BLOCKDAEMON

Tokenization Data Insights by Blockdaemon

A study into current adoption trends and 2024's potential direction of travel

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Executive Summary and Disclaimer

The result of six months of proprietary research, the following report provides a quantitative and qualitative overview of current tokenization activity, including: use cases, protocol choice and token standards. The data produced suggests bond issuance and fund management are the most widely explored use cases, while Hyperledger Besu and the ERC-1404 token standard appear to have gained the most usage up to this point. Nevertheless, as with any fledgling industry, trends are open to change and we also take the opportunity to explore what we believe our findings mean for tokenization in 2024 and beyond.

Disclaimer: Blockdaemon is a global provider of institutional grade blockchain infrastructure, namely nodes, validators and wallets. Blockdaemon is blockchain protocol agnostic and any reference we make to particular protocols is meant to convey the data communicated to us through this research with no endorsement intended.

1 | Introduction

In late 2022, Bitcoin was lingering around $16,500 following the swift, and in some instances criminal, downfall of crypto on exchanges, lenders, hedge funds and stablecoins alike. Fast-forward twelve months, with a series of spot ETFs approved and dovish policy narratives continuing to proliferate, Bitcoin sits north of $40,000, an increase of over 140% that dwarfs any return seen across conventional asset classes.

However, one could argue traditional finance deserves a good portion of recognition for crypto's impressive resurrection in 2023. In addition to the macro elements described above, their growing acceptance, exploration, and even active use of blockchain technology as part of, "real world asset tokenization" strategies has served to legitimize an industry plagued by controversy for much of 2022.

Yet despite the abundance of blogs, whitepapers, and case studies detailing what these tokenization initiatives entail and the inefficiencies they alleviate, there appears to be a lack of comprehensive reports offering a holistic view of market activity. For example, what is being tokenized? Which public or private protocols are being used? And what ERC standards are most popular?

Eager to uncover this information, Blockdaemon conducted six months of proprietary research. This report presents the findings of that in-depth study, we hope readers find it useful.

2 | The Problem Statement

An overwhelming challenge when trying to understand the tokenization landscape is the splintered, and often outright hidden, nature of it. One barometer that can be used to assess the size and composition of this fledgling use case is rwa.xyz's application, which tracks the volume of tokenized US Treasuries and Private Credit on public networks, namely Ethereum, Stellar, Polygon and Solana. Figure 1 (below) illustrates 2023's growth for US Treasury products, which started the year with a Total Value Locked (TVL) of $113M before rising to $775M, an impressive 581% increase.

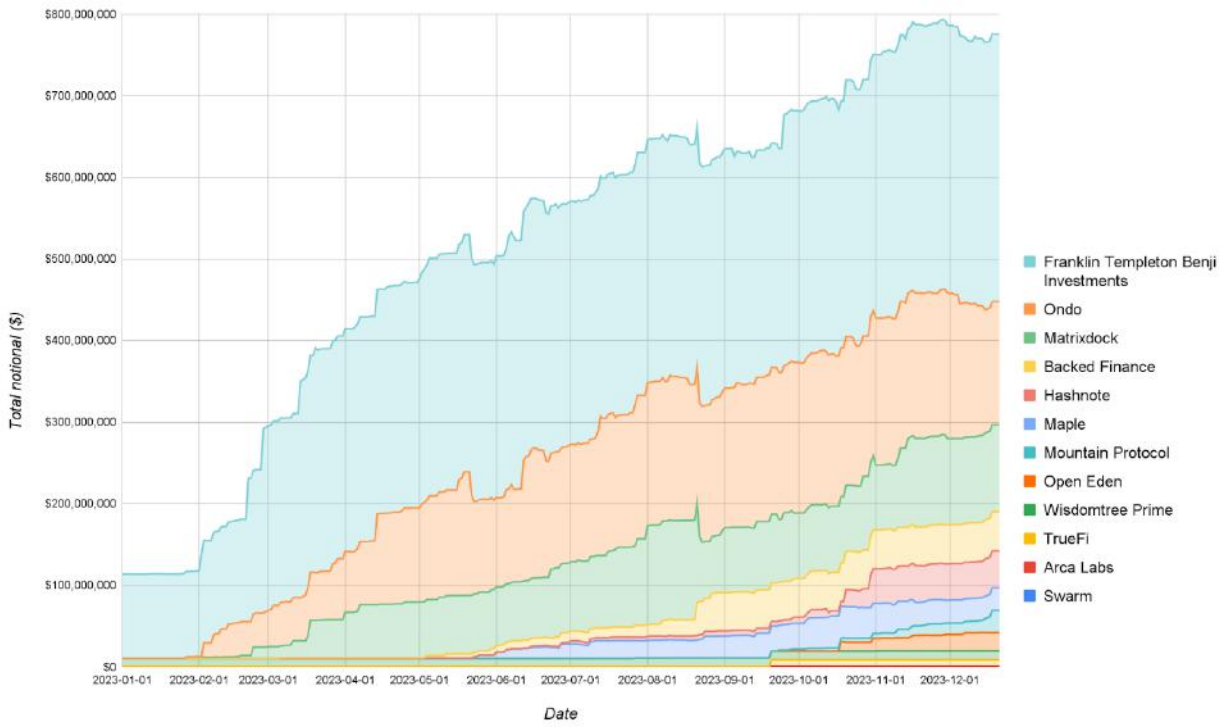

Figure 1 - Tokenized US Treasury volume on public blockchains in 2023. Source: app.rwa.xyz

This is promising and rwa.xyz's work should be applauded. Nevertheless, when you consider last October J.P. Morgan announced they were now processing over $1BN of transactions a day with JPM Coin via their Onyx network; it puts into perspective how much tokenization activity is taking place outside of public view on private, permissioned blockchains. The reality is, hundreds of millions, if not billions, of tokenized transactions are already live across bonds, money-market funds, repo, cross-border payments and real-estate, yet tracking them remains a challenge.

With this understanding, it became clear that in order to generate a more accurate image of the global tokenization ecosystem, Blockdaemon needed to find a way to look behind the "private protocol" curtain. The aim was to piece together a picture of the activity and the technology powering it. Here's how we achieved this.

3 | Methodology

Data was collected from 92 different firms, ranging from Banks to Asset Managers to Clearing Houses, using three sources:

1. 1-to-1 meetings with Blockdaemon clients and prospects
2. Conference panels and conversations (namely: SIBOS, European Blockchain Week, Money 20/20, London Digital Asset Week)
3. Internet and blockchain research

Where possible, data was collected on the following aspects of their tokenization work:

1. The protocol(s) being used
2. The ERC standard(s) being used
3. Their use cases

A full breakdown of the cohorts and data collection methods is shown in Figure 2 below.

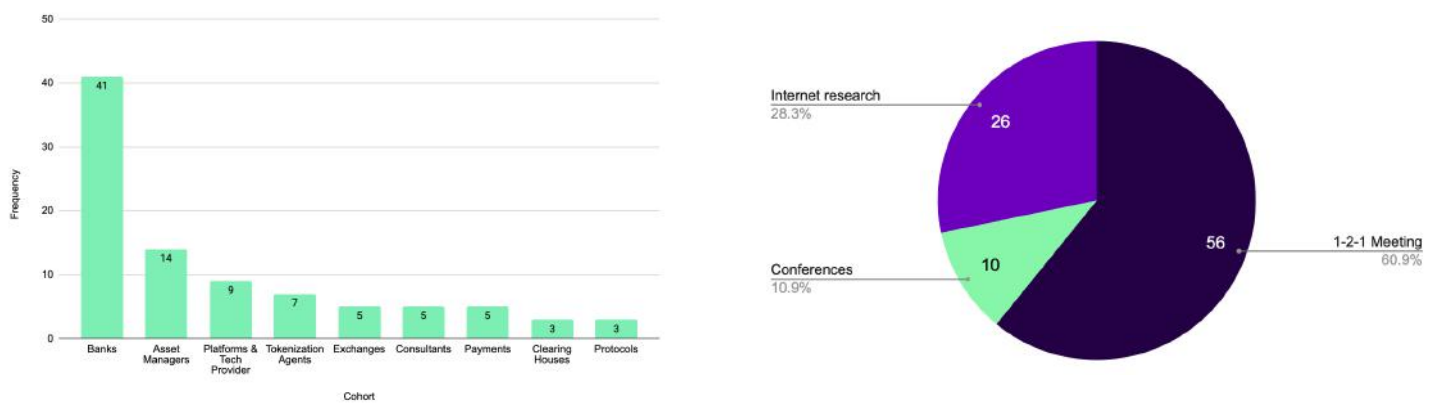

Figure 2 - Data collected broken down by cohort and collection method

Across the 92 surveyed firms, 441 'data points' were collected. This is feasible because one 'data point' equated to one mention. For example, the following statement: "we are conducting tokenized bond issuance and repo trading on Hyperledger Besu using the ERC-1404 standard", would result in the five data points being logged:

	PROTOCOL		ERC STANDARD		USE CASE
1	Hyperledger Besu	1	ERC-1404	1	Bonds
				2	Repo

4 | Results

Starting with which protocols are used for tokenization, Hyperledger Besu was the most frequently referenced, as per Figure 3 below.

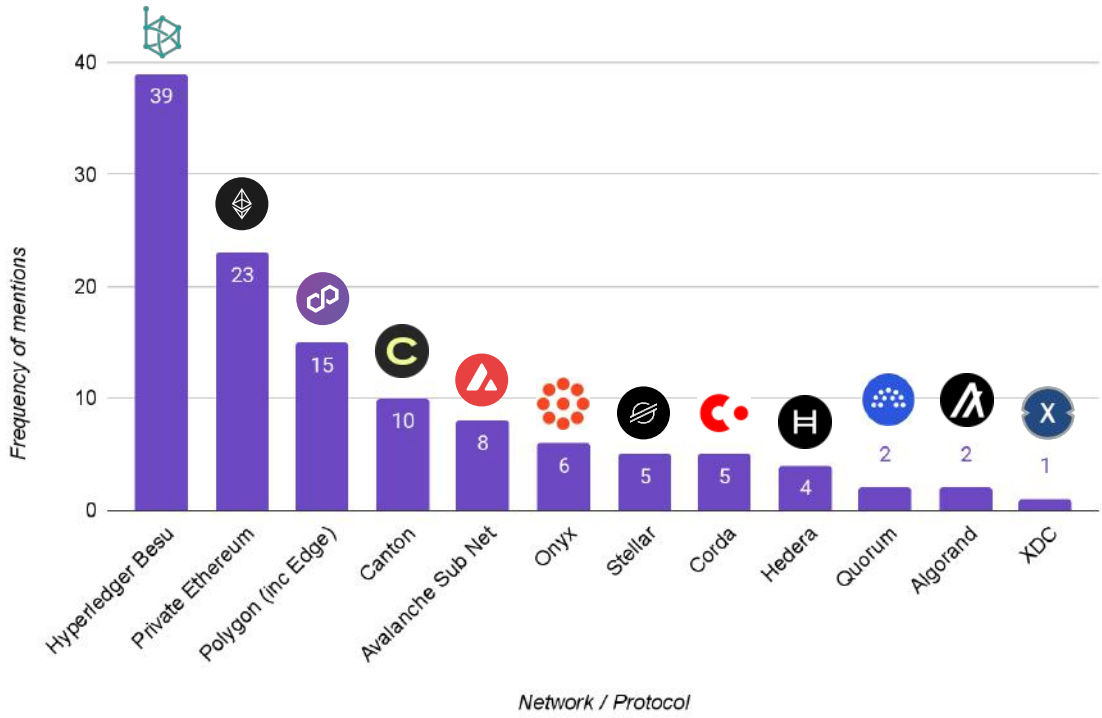

Figure 3 - Tokenization protocol leaderboard

The ERC-1404 standard was the most referenced token, ahead of the ERC-20 and ERC-3643 standards (Figure 4).

Finally, bond issuance stood out as the most common use case, followed by the tokenization of investment funds and their respective back office operations (Figure 5). Bank deposits and cross-border payments was third.

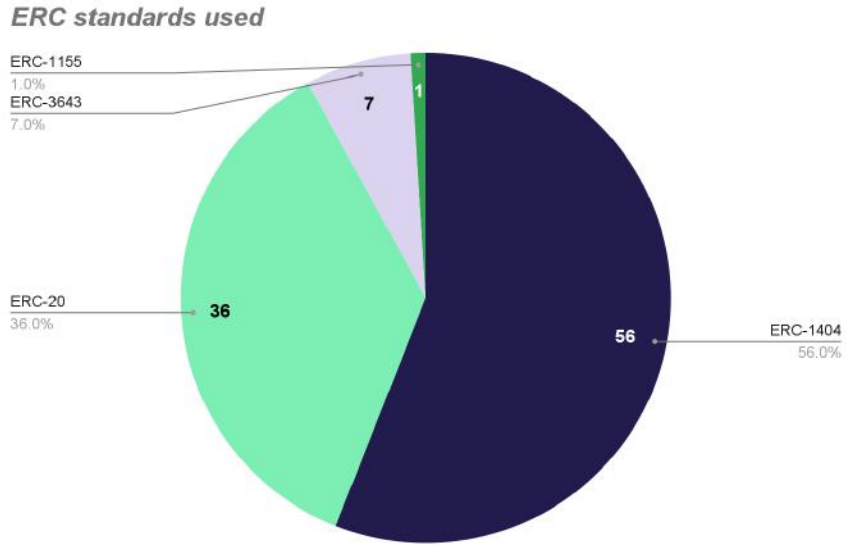

Figure 4 - ERC standard leaderboard

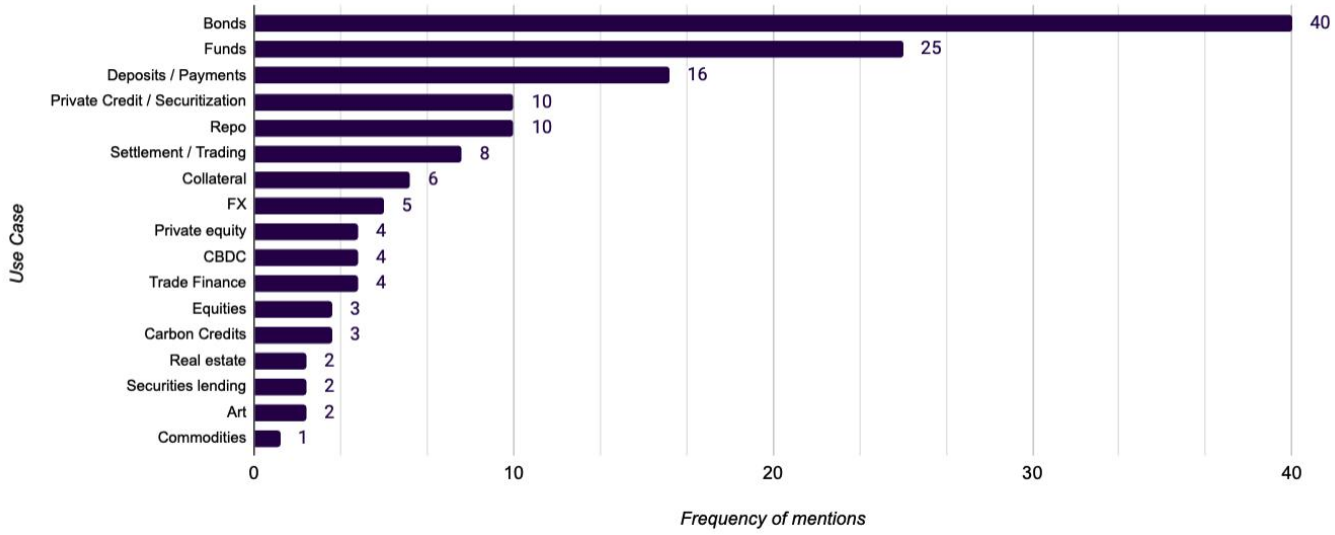

Figure 5 - Use case leaderboard

Given the private nature of these products and proof-of-concepts (PoC), a comprehensive summary of volumes was not obtainable

5 | Analysis and observations for 2024

1. Hyperledger Besu is currently leading, but fragmentation is a problem

Analysis: Competition and choice are positive forces in all markets, tokenization is no different. That being said, it is informative to see a level of critical mass starting to build around certain protocols. Most notably, this research indicates that Hyperledger Besu was mentioned by over 40% of companies. Financial products require liquidity and channels of exchange to survive. A bond issued on a blockchain is of little use if it cannot be traded or mobilized in secondary markets. Similarly, a fund is no good tokenized if it cannot be distributed to investors. To that end, the frequency at which Besu was mentioned paints a promising picture for the future growth of deep, liquid and connected marketplaces for tokenized assets.

That being said, given the relatively nascent nature of tokenization, it is equally foreboding to observe the level of fragmentation already in existence. A dozen networks and four distinct token standards were discussed over the course of data collection, not to mention private blockchain infrastructure often has specific node configurations meaning the number of unique architectures is likely far more. This all equates to a current market structure whereby, for the most part, disparate use cases function in close-looped silos with limited connectivity.

Observations for 2024: This is not to say all tokenized activity must move onto public, permissionless chains in 2024. Financial firms' regulatory, AML / KYC and reputational considerations make this currently unworkable. However, as a number of PoCs shift into production the market needs to ensure interoperability is at the heart of infrastructure planning. Solutions such as Ownera and Chainlink's 'Cross-Chain Interoperability Protocol' are growing in sophistication and should play a larger role in 2024.
The influence of large, powerful financial firms can also not be underestimated. Some key players have made investments in certain protocols, while others have created their own. As such, an undercurrent of self-development and vested interests will continue to flow in 2024 as natural competitors have to grapple with working together to ensure they dominate market share. With that understood, the potential for the order of protocols in Figure 3 (page 4) to change is a strong possibility as influential banks and asset managers attach themselves to certain networks.

2. US Treasuries at the center of key use cases

Analysis: The variety of use cases this study identifies simultaneously illustrates the immaturity and future potential of tokenization. Firms are clearly experimenting with a multitude of financial products in order to understand where this technology can unlock the most compelling changes to market structure. There is clearly a strong belief that blockchain can trigger efficiency gains and cost savings across all encountered use cases, the focus on fixed income, particularly US Treasuries, was evident.

Whether it be the tokenization of Treasury securities, Treasury Money Market Funds, Treasury repo trades or using Treasuries for collateral management, this market was at the heart of most conversations. Given its size ($26.3 trillion in outstanding) and importance this focus is hardly surprising. Large, regulated financial institutions across the world hold Treasuries as a key source of funding and regulatory capital. Therefore, any technology that presents the opportunity to reduce trading and operational costs will garner significant attention.

Moreover, as per Figure 1 (page 4), Treasuries are gaining notable attention on public blockchains too. Established asset managers like Franklin Templeton and WisdomTree are using Stellar and Etherum to offer retail investors a lost cost and low minimum investment entry into a historically inaccessible market.

Observations for 2024: With 3-month bills still yielding over 5%, coupled with the Treasury market's critical importance to financial institutions, it is reasonable to assume this year will see a continued focus on this use case, across both public and private chains.

A fundamental facet of this tokenization market that needs to progress in 2024 is the element of 'settlement' tokens. In conventional Treasury markets, transactions settle in US dollars at the Government Securities Division of the Fixed Income Clearing Corporation (FICC). However, in blockchain-based Treasury markets transactions are settled in a variety of tokens, including: USDC, Ethereum, as well as banks' proprietary stablecoins. As a result, it is currently unclear what standards govern tokenized settlement and payment rails.

There is a clear need to work towards a more unified and impartial settlement token that is able to span different chains, institutional infrastructure and, as a result, use cases. At this stage, the precise nature of this token remains an open question. A public stablecoin, such as USDC or USDT? Tokenized bank liabilities? Bank-issued private stablecoins? Or even, possibly, a Central Bank Digital Currency (CBDC)? This is a complex and politically sensitive question, it quickly gets to the heart of monetary control. Therefore, as tokenization volumes continue to rise over the next 12 months it is one that will become increasingly prevalent and with which regulators will need to actively consider.

3. Watch out for private credit

Analysis: Tokenization, and indeed blockchain more broadly, often gets labeled as a "solution looking for a problem". When it comes to private credit, that critique could not be more unfair. Small and medium-sized enterprises across the globe regularly struggle to secure fair funding rates, with companies in emerging economies often paying above 30% for loans from a local bank.
Moving private credit arrangements on-chain has the ability to: 1) grant borrowers and lenders greater choice of counterparties and deals respectively, 2) increase transparency and competition therefore reducing rates for SMEs and, 3) streamline a deal's legal and operational components.
Our data suggests the market also recognises this. "Private Credit / Securitizations" ranked as the fourth largest use case (Figure 5), while rwa.xyz's app shows that active loans on public blockchains also grew by 89% in 2023 to $485 million, and have previously seen TVL peak just above $1.5 billion back in 2022 (see Figure 6).

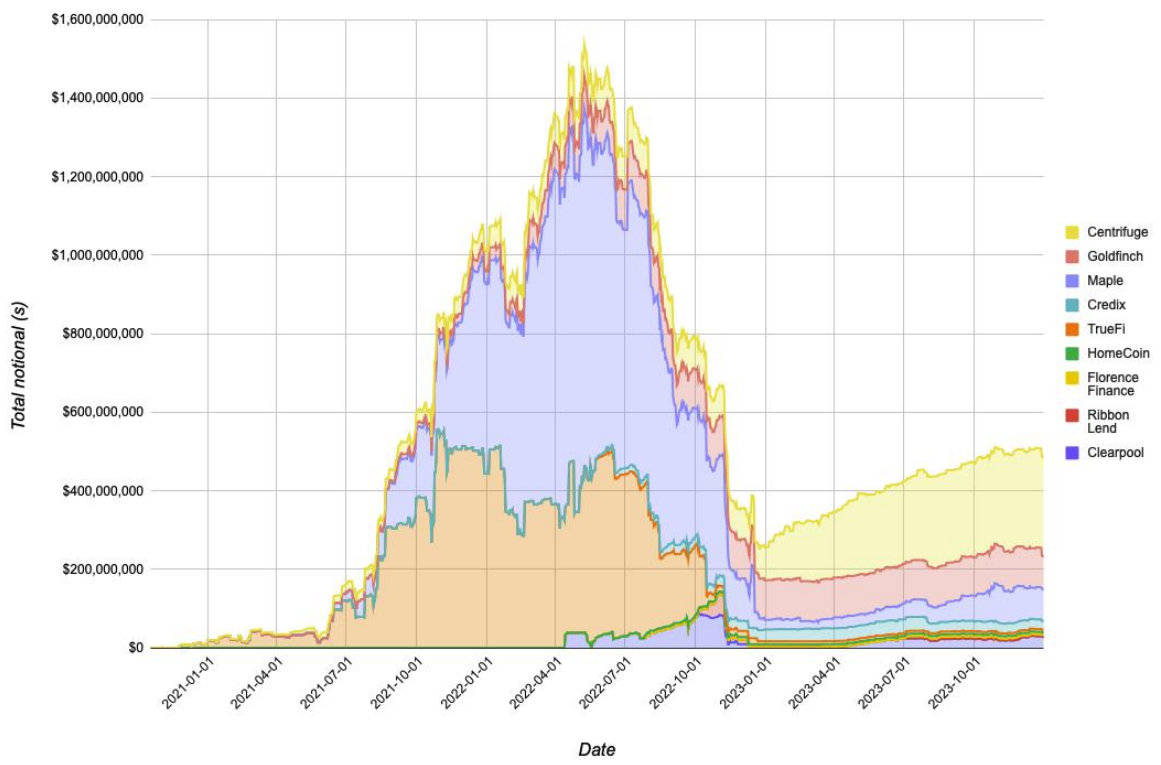

Figure 6 - Tokenized private credit. Volume of active loans from 2021 - 2023. Source: app.rwa.xyz

Observations for 2024: The traditional market for private credit has tripled in size since 2015. It currently stands at $1.6 trillion and CFTC Commissioner, Caroline Pham, has suggested it could grow to $10 trillion. Clearly this does not equate to guaranteed growth of the blockchain-based equivalent, however it illustrates the size of opportunity and potential room for expansion in 2024. With regulators and industry participants both labeling the conventional market too opaque, this year could see more impressive growth, especially in emerging markets where the value proposition is even stronger.

6 | Conclusion

From a purely empirical perspective, our research shows that tokenization projects are focusing on the fixed income and fund management industries, with Hyperledger Besu and ERC-1404 tokens the most widely adopted. However, this statement only tells part of the story.

It would be short-sighted to underestimate how long it takes for market structures to mature, as well as how they will always continue to evolve. Just because a certain protocol, token standard or use case leads the narrative today, does not mean to say the equation in 12 to 18 months will look the same. It is also pertinent to remember that, when it comes to finance, the playing field is never even. Large, reputable and well-capitalized traditional firms, not to mention regulators and governments, have a greater capacity to steer adoption and market standards. While it arguably sits in opposition to blockchain's promise of decentralization, it is conceivable to envisage a future where a handful of interoperable private chains control the lion's share of tokenized flow.

That being said, the impressive progress witnessed on public chains across US Treasuries and Private Credit illustrates the potential for innovation and growth when there is not a requirement for private, permissioned infrastructure. Arguably, these younger, more nimble companies may have a better chance of accelerating blockchain adoption across use cases, and into completely new products, even if they do not always garner the same volumes as established financial players (see Figure 7). Regardless of what view you take, the volume of banks, asset managers, exchanges, data providers, consultants and clearing houses we were able to canvas as part of this research underscores how seriously this topic is being taken by the market, and its considerable potential in 2024 and far beyond.

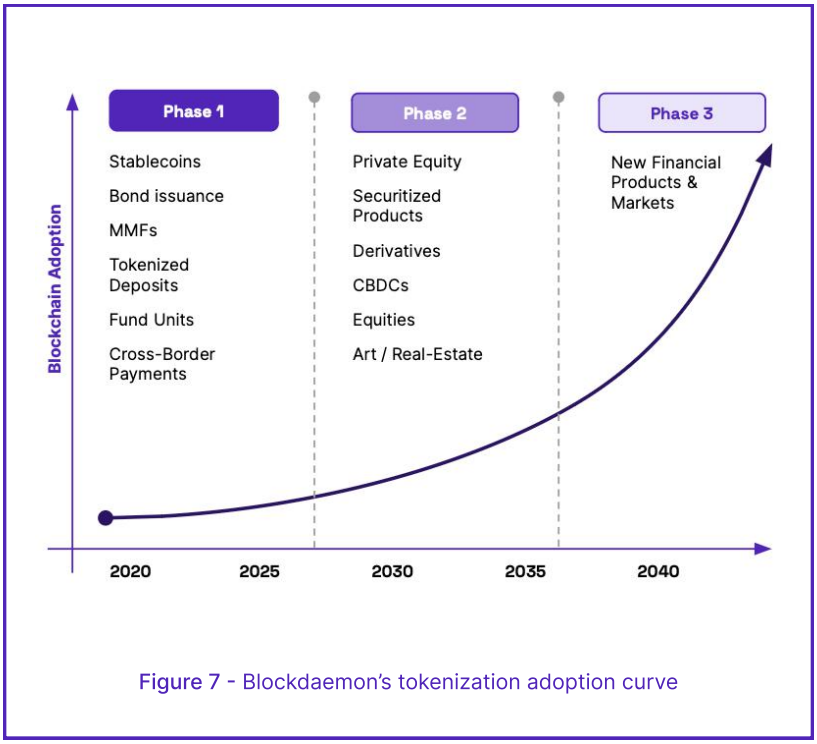

Figure 7 - Blockdaemon's tokenization adoption curve

LET'S CONNECT

If you, or anyone at your company, would like to discuss any part of this report, please do not hesitate to reach out to the author, **Barnaby Hodgkins**, who will welcome the opportunity to connect.

AUTHOR

Barnaby Hodgkins

Barnaby works in Growth Strategy at Blockdaemon, an institutional grade blockchain infrastructure company powering the global blockchain economy. Prior to Blockdaemon, Barnaby spent 6 and half years at J.P. Morgan's Corporate & Investment Bank selling to regulated buy and sell-side clients across Securities Finance, as well as Electronic FX, Rates and Credit products. Now, at Blockdaemon, in addition to helping accelerate growth in the EMEA region, Barnaby is responsible for designing and implementing commercial and product strategy related to Capital Markets and Traditional Finance clients.

bhodgkins@blockdaemon.com @barnabyhodgkins Connect on LinkedIn