

Exploring the Potential of Asset Tokenization in Financial Markets

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Introduction

Tokenization refers to the process of digitally representing real, physical assets on a blockchain network. Blockchain is a method of storing computer data into blocks of data linked to each other via an uneditable, digital chain. This specific order and links of each block are known by every computer (or node) in the network, a concept known as distributed ledger technology (DLT). What makes blockchain so enticing is that every transaction on the ledger is authorized by the digital signature of the owner, which can not be changed or tampered with. Every node must agree on the order of transactions on the distributed ledger, allowing blockchain to create a tamper-resistant, secure history of ownership.

By leveraging the unique advantages of blockchain technology, ownership of typically illiquid assets such as art, commodities, or real estate could become more accessible. One could compare asset tokenization like stock splices or ETFs but for a wider variety of assets. These assets can be split into a certain amount of rights, each represented by a uniquely identifiable token that is securely recorded on the blockchain network. Buying out property in a prime area such as Midtown Manhattan, for example, would be incredibly challenging with traditional financial products considering the initial capital investment. Tokenization can allow for ownership division of that piece of property into smaller, more affordable pieces, opening the door for investors everywhere to diversify their portfolio and gain access to this asset class.

Whether it be improving access to illiquid asset classes such as fine art or real estate to lowering the initial minimum investment to buy into private equity, tokenization has the power to impact every major asset class, theoretically making its Total Available Market (TAM) incredibly massive. Bain Capital estimates the notional value of private assets outside the financial system at around \$540 trillion. However, current tokenized assets represent only \$77 billion, or a market penetration of 0.01%.¹ As businesses look to adapt in order to enhance customer engagement, improve transaction experiences, and optimize processes, blockchain and tokenization will become increasingly relevant options for businesses.

However, the main benefits of asset tokenization can not be achieved without economies of scale. There are still many questions that remain unanswered and the regulatory framework is currently fragmented and underdeveloped. Despite immediate efficiencies, questions persist regarding the foreclosure process for tokenized assets and the repercussions of asset loss while tokens remain on exchanges. Fractional ownership, once exclusive to institutional investors, introduces new risks to retail investors. Regulatory challenges, including global compliance and cybersecurity, loom large with uncertainty deterring institutional and high net worth investors. As the discussion continues, addressing education gaps, cybersecurity, and regulatory oversight remains crucial to mitigating risks associated with asset tokenization.

¹Khan, R. (2023, June 29). Asset tokenization a trillion dollar market opportunity: JP Morgan, Blackrock, and Goldman Sachs think so. *Forbes*.
<https://www.forbes.com/sites/roomykhan/2023/06/29/asset-tokenization-a-trillion-dollar-market-opportunity-jp-morgan-blackrock-and-goldman-think-so/?sh=49c18aa4ff0>

Opportunities

Traditional markets often suffer from liquidity constraints with assets such as real estate or private equity requiring significant time and resources to buy or sell. When tokenization is conducted at scale, beyond proof of concept, by far its most touted benefit is the democratization of access in the financial world. One of the most significant advantages is fractional ownership, which allows high-value assets to be divided into smaller, more affordable shares.

Fractionalization enables individuals to invest in assets that were previously out of reach, thereby expanding investment opportunities to a broader audience. This increased liquidity enhances capital efficiency by allowing investors to deploy their capital more flexibly and access a broader range of investment opportunities. Through the process of digitizing real-world assets and representing them as tokens on blockchain networks, asset tokenization can help level the playing field, or at least expand access, for investors worldwide. Asset tokenization enables global accessibility, breaking down geographical barriers, and providing investors from all corners of the world with the opportunity to participate in diverse markets.

Additionally, by leveraging blockchain technology, asset tokenization facilitates around the clock trading, reduced entry costs, elimination of intermediaries, and increased market efficiency. These advancements streamline the investment process, making it more accessible, affordable, and transparent for a wider range of investors. From a financial institution perspective, asset tokenization can provide a competitive advantage beyond just offering more services to clients; it can help cut costs. Boston Consulting Group estimates that asset tokenization could generate savings of \$20 billion annually in global clearing and settlement alone, potentially unlocking a \$16 trillion market for tokenized illiquid assets by 2030.² Asset tokenization, through its benefits of blockchain, allows greater efficiency in back and middle offices. In the status quo, corporations have significant amounts of data that may be challenging to interlink with each other, such as intellectual property, rights, licenses, and ownership of individual products.³ The infrastructure in asset tokenization can allow for one single IT layer of trust that allows different pieces of data from multiple sources to be connected securely. This is in addition to being able to retain an immutable record of asset ownership within the digital environment. Ultimately, the platform can enhance the value chain's security, compliance, auditability, and transparency.

A particular aspect of efficiency that would be possible with asset tokenization is smart contracts. A smart contract is a digitized agreement in the form of a computer program that is executed automatically once certain pre-programmed conditions are satisfied.⁴ Smart contracts have the power to scale down formalities and costs associated with traditional methods, without compromising the security of the transaction. For example, transaction speed across jurisdictions and borders can be increased since different stipulations and laws of each region can be

²Banks, Central Banks ramp up asset tokenization efforts. (2023, August 1). *Fintech News America*. <https://fintechnews.am/fintech-usa/49622/banks-central-banks-ramp-up-asset-tokenization-efforts/>

³Ernst & Young. (2020). Tokenization of assets, decentralized finance (DeFi). *Ernst & Young*. https://assets.ey.com/content/dam/ey-sites/ey-com/en_ch/topics/blockchain/ey-tokenization-of-assets-broschure-final.pdf

⁴Kukkuru, Manjunatha G. (n.d.). Smart contracts: Introducing a transparent way to do business. *Infosys*. <https://www.infosys.com/insights/digital-future/smart-contracts.html>

automatically programmed into the underlying technology. This could unlock the potential for greater collaboration across financial systems.

Expanding its use case even more, smart contracts have the ability to enhance stakeholder participation in corporate affairs, which can be critical for corporate sustainability due diligence.⁵ Smart contracts would be able to automate identity verification and voting processes and allow for tailored covenants that determine the continuity of that investment (i.e. smart contracts could allow an investor to automatically pull out of an investment if a CEO was paid over a certain threshold).⁶ By leveraging blockchain technology, smart contracts ensure transparency, security, and immutability, thereby mitigating the risk of fraud or disputes. Consequently, the combination of asset tokenization and smart contracts has the potential to revolutionize traditional markets, optimizing processes, reducing costs, and unlocking new opportunities for efficiency and innovation.

Limitations

While asset tokenization has the potential to completely revolutionize all asset classes, unlocking immense values of liquidity from once-illiquid asset classes, it will not be an overnight transformation. The most immediate efficiencies and benefits that have been mentioned are only possible at economies of scale. In that process, serious questions still need to be answered, such as if an asset (such as a building property) can be foreclosed on if owned through asset tokens.⁷ Even more, what if the underlying asset is completely lost but the tokenized representation still exists on an exchange? Ultimately, the fractional ownership of assets previously reserved for institutional investors, one of the main benefits of tokenization, could expose retail investors to undefined, new risks.

Furthermore, the advancement of regulation may provide roadblocks to innovation; the impact on financial stability and responsible market conduct is still unknown. Even if domestic regulation can be achieved, another challenge that must be addressed is how to unify an assortment of fragmented rules to establish globally compliant transactions.⁸ One study by Ernst & Young finds that by far the primary perceived obstacle to tokenization for institutional investors and high net worth investors is regulatory uncertainty, followed by a lack of trusted operators in the space.⁹ Given the breakdown and regression of global trust in the crypto space following the collapse of FTX, the issue surrounding trusted operators is particularly important. These concerns are just the surface of the ongoing debate. For example, how should education gaps and misconceptions about blockchain be addressed?

⁵Lafarre, Anne & Van der Elst, Christoph. (2023, July 11). The viability of blockchain in Corporate America. *Oxford Business Law Blog*. <https://blogs.law.ox.ac.uk/oblb/blog-post/2023/07/viability-blockchain-corporate-governance>

⁶ Ren, Kai & Twainy, Zakie. (2022, September 1). The rise of tokenization, how tokenization can revolutionize finance and its barriers to adoption. *The Bank of New York Mellon Corporation*. <https://www.bnymellon.com/emea/en/insights/all-insights/the-rise-of-tokenization.html>

⁷Birry, Alexandre & Mounts, Chuck. (2023, January 13). Toward a tokenized future. *S&P Global*. <https://www.spglobal.com/en/research-insights/featured/special-editorial/look-forward/toward-a-tokenized-future>

⁸Ozair, Merav. (2023, March 6). What tokenization is and how it can unlock illiquid and opaque markets. *Nasdaq*. <https://www.nasdaq.com/articles/what-tokenization-is-and-how-it-can-unlock-illiquid-and-opaque-markets>

⁹Elinson, Sara & Kher, Prashant K. (2023, August 18). How tokenization in asset management is driving meaningful opportunity. *Ernst & Young*. https://www.ey.com/en_us/financial-services/tokenization-in-asset-management

Additionally, the inherent nature of blockchain technology introduces its own set of risks. The immutable and decentralized ledger, while offering security and transparency, also poses challenges. Smart contract vulnerabilities, coding errors, and governance issues could lead to catastrophic losses if exploited by malicious actors. Moreover, the reliance on digital infrastructure opens the door to cyber threats, including hacking, phishing, and ransomware attacks. As the volume and value of tokenized assets grow, so does the attractiveness of these assets as targets for cybercriminals. Ensuring robust cybersecurity measures and contingency plans are explicitly outlined will be paramount to safeguarding the integrity of tokenized assets and maintaining investor trust in the burgeoning ecosystem.

Regulators must not overlook these critical uncertainties when conducting a cost-benefit analysis of asset tokenization. Despite the apparent advantages, realizing these benefits securely hinges on addressing the accompanying limitations, uncertainties, and inquiries in depth. As innovation, technology, and applications for asset tokenization proliferate, regulators must maintain a vigilant stance on potential hazards and risks. This ongoing scrutiny is essential to foster a robust framework that safeguards investors and ensures the integrity of the tokenized asset landscape.

Status Quo

Regardless of the ongoing battle for tokenization of assets, capital markets giants, core financial players, and a myriad of smaller firms are testing the waters in an attempt to unlock the benefits of asset tokenization while gaining potential competitive advantages through differentiated services. As technological innovation advances, use-cases will continue to spur and grow. Here are a few examples that regulators should consider when thinking about potential regulation.

J.P. Morgan¹⁰: This bedrock financial institution launched Onyx in 2020 as the world's first bank-led blockchain platform for digital asset exchange. The platform aims to help institutions and managers unlock liquidity by representing assets as programmable tokens on J.P. Morgan's blockchain network. These tailor-made applications can be used as collateral against secured intraday financing or as collateral margin. J.P. Morgan vets all its participants to ensure proper network stability. As part of Onyx, J.P. Morgan has developed its own internal on-cash payments rail named JPM Coin.¹¹ The JPM coin allows participating institutions to engage in domestic and cross-border, multi-currency payments in real time.

Goldman Sachs¹²: Working with Digital Asset's Daml smart contract language and Canton, Goldman Sachs launched GS DAP in January of 2022. GS DAP is a blockchain-based platform

¹⁰Onyx Digital Assets, Unleash the power of tokenization. (n.d.). *Onyx by JP Morgan*. <https://www.jpmorgan.com/onyx/onyx-digital-assets>

¹¹Onyx Coing Systems Product Team. (n.d.). *Onyx by JP Morgan*. <https://www.jpmorgan.com/onyx/coin-system>

¹²GS Dap. (n.d.). *Goldman Sachs Developer*. <https://developer.gs.com/discover/gs-dap>

that issues tokenized assets for participants, unlocking liquidity, and streamlining the issuance process. The platform is focused on leveraging the power of smart contracts to increase transaction velocity, transparency, and safety. In November 2022, the European Investment Bank launched a €100 million two-year digital bond with same-day settlement. This was the first syndicated digital bond issued by a public institution to be admitted on the Luxembourg Stock Exchange's Securities Official List.¹³ In February 2023, GS DAP was utilized again to help the Government of Hong Kong successfully offer HK\$800 million Tokenized Green Bond, the first tokenized green bond issued globally by a government.¹⁴

KKR & Co. Inc¹⁵: The firm has partnered with digital-assets specialist Securitize to tokenize part of its Health Care Strategic Growth Fund and make it available on a public blockchain network. Qualified purchasers, generally those with at least \$5 million in investable assets, will be able to create a digital wallet and access the token. While still a hefty amount, the token allows a smaller buy-in from investors in order to access the return from private equity assets. The token will also allow KKR to automate some monitoring and vetting transactions.

Regulatory Environment

Buy-in from institutional investors will be required in order to see significant progress in asset tokenization. Attention from investors will be demanded as this field continues to grow and develop. As it currently stands, global regulation continues to be a mesh of various regulatory approaches. Singapore and Hong Kong, for example, have taken a “same activity, same risk, same regulation” approach, where laws and principles applied to traditional securities will also apply to tokenized assets if they perform the same function, helping to provide clarity to businesses.¹⁶ In the European Union, comprehensive regulation referred to as Markets in Crypto-Assets regulation (MiCA) has been in the process of implementation since June 2023.¹⁷ MiCA is dedicated to tailoring existing regulations to digital assets, focused on authorization for any relevant firm offering qualifying services as well as compelling these firms to publish fair and clear white papers detailing any risks to potential buyers. Within Europe, individual governments such as France and Germany have released their own regulatory frameworks or guidance. For example, the Swiss Financial Market Supervisory Authority (FINMA) has

¹³ Digital Asset. (2023, January 10). Goldman Sachs tokenization platform GS DAP, leveraging Daml, goes live [Press Release].

https://www.digitalasset.com/hubfs/GS_DAP%20DA%20Press%20Release_1_9_23.docx.pdf?_gl=1*olh%208hz*_ga*MTgwNDU0MzUwMC4xNzA5MDkzMTAy*_ga_GVK9ZHZSMR*MTcwOTA5MzEwMS4xLjAuMTc%20wOT45MzEwMS4wLjAuMA.

¹⁴Hong Kong Monetary Authority. (2023, February 16). HKSAR Government's inaugural tokenized green bond offering [Press Release]. <https://www.hkma.gov.hk/eng/news-and-media/press-releases/2023/02/20230216-3>

¹⁵ Gottfried, Miriam. (2022, September 13). KKR makes piece of PE fund available on public blockchain. *Wall Street Journal*. <https://www.wsj.com/articles/kkr-makes-piece-of-pe-fund-available-on-public-blockchain-11663014955>

¹⁶The Global Regulatory Landscape for Asset Tokenization. (2023, November 17). *Antier*. <https://www.antiersolutions.com/the-global-regulatory-landscape-for-asset-tokenization/>

¹⁷Markets in Crypto – Assets Regulation. (2023). *European Securities and Markets Authority*. <https://www.esma.europa.eu/esmas-activities/digital-finance-and-innovation/markets-crypto-assets-regulation-mica>

implemented a framework focused on relevant risk - regulatory requirements for tokenized assets are tailored to the specific risks the asset poses.¹⁸

The United States has taken a more cautious approach to asset tokenization. The Uniform Law Commission, responsible for drafting uniform transaction laws for consideration by the states, has proposed multiple amendments to its statutes that address certain digital assets. In particular, proposed Article 12 seeks to extend regulation over digital assets by introducing the term “controllable electronic record” (CER).¹⁹ The *Digital Asset Registration Act* was signed into Wyoming state law in 2023, providing a legal framework for the registration, issuance, transfer, and storage of digital assets and blockchain technology.²⁰ At the federal level, Rep. Tom Emmer (R-MN) and Rep. Darren Soto (D-FL) introduced the *Securities Clarity Act* in 2023, aiming to specify jurisdictional boundaries between investment contracts (i.e. a token) and an asset itself.²¹ That being said, consensus still needs to be built between Congress and various financial regulators in order to effectively address the development of asset tokenization.

In exploring the potential of asset tokenization, it is evident that this innovative approach holds promise for transforming traditional markets and democratizing access to investment opportunities. By leveraging blockchain technology, asset tokenization enables fractional ownership, enhances liquidity, and reduces barriers to entry, thereby expanding the investment landscape for a broader audience. However, realizing these benefits requires addressing significant challenges, including regulatory uncertainties, technological risks, and cybersecurity threats.

Ultimately, regulators must carefully balance the promotion of innovation with the protection of investors' interests as they navigate the landscape of asset tokenization. This entails providing clear regulatory frameworks that offer oversight without stifling the potential benefits of tokenization. Addressing the challenges posed by cross-border transactions and harmonizing regulations globally are essential to fostering market development and reducing uncertainty. Additionally, regulators must prioritize addressing technological and operational risks, including cybersecurity threats and potential smart contract vulnerabilities. Collaboration between regulators, industry stakeholders, and international bodies is crucial for developing robust regulatory frameworks that ensure market integrity and investor protection while fostering innovation. By remaining vigilant, adaptive, and forward-thinking, regulators can support the evolution of a safe, transparent, and efficient financial ecosystem in the era of asset tokenization.

¹⁸ The Global Regulatory Landscape for Asset Tokenization. (2023, November 17). *Antier*.

<https://www.antiersolutions.com/the-global-regulatory-landscape-for-asset-tokenization/>

¹⁹ Lee, Anh B. & Scaletta, Sam. (2023, November 10). UCC amendments embrace digital assets as collateral. *Reuters*.

<https://www.reuters.com/legal/legalindustry/ucc-amendments-embrace-digital-assets-collateral-2023-11-10/>

²⁰ Wyoming digital registration act. LSO. No. 23LSO-0171, SF0076. (2023).

<https://wyoleg.gov/Legislation/2023/SF0076#:~:text=Wyoming%20digital%20asset%20registration%20a%20ct.-Sponsored%20By%3A%20Select&text=Digital%20Innovation%20Technology-.AN%20ACT%20relatin%20g%20to%20digital%20assets%3B%20providing%20for%20the%20registration.and%20providing%20for%20effective%20dates.>

²¹ Emmer, Tom. (2023, May 18). Emmer and Soto introduce bipartisan bill to provide regulatory clarity for digital assets [Press Release].

<https://emmer.house.gov/2023/5/emmer-and-soto-introduce-bipartisan-bill-to-provide-regulatory-clarity-for-digital-assets>