduces manual processes and minimizes reliance on intermediaries. Thus, while the underlying asset remains

tangible or contractual in the real world, its tokenized representation harnesses the efficiency, security, and transparency features of blockchain technology to streamline every aspect of ownership and transfer.

2. Tokenization as a Game Changer for Finance

Tokenization has shifted, in few years, from conference talking point to an operating priority for policy-makers and market leaders alike. At the World Economic Forum's 2024 Annual Meeting, delegates debated how everything from real estate to trade receivables might be recorded directly on distributed ledgers [6]; the Forum's follow-up study (24 March 2025) gave the debate numbers, estimating that a shared ledger market could provide round-the-clock asset mobility, near-instant delivery-versus-payment and collateral savings of up to $15–20 billion a year [7, 8].

The commercial appeal is straightforward. Virtually every asset class still sits on decades-old, siloed infrastructure – separate systems for custody, payments and corporate actions – which makes it difficult for treasurers and regulators to establish, in real time, who owns what. Moving the asset itself onto a single ledger collapses those silos, creates a consolidated risk picture and allows smart contracts to automate settlement, income distribution and compliance checks. Industry modelling suggests that in collateral markets alone, a tokenized workflow could unlock more than $100 billion a year by freeing securities that are currently trapped in T+2 settlement buffers [9]. Out of roughly $255 trillion in marketable securities worldwide, only $28.6 trillion is actively mobilised as collateral; even a small incremental share would transform liquidity and pricing.

The mechanics are already visible. When rights to an office block, an equity stake or a pool of receivables are tokenized, minimum lot sizes collapse and fractional interests become tradeable to smaller investors, broadening the buyer base and diversifying funding sources.

Because blockchains operate continuously, those tokens can change hands at any hour, eliminating the batch-based clearing cycles that dominate traditional post-trade. Finality in minutes trims counterparty exposure and releases margin that would otherwise sit idle for two days. Once logic for coupons, dividends or transfer restrictions is embedded directly in code, the instrument effectively services itself.

This is no longer speculative. Banks, asset managers and even sovereign issuers have begun to replace paper-based workflows with on-chain processes. Companies can now issue fully regulated security tokens that confer the same legal rights as conventional shares but circulate entirely on ledger, benefiting from real-time corporate-action processing and secondary trading. Central bank and commercial bank money are likewise being tokenized, enabling atomic settlement against tokenized bonds and equities.

Market size projections capture the scale of the shift. By the end of 2022, $310 billion in securities – listed and unlisted equity, fixed income and structured notes – had already been issued on distributed ledger rails [5]. Conservative forecasts estimate a total market value of $16 trillion by 2030; optimistic scenarios reach $68 trillion, implying a compound annual growth rate above 60% [5]. For comparison, the combined assets under custody of the eleven largest global custodians grew just 5.7% annually between 2010 and 2018.

Institutional tokenization gained decisive momentum over the past year. The clearest signal came from Washington, where the U.S. Commodity Futures Trading Commission (CFTC) formally unveiled its Digital Asset Markets Pilot Programme, inviting a select group of crypto-asset companies – rather than traditional clearing banks – to examine the use of fully reserved stablecoins as permissible collateral in U.S. futures and swaps markets [10]. Within days, Senator Bill Hagerty introduced the bipartisan Stablecoin Innovation and Protection Act, a new federal legislation that would formalise a regulatory framework for these instruments. Together, the draft legislation and the CFTC's Digital Asset Markets Pilot Programme give dollar backed tokens a realistic pathway into the $300 trillion U.S. futures and swaps market, embedding them in the very plumbing of systemic liquidity. Sceptics note, however, that regulation alone does not create order flow. As BlackRock's Chief Investment Officer for ETF and Index Investments Samantha Cohen observes, neither an ETF wrapper nor a token

"magically creates volume and liquidity". Demand must exist – or be cultivated – before any technology can unlock its benefits. Some asset classes will attract users immediately; others are likely to languish until the market infrastructure and investor familiarity mature [11]. In every case, adoption depends on whether tokenization reduces issuance or distribution costs and delivers incremental value to the end-investor.

Two use cases already demonstrate how quickly tokenization can translate into scale and eco- nomic relevance.

- The first is tokenized cash equivalents, the stablecoins. Born with Tether's launch in 2015, the sector has grown into a market capitalisation of roughly $200 billion; Tether itself now holds about $140 billion in reserve assets, making it one of the most profitable financial entities in the world, while Circle's USDC dominates dollar liquidity across Ethereum-based DeFi. For users outside the United States, both tokens deliver 24-hour access to U.S dollar purchasing cross-border transfers at costs well below those charged by traditional correspondent banks and remittance firms. These policy moves arrive at a time when stablecoins already support more than $10 billion in average daily settlement volume – surpassing Western Union's global remittance flows on several days in January and February – and facilitate capital movement across more than 190 sovereign jurisdictions. If either the Hagerty bill or the CFTC collateral framework becomes operational, the demand for tokenized cash equivalents could expand well beyond the current $200 billion market capitalisation, accelerating their transition from niche settlement rail to systemic liquidity instrument.

- The second success story centres on tokenized money market funds. Money market funds (MMFs) occupy a specific niche in the financial system: they allow investors to park cash in high-quality, short-maturity instruments – typically Treasury bills, repos and other AAA assets – while earning a yield that tracks overnight money market rates.

  As the UK Financial Conduct Authority notes, "MMFs are considered to be low-risk investments that give investors a way to diversify credit risk and a place to hold their assets, while aiming to yield a return in line with short-term money market rates. MMFs are an important cash manage- ment vehicle for investors to manage short-term liquidity and meet margin calls" [12]. Large corporates prefer MMFs to bank deposits precisely because the funds are bankruptcy-remote; the failure of several U.S. regional banks in 2023 illustrated that deposits, however insured, leave cash exposed to a single institution's balance sheet risk. Being a vehicle of high-quality yield to holders, MMFs often hold many high-quality liquid assets (HQLA) as the underlying securities, e.g. U.S. Treasuries. HQLAs in turn are often used as collateral in trading Repos or Swaps due to these HQLAs' market liquidity and depth.

- Thus, their portfolios, packed with HQLA, already play a pivotal role. Tokenizing MMF shares supercharges that role by by adding three distinct forms of capital efficiency [13]. First, instant on-chain settlement compresses a multi-day reconciliation process into seconds, freeing cash the moment units are redeemed. Second, a ledger that never closes extends a treasurer's working day from eight hours to twenty-four, allowing liquidity to be raised or parked at any moment, across any time zone. Third, because tokens settle in real time, the same units can be posted, returned and reposted as collateral within one business day: true intraday optimisation that legacy post-trade architecture simply cannot deliver.

The commercial response has been swift. Ondo Finance opened the category in 2023; two years on, tokenized MMF assets exceed $3.6 billion. BlackRock, Hashnote, Franklin Templeton, Fidelity and Hamilton Lane have since launched competing products, and the industry reached an AUM milestone in 22 months that had taken the stablecoin market 59 months (nearly five years) to replicate. The appeal is straightforward: holders of large stablecoin balances can obtain Treasury exposure without the friction of off-ramping into the banking system or opening a brokerage account. Added benefits include the ability to combine these tokens with decentralised finance protocols to generate additional yield, to settle repo transactions intraday rather than on a T+1 basis,

and to mint or redeem positions on demand. On March 2025 Fidelity Investments has joined the race. The $5 trillion asset management firm filed with the U.S. SEC to add an "OnChain" share class to its Fidelity Treasury Digital Fund (FYHXX), using Ethereum as the initial transfer-agent rail and reserving the right to expand to other blockchains once the product receives approval, expected by 30 May. The move lifts the competitive field in tokenized MMFs to five heavyweight sponsors: BlackRock (about $1.47 billion in AUM after a 128% jump in March), Ondo Finance ($987 million), Hashnote ($769 million), Franklin Templeton ($690 million) and now Fidelity. Collectively, these vehicles have driven the tokenized Treasury market to almost $5 billion – about a six-fold jump in twelve months – and turned MMF tokens into the fastest-growing asset class on-chain: sector assets rose roughly 500% in 2024, the holder base expanded nine-fold, more than 100 new venues integrated the tokens, and overall MMF AUM is now more than 5, 000% higher than in 2023 [14, 15].

The collateral question now takes centre stage. The U.S. CFTC has proposed recognising tokenized MMF units as eligible margin for the $300 trillion OTC derivatives market – an invitation no major asset manager can ignore. To function as high-quality collateral, however, these tokens must trade in deep, liquid secondary markets. At present, more than 12, 000 wallets hold MMF tokens, yet fewer than fifty control blocks larger than $10 million, and only a handful have the balance sheet capacity to make markets. Broad institutional participation would supply the depth needed for cash-like fungibility; once that liquidity materialises, the tokens' native composability will do the rest. A MMF token that settles instantly, pays the risk-free rate and can be rehypothecated across lending, repo and derivatives platforms is positioned to displace both bank deposits and non-yielding stablecoins as the foundational asset of on-chain finance [15].

3. Global Tokenization Landscape

- **2021** – The Hong Kong Monetary Authority (HKMA) launches Project Evergreen, an initiative to test DLT for bond issuance in collaboration with the BIS Innovation Hub Hong Kong Centre, laying the groundwork for later real-money transactions [16].
- **April 2021** – The asset manager Franklin Templeton initiates a tokenized counterpart to its $5 billion U.S. Treasury money market fund (FMFXX). The first of its kind, the Franklin OnChain U.S. Government Money Fund (FOBXX), was launched on the Stellar network [17].
- **May 2022** - The Monetary Authority of Singapore (MAS) unveils Project Guardian, a multi- year initiative to test institutional use cases for asset tokenization and DeFi. The first live trade, executed in partnership with DBS Bank Ltd., JP Morgan and Marketnode, replicates secured lending on a public blockchain while adhering to existing regulatory safeguards [18].
- **January 2023** – The European Investment Bank issues a £50 million digital bond – its first in pound sterling – on HSBC's Orion tokenization platform. All post-trade events, from primary distribution to secondary settlement and coupon payment, are executed on-chain [19].
- **February 2023** – HKMA completes the world's first tokenized government green bond, demonstrating that Hong Kong's legal and regulatory framework can support the full lifecycle of a tokenized sovereign offering [16].
- **November 2023** - MAS adds five new pilots covering tokenized MMFs, repo, multi-currency FX, Treasury management and alternative asset portfolios. Citi, T. Rowe Price, Fidelity International, BNY Mellon and Ant Group join the consortium [20].
- **January 2024** – Franklin Templeton's tokenized U.S. Government Money Fund (FOBXX) has a rapid growth, reaching $511.8 million in assets under management as of 31 January 2024, and trading natively on six separate blockchains. The fund started 2023 with less than $100 million and had climbed to roughly $310 million by the end of September: its assets have more than quintupled in a single year [17].

- **February 2024** – HKMA follows with the world's first multicurrency digital bond, issuing the equivalent of HK$6 billion across HKD, RMB, USD and EUR; investors span asset managers, banks, insurers and non-financial corporates [21].
- **March 2024** - BlackRock takes its first step into real world asset tokenization, filing with the U.S. Securities and Exchange Commission to register the BlackRock USD Institutional Digital Liquidity Fund (BUIDL), that tokenizes cash and U.S. Treasury bills on the Ethereum network. The vehicle will be issued and serviced in partnership with Securitize, known for structuring tokenized private credit and fund products [22].
- **March 2024** - The Consultative Group on Innovation and the Digital Economy (CGIDE) set up a technical task force to catalogue live tokenization pilots and to gauge how those projects might operate if transactions were settled directly in central bank money [23]. Two Latin American projects stand out:

  - **Central Bank of Brazil (BCB)**
    The Banco Central do Brasil has chosen an "upgrade, not ban" strategy: integrate new rails, regulate them, and let the market innovate on top. Its Drex programme treats a wholesale CBDC as digital public infrastructure. The central bank supplies the settlement and asset layers; commercial banks, payment service providers and fintechs build the protocols and user-facing applications. The first phase of the Drex pilot focused on privacy proofs, to ensure that the DLT retains confidentiality without sacrificing composability.

  - **Central Bank of Colombia (BanRep)**
    BanRep, working with the Ministry of IT & Communications, Ripple and Peersyst, is testing a wholesale CBDC (wCBDC) that lives on a permissioned DLT and settles Colombian government bonds. Commercial-bank deposits in the high-value payment system (CUD) are tokenized into CBDC, which then move atomically against tokenized securities in both primary and secondary markets. The prototype processes roughly 9,700 transactions per second, remains resilient during node outages and scales via smart contract modules.

  Both pilots align with BIS Innovation Hub's Project Agor´a, where seven central banks are co-designing a programmable platform that hosts tokenized reserves and commercial bank deposits, aiming for 24/7 cross-border payments without leaving the correspondent banking model.

- **June 2024** - Fidelity International, the world's third largest asset manager with nearly $6 trillion under management, becomes the first large European asset manager to tokenise a money market fund on JPMorgan's private, Ethereum-based Onyx Digital Assets network [24].
- **July 2024** - The Republic of Slovenia became the first EU sovereign to issue a fully digital bond. The EUR 30 million note, maturing on 25 November 2024, was settled entirely on-chain in central bank digital money, while BNP Paribas acted as global coordinator [25].
- **October 2024** – Euroclear, partnering with the World Gold Council, tests tokenized gold, gilts and Eurobonds for use in collateral management, while U.S.' Depository Trust & Clear- ing Corporation (DTCC), the European Investment Bank and the World Bank continue to build DLT based post-trade services [26].
- **October 2024** – The Bank of England signals that it is preparing for a potential retail central bank digital currency ("digital pound"). A joint consultation with HM Treasury indicates no final decision will be taken before 2025, citing privacy concerns among respondents [27]. In parallel, HM's Government outlines plans to issue "digital gilts", the UK government bond equivalent to U.S. Treasuries, on a public

permissioned blockchain [28], making the United Kingdom the first G7 issuer to commit publicly to on-chain government bonds.

- **November 2024** – The UK Financial Conduct Authority and MAS announce a joint work stream to map regulatory considerations for tokenized funds and wealth management prod- ucts under Project Guardian [29].
- **November 2024** – Goldman Sachs announces the planned spin-out of its Digital Asset Platform (DAP) infrastructure into an independent company within 12–18 months, noting that the platform has already processed more than a year of live tokenized securities, funds and bonds [30].
- **3 February 2025** - Germany takes a commanding lead in Europe's market for tokenized securities. Of the EUR 1.59 billion issued across all participating jurisdictions, German originators account for roughly EUR 850 million – about 53% of the total. The dominance is even more pronounced by deal count: more than two-thirds of the transactions logged during the trial are German, including the three largest issues – Siemens' EUR 330 million digital bond, the EUR 150 million KfW transaction and a EUR 100 million placement jointly arranged by LBBW and Berlin Hyp AG [31].
- **7 February 2025** – The U.S. Commodity Futures Trading Commission (CFTC) unveils its Digital Asset Markets Pilot Programme, inviting crypto asset CEOs (rather than traditional clearing banks) to assess fully-reserved stablecoins and tokenized money market fund shares as eligible collateral in the $300 trillion derivatives market [32].
- **13 February 2025** – Standard Chartered announced a collaboration with China Asset Management (Hong Kong) to launch the region's first tokenized retail money market fund [33].
- **19 February 2025** - Thailand's Ministry of Finance confirms that, no later than 30 Septem- ber 2025, it will offer a tokenized bond with a target size of $148 million. The bonds will be sold directly to retail investors (instead of placing it with institutional investors to upgrade its entire government debt issuance system) via a government operated platform. Finance Minister Pichai frames the initiative as a democratisation strategy: "Investors will be able to buy and sell any amount on the platform, bypassing bank counters altogether" [34].
- **20 February 2025** - The ECB unveils plans for a blockchain based payment infrastructure that will allow financial institutions to settle transactions in central bank money. The initiative parallels the Swiss National Bank's wholesale CBDC pilot, launched in December 2023 and now extended until at least 2026 [35].
- **13 March 2025** - BlackRock's tokenized money market fund (BUIDL) crosses the $1 billion mark after its assets jumped from $620 million on 28 February to $1.47 billion by 23 March – a 128% gain in three weeks, the largest single month inflow yet recorded in the on-chain MMF sector. Chainalysis shows that $560 million of the inflow came from the DeFi platform Ethena, which redirected collateral from its declining high-yield USDe product into BUIDL, while the India Covid-Crypto Relief Fund contributed a further $51 million. MakerDAO subsequently announced a planned $500 million subscription. With these movements, BUIDL now accounts for the largest share of the tokenized MMF sector, which has grown to almost $5 billion in aggregate assets [36].
- **18 March 2025** - The UK Chancellor of the Exchequer Rachel Reeves convenes fintech executives from Revolut, Wise, Stripe and Zilch to outline the testing roadmap for DIGIT (Digital Gilt Instrument and Technology), a short-dated government bond that will be issued and settled entirely on a DLT platform separate from the Debt Management Office's conventional systems. A policy paper released the same day describes DIGIT as a transferable security whose on-chain lifecycle aims to automate operational workflows, deepen secondary market liquidity and widen investor participation. The move positions the UK alongside Slovenia's 2024 digital bond [37].

- **31 March 2025** - Fidelity joins BlackRock and Franklin Templeton in the race to tokenize U.S. Treasuries. Fidelity Investments files with the Securities and Exchange Commission (SEC) to register an Ethereum-based, on-chain share class of its Fidelity Treasury Digital Fund (FYHXX). The money market fund primarily invests in cash and U.S. Treasury securities. While the on-chain share class currently uses the Ethereum network, the fund may use other public blockchain networks. It is expected to come into effect on May 30, subject to regulatory approval [38]. Fidelity is the latest financial heavyweight entering the fast-growing tokenized U.S. Treasuries space, which has grown almost 500% over the past year.
- **2 April 2025** - The Depository Trust & Clearing Corporation (DTCC) announces a new, blockchain based collateral management service built on its recently launched DTCC Ap- pChain – an industry pilot developed in collaboration with buy- and sell-side firms and market utilities [39].
- **10 April 2025** - Broadridge, an established leader in intraday repo markets, and Fnality International, recognized as a systemically important payment system for digital money, successfully execute a real-time delivery-versus-payment (DvP) transaction between tokenized collateral and digital cash. This marks one of the first operational examples of full interoperability between tokenized assets and programmable digital money. By establishing this link, Broadridge and Finality have enabled truly instantaneous, atomic settlement, unlocking real- time collateral mobility and paving the way for intraday liquidity optimization on a global scale [40].
- **14 April 2025** – JPMorgan extends its Kinexys Digital Payments network–its Ethereum-based, blockchain-enabled rails for corporate cash transfers – to include pound denominated deposit accounts. Launched in 2019 as JPM Coin and rebranded last year, Kinexys already supports U.S. dollars and euros for real-time, 24/7 transfers and foreign-exchange settlements.

  By adding sterling, the bank aims to fill a gap left by dollar-only stablecoins (a roughly $235 billion market), giving multinational clients low-cost access to on-chain pound liquidity. Institutions such as LSEG's SwapAgent and Trafigura have signed on to test the new sterling rails, which already process more than $2 billion in daily volume, up ten-fold year over year [41].

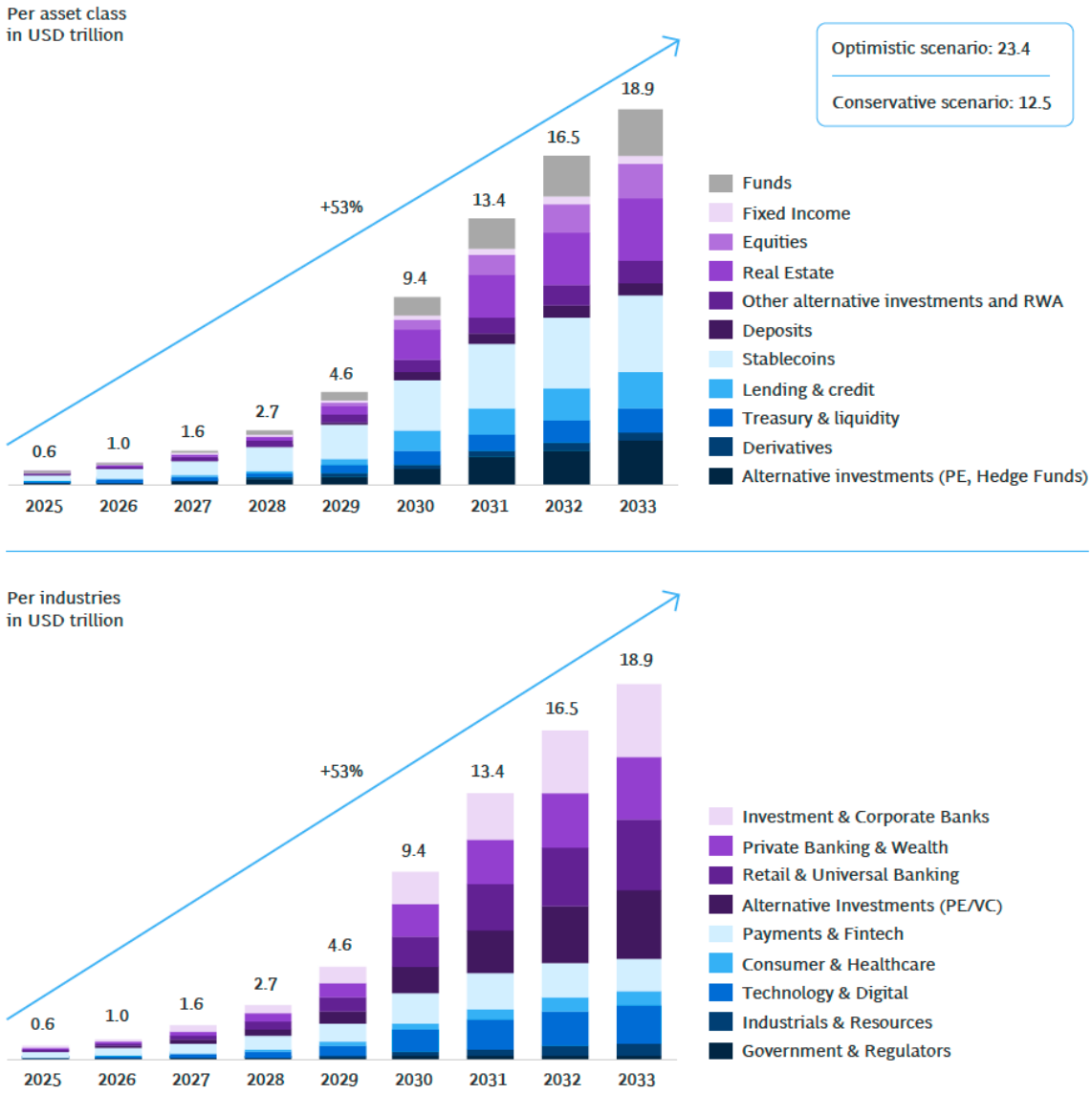
4. Market Size Projections for Asset Tokenization

Tokenization directly addresses core inefficiencies in traditional markets: settlement delays, excessive intermediation, limited access, and operational complexity. With stablecoins already circulating at $230+ billion, the foundation for this transformation is firmly established.

Market forecasts differ on absolute dollar values, yet all agree on the direction: tokenization is moving out of the margins and into the core of finance. The World Economic Forum puts a headline marker on that shift, suggesting that by 2027 as much as 10% of global GDP could be represented on public or permissioned ledgers [42]. Consulting house projections extend that curve further into the decade. McKinsey's base case points to roughly $2 trillion in tokenized real world assets by 2030, while Ernst & Young foresees markets of $14 trillion.

A study released on April 7, 2025 by Ripple and Boston Consulting Group projects that the market value of tokenized RWAs – all tokenized RWAs plus fully reserved fiat-stablecoins (USDC, USDT, etc.) and other asset-backed tokens – will expand from roughly $0.6 trillion today to $9.4 trillion by 2030 and $18.9 trillion by 2033, implying a compound annual growth rate of about 53% over the period [43] (see Fig. 3). The report outlines three stages of adoption [44]. It describes the first phase as low risk adoption, including pilots involving money market funds and corporate bonds. BlackRock's BUIDL tokenized money market fund launched in 2024 is given as an example, alongside Singapore's Project Guardian. Phase two starts to involve more complex assets such as private credit, structured finance and corporate bonds. The aim is to earn a return, enhance liquidity and enable composability, as opposed to the simpler transactions in the earlier phase. This is when institutions start to move beyond private blockchains to explore permissioned public blockchains.

Figure 3. Estimated Growth in Tokenization Through 2033.



Source: Ripple and BCG.

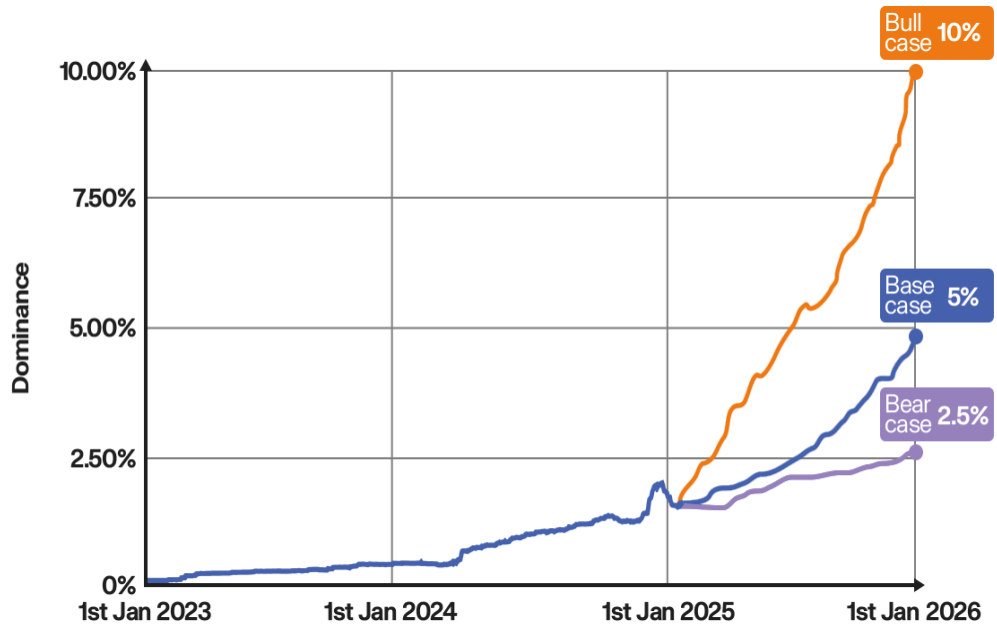
Market transformation is achieved in phase three. The tokenized asset classes expand to include private equity, hedge funds, infrastructure and real estate-backed debt. This step requires secondary markets with sufficient liquidity, as well as the willingness to accept tokenized assets as collateral.

Over the past twelve months the growth narrative has shifted decisively away from cash- substitutes toward yield- and return-bearing instruments. The value of non-stablecoin RWAs recorded on public blockchains – mainly tokenized Treasuries, MMF shares, gold, real estate, and credit pools – has risen about 85% year-on-year to $15.2 billion in 2025. On-chain data indicate that the fastest-expanding RWA categories are now tokenized U.S. Treasuries (+377%), tokenized U.S. equities (+347%) and tokenized investment funds (+82%). Stablecoin capitalisation, by contrast, has been broadly flat. The progression is intuitive: stablecoins function as a 24-hour digital current account, tokenized MMF have emerged as the on-chain equivalent of a savings account, and the next logical stop is equity exposure. Four early venues – Backed Finance, Dinari, Swarm Finance and Mass Money – now issue regulated equity tokens backed one-for-one by the underlying shares. Adoption remains in its infancy (fewer than 500 monthly active wallets across the entire segment), yet velocity is accelerating wherever tokens plug directly into DeFi.

Backed's tokenized S&P 500 ETF, for example, clears more than $24 million in monthly transfers. Distribution is still the main bottleneck, but several forthcoming launches are expected to broaden retail and institutional reach, potentially placing tokenized equities on the same steep growth trajectory that Treasuries followed in 2024 [45].

- **Tokenized U.S. Treasuries: Leading the Shift**
  The $28 trillion U.S. Treasury market, despite its critical role in global finance, still struggles with outdated T+1/T+2 settlements, costly intermediaries, and fragmented liquidity. Tokenization addresses these inefficiencies by enabling immediate settlement, reducing intermediation costs, and streamlining liquidity management. Currently, tokenized Treasuries total only $4 billion (~ 2% of the $230 billion stablecoin market), yet they doubled from $1 billion to $2 billion in just five months during 2024. Given that stablecoin holders currently forfeit approximately $8 billion annually by holding non yield-bearing tokens, tokenized Treasuries present a compelling yield-generating alternative (see Fig. 4) [4].

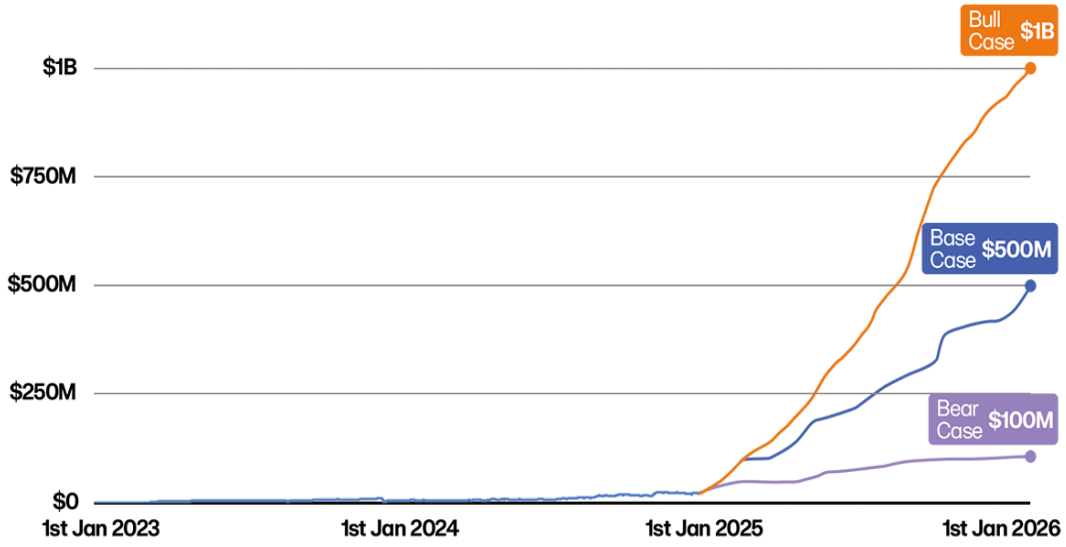
Figure 4. Forecasted Total Value Locked of Tokenized Treasury Assets (2025)



Source: Keyrock and Centrifuge

- **Tokenized Equities: Extending Capital Market Access**
  Traditional equity markets continue to suffer from structural inefficiencies such as slow T+2 settlement cycles, costly intermediaries, and limited accessibility. Putting shares on a blockchain could fix this – settlement in seconds, trading 24/7, and fewer back-office chores. Yet long-standing securities regulations – the U.S. Securities Acts of 1933 and 1934, and the EU's MiFID II and Prospectus Regulation – still require detailed disclosures, registrations and tightly controlled trading venues, which has slowed tokenization. Policymakers' growing acceptance of blockchain's efficiency gains, reinforced by expectations of a more crypto-friendly U.S. administration from 2025, makes such structures viable, though total tokenized-stock value locked is still roughly 300 times smaller than Mirror or Synthetix at their peak (see Fig. 5) [4].

Figure 5. Forecasted TVL of Tokenized Equities (2025)



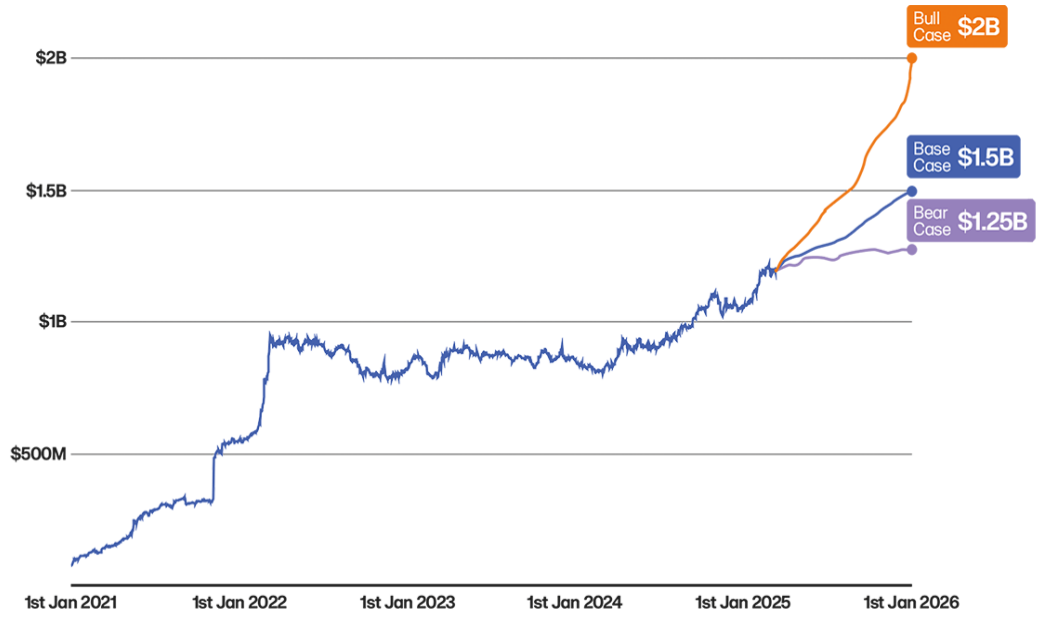
Source: Keyrock and Centrifuge

- **Tokenized Commodities: Progress and Limitations**
  Commodities markets, encompassing metals (gold, silver), energy (oil, gas), and agriculture, typically operate with less stringent regulations than equities, making tokenization more straightforward. Tokenized commodities, primarily gold tokens like PAX Gold (PAXG) and Tether Gold (XAUT), currently represent around $1.2 billion in market size. Despite regulatory simplicity and transparent ownership via audited custodians like Paxos, these products have struggled with limited liquidity and minimal DeFi adoption (~ $3 million). Moreover, oracle risks can exacerbate liquidity mismatches and market inefficiencies.
  Alternatively, synthetic commodity platforms like Ostium Labs provide leveraged, non- redeemable commodity exposure, directly catering to traders preferring speculative positions rather than physical delivery (see Fig. 6) [4].

- **Tokenized Private Credit: Unlocking Illiquid Markets**
  The $2 trillion private credit market, historically limited by illiquidity, large investment minimums ($5–10 million), and multi-year lockups, is rapidly embracing tokenization. With current tokenized private credit totalling around $12.2 billion, on-chain securitization reduces costs by up to 97%, expands investor access beyond traditional institutional minimums, and provides transparent, real-time loan performance tracking. Looking forward, clearer regulatory frameworks, growing institutional participation, and further integration with DeFi markets are expected to drive adoption. Leading platforms such as Centrifuge, Maple, and Tradable have pioneered tokenizing a wide variety of credit instruments, from institutional private loans and structured credit products to consumer mortgages and real estate-backed debt, significantly broadening on-chain use cases (see Fig. 7) [4].

Standard Chartered provides the upper bound of the market size projections, modelling $30 trillion in market capitalisation by 2034 – roughly fifteen times McKinsey's estimate [46]. SC's $30 trillion forecast rests on ambitious assumptions: a vast pool of tokenized real-world assets, a $5 trillion in tokenized trade-finance instruments, and the assumption that programmable money embedded in anchor-buyer programmes will unlock deep-tier supplier funding.

Figure 6. Forecasted TVL of Tokenized Commodities (2025)



Source: Keyrock and Centrifuge

Until liquidity, product-market fit and legal frameworks improve, the SC's upper bound estimate looks more aspirational than probable.

Whether the outcome lands at the low or high end of those scenarios, the consensus is clear: tokenization will not remain a niche technology but will absorb a meaningful share of the world's financial assets within the next decade.

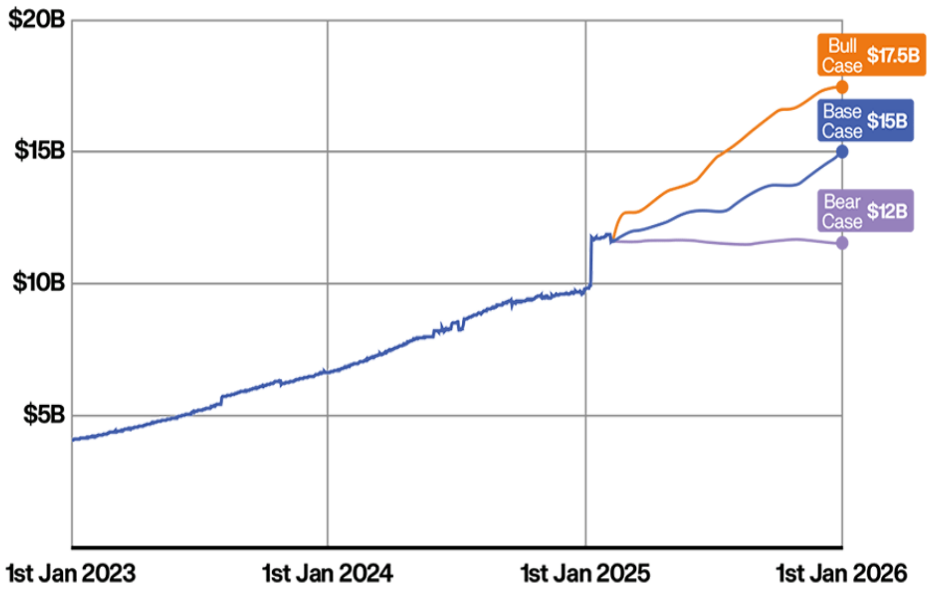
5. Challenges and Considerations

Removing friction and adding tangible utility are what ultimately move capital on-chain. For example, BlackRock's BUIDL and Ondo's USDY make the point: instant redemption turns a to- kenized MMF into a spendable savings account, and payment-app integrations let users save and spend with the same instrument. When a token behaves like cash – settling in seconds, redeemable 24/7 and accepted across venues – investors migrate quickly; when it does not, platforms fall be- hind. Regulation may open the door, but lasting adoption arrives only when a tokenized product beats its conventional twin on cost, liquidity or functionality. That bar remains high. On the crypto-native side, many firms now mirror traditional risk management practices – seeking institutional grade custody, secure settlement rails, and privacy controls that prevent order flow leakage. Data permissioning has emerged as a critical requirement: without it, large trading desks remain reluctant to scale positions because their strategies would be visible on-chain to competitors [7].

Economic realism poses another check: the projects gaining traction are those that deliver incremental operational or capital efficiencies, not wholesale rewrites of market structure [47]. Recent activity illustrates the point. When it comes to market access focused approach, the on-chain capital markets activity is a good indicator for traction. Over the last six months the market for on-chain bonds has been tiny. Only about $22 million of private-debt tokens and $100 million of public-debt tokens have been issued, and venture investors have put almost no new money into crypto-native tokenisation start-ups.
Most of the private-credit volume came from a single Maple Finance deal backed by U.S. tax refund claims – one-off business, not a repeatable model.

Public-bond platforms show the same pattern: assets have stalled or fallen. Mountain Protocol did record a $100 million jump in December 2023, but on-chain data suggest that figure was pre-arranged money chasing a temporary incentive on the Manta network, not genuine investor demand.

Figure 7. Forecasted TVL in Private Credit (2025)



Source: Keyrock and Centrifuge

By contrast, traditional institutions continue to expand quietly but steadily. In March 2024 BlackRock launched a $100 million on-chain Treasury bill fund [48]; Figure Markets, the digital asset arm of Figure Technologies, secured $60 million to build an exchange designed for collateral mobility; and Zodia Market has moved into fully collateralised on-chain lending. These initia- tives promise clear, quantifiable pay-offs – faster collateral movement, lower margin requirements, simpler post-trade processing – rather than speculative returns.

Why the gap? Three constraints hold back the crypto-native side [47]:

- The available capital is small and scattered – too little to support a deep bond market.
- Traditional investors see no reason to switch: tokenised bonds still offer thinner liquidity, uncertain regulation and no better yield.
- Issuing a fully compliant security token is expensive; the legal and tech costs often wipe out any savings. MakerDAO's experience is telling: at its peak it parked over $2 billion in off-chain Treasuries, but no mainstream manager will pay for the extra legal work to bring that exposure on-chain for what would be only a few million dollars in annual fees.

There lacks a fundamental business case for the buy-side to adopt tokenization for tokenization's sake: the immediate hurdle for tokenisation is not whether the technology works, but whether the economics add up.
Recent activity in yield-bearing cash tokens proves the point. Stablecoin balances climbed to $230+ billion, yet the vast majority earns zero interest; meanwhile, Ethena's higher-yield USDe reached a $2 billion market cap in just four months, a milestone that took stablecoin titans Tether and Circle (which together demand 90% of the market) years to hit [49].
BlackRock's launch of BUIDL crystallises that preference: the vehicle drew more than $240 million in its first week, because it combines a familiar money market risk profile with 24/7 on-chain liquidity and a risk-free yield [50].

One structural limitation remains: a blockchain entry is not yet a legally recognized record of ownership. Every tokenized security still has to pass through the existing central securities depository chain (CSD) and pay for the same custody and fund administration services as its off-chain equivalent [51].

Where tokenizition does change the economics is on the revenue side. A token that can move freely at any time gains new uses – intraday repo collateral, structured-yield building blocks – that conventional assets locked in custody accounts cannot match. The first wins come not from cutting costs, but from unlocking fresh sources of income. Until tokenized products consistently deliver those superior economics – either by generating incremental yield or by demonstrably lowering capital charges – the sector's growth will continue to depend on pragmatic, incremental wins rather than sweeping transformational leaps. The hurdle now is no longer technical; it is one of distribution, trust, and broad-based adoption [36].

6. Conclusions

The tokenization wave is no longer theoretical: U.S. regulators are weighing stablecoins as eligible derivatives collateral and new federal legislation is on the table. A user-centric framework points to three pillars – assets, protocols and underlying infrastructure – and the first of these, tokenized assets, will succeed only if they deliver clear, incremental value to end-holders: a token that offers no more utility than its off-chain equivalent has no reason to exist.

There are two asset classes that are showing traction and sustained growth in the market. Stablecoins have grown from about $150 billion to $230+ billion in the past year, and yield-bearing dollar tokens raced from zero to $2 billion in a quarter, proving that investors favour tokens that pay. In parallel, tokenized money market funds and short-dated Treasuries – pioneered by Ondo Finance and now joined by BlackRock, Franklin Templeton, Fidelity Investments and others – have climbed from zero to almost $5 billion in two years because they give on-chain treasuries the twin benefits of risk-free yield and round-the-clock liquidity [3].

These examples illustrate the adoption yardstick: control, access and portability. Users gravitate to assets they can move 24/7, deploy as collateral, and use across multiple platforms without costly off-ramps. Anything less struggles to gain traction, as Samantha Cohen, Chief Investment Officer of ETFs and Index Investments at BlackRock, has noted: "Tokenizing something or putting it in an ETP wrapper does not magically create volume and liquidity. A market needs a certain level of demand participation in order to actually unlock the benefits of that technology whether that technology is an ETP wrapper or that's tokenization" [52]. The question naturally becomes what are the next asset category to see traction onchain. Most likely candidate is U.S. public equities. If stablecoin holders are happy collecting 4% yield on short term U.S. Treasury Bills onchain, then a significant percentage of them will likely be happy to hold stocks onchain for double digits growth [52].

Until then, one lesson stands out: tokenizition gains ground when it improves capital efficiency or unlocks new use-cases, not when it merely shifts an asset from one ledger to another.

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