

Tokenisation in Money Markets

ECB Money Market Contact Group

18th September 2024

Patrick Simeon



Maria Cristina Lege



Tokenisation of Financial Assets

Tokenization is the process of issuing a **unique digital representation of a real thing, for example an asset, on a blockchain**, realized using a distributed ledger technology (DLT) and with a secured and centralized storage of sensitive data.

The growing interest in tokenization is linked to the various potential uses of digital tokens in financial market but not only, in fact many use cases are already in place:

- **investments**, exchanges, pledges (e.g collateral, MMF)
- **financial assets** (e.g. equities , bonds)
- **physical assets** (e.g. real estate, art)
- **intangible assets** (e.g intellectual properties)

The main features of tokenized digital assets, that are expected to have an impact on the functioning of money market transactions, are mainly related to:

- 24/7 availability
- Common technology DLT based
- Atomic and instant settlement
- Shorter timeframe, from days to minutes or even seconds in the future
- Opportunities for intraday activities
- Clearing efficiencies
- Transparency and tracking
- Improvement in transfer /distribution processes
- Costs reduction

2030 tokenized asset market capitalization base case, \$ trillion

Cash and deposits ¹	<i>Excluded from total</i>	~1.1
Mutual funds and ETFs ²	■	~0.4
Loans and securitization ³	■	~0.3
Bonds and exchange-traded notes ⁴	■	~0.3
Alternative funds ⁵	■	~0.2
Alternative assets ⁶	■	~0.1
Unlisted equities ⁷	■	~0.1
Precious metals ⁸	■	~0.1
Publicly listed equities ⁹	■	<0.1
Intangible assets ¹⁰	■	<0.1
Derivatives ¹¹	■	<0.1
Total value tokenized in 2030	■	~1.9

Tokenisation in Money Market and Settlement – use cases



Money Market Funds (MMFs)



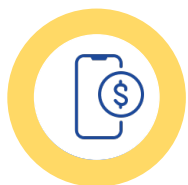
Commercial paper and bonds



Repos, Collateral Mobilization



Deposits and Loans



Stablecoins



- Acceleration gained on settlement side thanks to the ECB *"Exploratory work on new technologies for wholesale central bank money settlement"*
- Mitigation of financial stability risk, thanks to *"Markets in Cryptoassets Regulation" (MICAR)*, the new regulatory framework for crypto-assets that include consumers and investors protection
- New business opportunities



- New **programmable money** for the settlement system

Monetary Market Funds Units: benefit expected from the tokenisation (1/2)

For Investors

Lower entry ticket and access to funds usually intended for institutional investors; **extended access** to international products with improved accessibility, “democratization of markets”

Lower transaction costs/custody fees, disintermediation of CSDs (Euroclear FR and Clearstream DE)

Instant order placement, potentially 7 days a week, 24 hours a day

Shorter settlement/delivery times (T+1 or T+0), faster and frictionless transactions with decrease in the need for trade confirmations and reconciliations between back offices after the trade has occurred

Real-time view of trade and position processing

Transparency: greater visibility into the fund’s operations and performance, information storage of ownership and rights, **ESG** risks and **KYC**, a more relevant measurement of the fund's performance in relation to its objectives and documentation

Arbitrage of stable coins while waiting for central bank currencies

Tokenized MMF’s used as collateral

Monetary Market Funds Units: benefit expected from the tokenisation (2/2)

For Asset Managers and Distributors

Reduced operating costs: KYC, reconciliation of liabilities, payment of distribution fees, etc.

Opening up **new distribution channels**, broadening the customer base with reduced minimum investment levels

Business development with **new source of revenue** through more automated processes

Increased knowledge of the composition of fund liabilities and investor behaviour

Competitive advantage with **subscription** right up to the last second before the cut-off point

Strengthening of treasury solutions offering: tokenized MMFs could be used as collateral and to organize a monetary value exchangeable with other instruments instead of stable coins or the Central Bank's digital currency (CBDC, not yet ready).

Enhanced liquidity through the possibility to offer collateral pledge cross market participants

Commercial Paper and Bonds

Digital commercial papers have the same characteristics of the traditional ones but are issued using blockchain and smart contract technology, making administrative activities more efficient.

The product is particularly interesting for proofs of concept and tests, thanks to its simplicity and the basic life cycle, with the added advantage that the use cases could be extended to a wide range of issuances, including MLT bonds and equity.

Traditional issuances of commercial papers are still quite expensive and time consuming for issuer due to the involvement of multiple actors in the process, from issuance to post-trade custody and distribution; the new technology will reduce manual processes across various phases in the life cycle, both for issuers and investors, thanks to the self execution of the contract, based on predefined conditions.



Capital markets · News

Rabobank conducts €2 billion of DLT pilots for commercial paper

Source: <https://www.ledgerinsights.com/rabobank-conducts-e2-billion-of-dlt-pilots-for-commercial-paper/> / **Febr 2024**



cdp successfully issues its first Digital Bond on Blockchain. Intesa Sanpaolo fully underwrites the transaction

Cassa Depositi e Prestiti, also as Register Manager, and Intesa Sanpaolo are the first financial institutions in Italy to conclude a transaction with these characteristics, part of a broader ECB trial

The security was issued via distributed ledger technology¹ and cash flow settlement took place in euro through the Bank of Italy's "TIPS Hash-Link" solution

Source: https://www.cdp.it/sitointernet/en/digital_bond.page - **July 2024**



REPUBLIC OF SLOVENIA
GOV.SI

On 25 July 2024, the Republic of Slovenia issued its inaugural digital bond. The landmark transaction is the first such transaction of an **EU sovereign, and one of the first sovereigns worldwide**. The bond was issued in the context of the **European Central Bank's (ECB) wholesale central bank money (CeBM) settlement experimentation programme**. The settlement of the bond was performed on-chain in wholesale Central bank digital money through the Banque de France's (BdF) interoperable and tokenized cash solution (DL3S).

BNP Paribas acted as Global Coordinator and Sole Bookrunner, as well as DLT platform operator of Neobonds, BNP Paribas' private tokenisation platform built with Digital Asset's Daml and leveraging Canton blockchain.

Source: <https://www.gov.si/en/news/2024-07-26-the-republic-of-slovenia-issues-its-inaugural-digital-bond/> / **July 2024**

Repos and Collateral mobilization

For Repo Market and for Collateral Mobilization, financial institutions that tokenize these products could achieve **operational efficiencies** in collateral utilization and management of margins:

- **smart-contracts** facilitate the execution and allow to mobilise a wider pool of eligible assets as collateral
- **daily life cycle management** becomes easier (e.g for collateral valuation and margin, reduction of constraints due to timezone differences and cut-offs management)
- **reduction of errors and settlement failures**
- **simplified reporting for EMIR, SFTR, etc..**
- The **instant settlement** and on-chain data allow also to manage the **intraday liquidity** via tokenized short-term repo
- 24/7 business day, could **enlarge the panel of market participants** that will be able to trade same-day value
- **ICMA** in august 2024 announced the publication of the **Digital Assets Annex** to the GMRA, to standardize the framework and to set the terms which can be used for repo transactions involving digital cash, digital securities (including tokenised traditional securities), or asset-backed digital assets.

JPM Coin to be used for settlement on Broadridge's DLT repo platform - May 14, 2024 by Ledger Insights

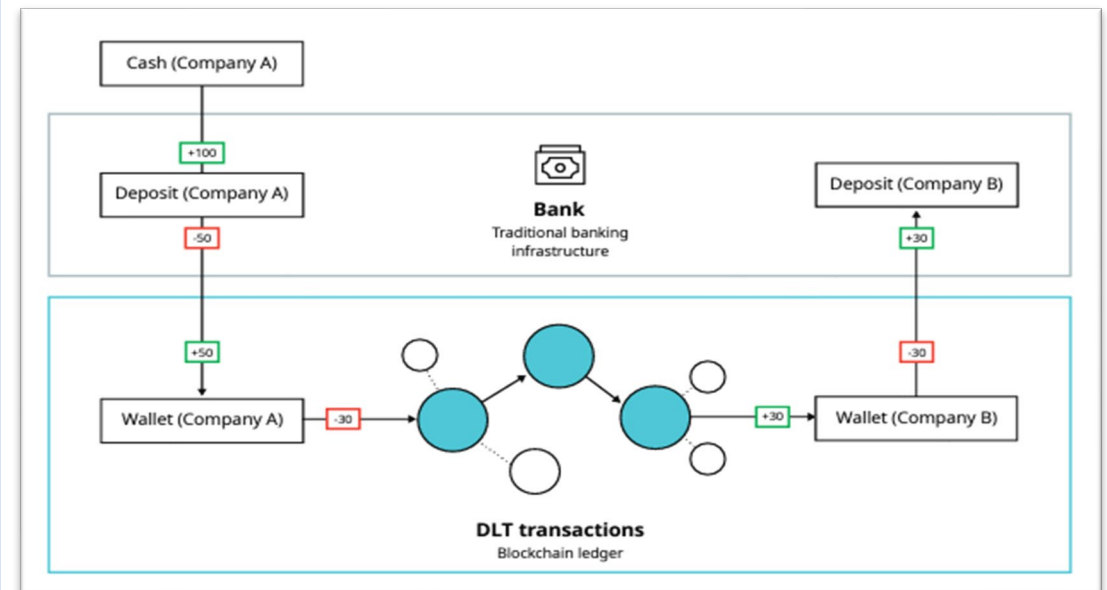
Starting next month, Onyx by JP Morgan will enable its JPM Coin tokenized deposit solution to be used for on-chain settlement for Broadridge's Distributed Ledger Repo (DLR) platform. Synchronizing the two blockchain networks will enable delivery versus payment for intraday repo transactions.

Source: <https://www.ledgerinsights.com/jpm-coin-to-be-used-for-settlement-on-broadridges-dlt-repo-platform/>

Deposits and loans

Tokenised deposits represent commercial bank money and are transferable instruments managed on DLT. In other words, they are just the equivalents of existing deposits, booked by a depository institution and recorded on a blockchain.

Tokenised deposits could be used for example as provision of cash collateral. They aren't bearer instruments and should not be confused with stablecoins; as in the new tokenised ecosystem, the deposits represents the **tokenisation of an existing asset.**



Source: Oliver Wyman and Onyx by J.P. Morgan Analysis

The use of tokenization for **lending**, thanks to the blockchain and smart contracts, could improve labor-intensive and time consuming processes, increase transparency and standardization throughout the life cycle of loans. The costs reduction could also improve lending conditions.

Stablecoins - overview

Markets in Crypto-Assets Regulation (MiCAR), effective as of 30 June 2024, with the purpose to guarantee transparency and protection of holders, includes in the general definition of stablecoins two distinct types of assets.

- **Electronic money tokens (e-money tokens - EMTs)**: cryptoasset that is expected to maintain a stable value by referencing the value of EMT to a reserve of other assets (e.g., a single specific currency, EUR or USD)
 - **Asset-referenced tokens (ARTs)**: cryptoasset whose value refers to another value or right or a combination of assets (including currencies, commodities, or other crypto-assets).
-

Taking into consideration that one of the main purposes for EMTs is stability, they are expected to become **suitable for everyday transactions**, being **more stable than traditional cryptocurrencies** with the advantages of **blockchain technology** applied to digital payments and so faster and cheaper. Among the main use cases for stablecoins is worth to mention:

- **payments**: used as a currency for transactions making them much more stable compared to cryptocurrencies, with a wide range of possible utilization for wholesale instant payments (payments/PvP, settlement for security tokens, cross-border transactions/FX)
- **inflation hedging**: in countries with high inflation are useful to protect the purchasing power of citizens (in some cases they have partially replaced the reference fiat currency)
- **volatility reduction**: stabilization of the cryptocurrency market as investors could easily convert cryptocurrencies into stablecoins to protect their capital during periods of high uncertainty

The total Stablecoin market cap increased by 25% in the first half of 2024, from 130 \$/bln to 165 \$/bln and around 70% is anchored to USD (Source <https://defillama.com/stablecoins>). The growth is expected to continue and **LCR impact** could become an issue in the future (in case the stablecoin issuer is a bank that sells stablecoins to its own customer there is no impact but in case stablecoins are sold by a non bank, due to the outflow from current accounts of retail customers, there is a direct consequence on liquidity ratios).

Digital evolution – recap of opportunities and possible benefits

Accessibility and Liquidity

- **Fractional Investments:** Tokenization allows investments to be divided into smaller fractions, making assets accessible to a larger number of investors
- **24/7 Trading:** Tokens can be traded at any time, adding flexibility and potentially increasing the market liquidity

Markets and Products

- **Global Markets :** Tokens can be traded globally, opening possibly new markets and investment opportunities
- **Innovation in financial products :** Tokenization enables the creation of new types of financial products and services

Brokerage and Costs

- **Elimination of intermediaries:** Blockchain technology enables direct transactions between buyers and sellers, reducing costs associated to the activity of the traditional intermediaries
- **Automation of transactions:** Smart contracts allow to automate many steps, reducing operational costs and risks

Global Investors Base

- **Financial inclusion:** Investors all over the world can access to previously inaccessible markets
- **Diversification:** Investors can diversify their portfolios more easily and efficiently

Transparency and Security

- **Immutable ledger:** Transactions are recorded on a public and immutable blockchain, ensuring total transparency
- **Cryptographic security:** The use of advanced cryptography protects transactions and investor data

Digital evolution – recap of risks

Fragmented marketplaces
of numerous private
networks with islands of
liquidity

Unsettled transactions need
to be effectively managed
during the post-trade process

Cybersecurity threats

Regulatory issues for cross
border transactions and
uncertainty in various
jurisdictions or coexistence of
different national regulatory
frameworks

Increased **operational
and legal risks**
inherent to a move to
new processes and
platforms

Perception that
tokenization is associated
with **higher risks of fraud**
and fraudulent
transactions

Risks relating to **operational
resilience and business
continuity** due to greater
dependance on technology

Digital evolution – points for discussion

The expected more extensive use of the DLT and in particular of the blockchain in financial markets could be reached only solving/evaluating some points of attention:

Blockchain, Smart contract standards and Legal issues

- **Lack of interoperability:** different blockchains are often not compatible with each other, making it difficult to transfer assets between different platforms.
- **Technological adaptability:** blockchain and smart contracts technologies are still under development and improvement, with ongoing changes and updates.
- **Laws and regulations** related to blockchain, and digital assets are different from country to country, creating uncertainty for investors and companies. ISDA in the Guidances published in May 2024 has very well underlined that *"These technological differences may create significantly different legal outcomes. In some cases, differences in functionality which may appear limited from a user experience perspective will give rise to important legal distinctions"*.
- **Lack of harmonization:** the absence of global regulatory standards creates difficulties for companies operating internationally.

Cash Leg and Market issues

- **Absence of a central bank digital currency (CBDC):** without a globally recognized CBDC, cash transactions on blockchain can be limited.
- **Limited acceptance of stablecoins:** only few stablecoins are regulated (except for those MiCAR compliant), with related limits for their usability for high-value transactions.
- **Market confidence:** investors and traditional financial institutions have still a limited confidence in digital currencies, there are compliance constraints and AML issues, the need to invest a lot to develop new technologies are among the main obstacles to overcome before the blockchain-based payment solutions could really be a game changer.
- **Monetary policy** should take into consideration at a certain point the composition of assets in which issuers invest the underlying reserves with great attention to **financial stability** issues.

Annex



Franklin On Chain U.S Gouvernements Money Fund Total Net
Assets : \$ 425,464,332
Inception Date : 06/04/2021

The fund seeks to provide as high a level of current income as is consistent with the preservation of shareholders' capital and liquidity. The fund also tries to maintain a stable \$1 share price.

The fund invests at least 99.5% of its total assets in **U.S. government securities**, cash and repurchase agreements collateralized fully by U.S. government securities or cash.

Launched on Stellar Lumen blockchain and expansion on Polygon and Avalanche



BlackRock USD Institutional Digital Liquidity Fund Total Net
Assets : \$ 502,669,170
Inception Date : 20/03/2024

The BlackRock USD Institutional Digital Liquidity Fund (BUIDL) will provide qualified investors with the opportunity to earn U.S. dollar yields by subscribing to the Fund through Securitize Markets, LLC.

Fund Allocations: The Fund will invest 100% of its total assets in cash, U.S. Treasury bills, notes and other obligations issued or guaranteed as to principal and interest by the U.S. Treasury, and repurchase agreements secured by such obligations or cash.

BNY Mellon will enable interoperability for the fund between digital and traditional markets



Spiko funds are the very first money market funds to be tokenized on public blockchains in Europe.

Compartiment de SPIKO SICAV, organisme de placement collectif en valeurs mobilières de droit français

Spiko EU T-Bills Money Market Fund Total Net Assets : 30 375 000 € Inception Date : 15/05/2024

The objective of fund is to provide investors with capital preservation and consistent performance with the compounded €STR at the end of the recommended minimum investment period of 1 day.

The portfolio invests up to 100% of its net assets in euro-denominated bonds and money market instruments issued by Eurozone governments.

Spiko US T-Bills Money Market Fund Total Net Assets : \$ 2,345,100 Inception Date : 15/05/2024












The objective of fund is to provide investors with capital preservation and consistent performance with the compounded Federal Funds Rate at the end of the recommended minimum investment period of 1 day.

The portfolio invests up to 100% of its net assets in US dollar-denominated bonds and money market instruments issued by the US government.

Both Sub-Funds are launched on Ethereum and Polygon

Stablecoins – some examples

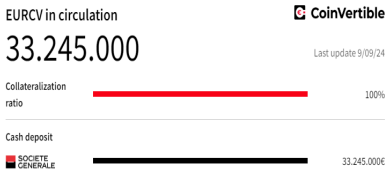
The most relevant digital currency for Market CAP are redeemable 1:1 for US dollars

Name	Market Cap 
 Tether (USDT)	\$118.39B
 USDC (USDC)	\$35.08B
 Dai (DAI)	\$5.08B
 Ethena USDe (USDE)	\$2.70B
 First Digital USD (FDUSD)	\$2.56B
 PayPal USD (PYUSD)	\$877.85M
 USDD (USDD)	\$737.14M
 Frax (FRAX)	\$646.87M
 Tether Gold (XAUT)	\$616.52M
 TrueUSD (TUSD)	\$496.53M

Source www.forbes.com/digital-assets/



COINVERTIBLE STABLECOIN



An institutional-grade stablecoin with full transparency



We integrated all of Societe Generale expertise to deliver EUR CoinVertible (EURCV), a stablecoin to provide a **bridge between the traditional financial system and the digital assets world**. By being **fully collateralized, transparent, and meeting regulatory requirements** while being available on public blockchains, it can offer the benefits of digital assets such as efficiency and security while reducing the volatility associated with many cryptocurrencies. SG-Forge has been granted with an electronic money institution license with the ACPR (Autorité de Contrôle Prudentiel et de Résolution) and has meticulously restructured EURCV to now ensure all capabilities of an open stablecoin are met: **compliance with the European Markets in Crypto Assets Regulation (MiCA)**, with EURCV qualifying as e-money token, and free transferability without whitelisting restrictions.

Source <https://www.sgforge.com/product/coinvertible/>



1 st Jul 2024

Circle is First Global Stablecoin Issuer to Comply with MiCA, EU's Landmark Crypto Law

Of the top 10 stablecoins by market capitalization, only USDC is currently MiCA-compliant. This milestone underscores Circle's commitment to regulatory compliance for dollar and euro stablecoins. The company's proactive approach to meeting high standards of security, transparency and oversight will help drive the mainstream adoption of regulated digital currencies.

Stablecoins – some examples

18 Jul 2024



HKMA announces stablecoin issuer sandbox participants

The sandbox, which was launched in March 2024, is part of the HKMA's efforts in facilitating the sustainable and responsible development of stablecoin ecosystem in Hong Kong. Through the sandbox, the HKMA allows institutions with plans to issue stablecoin in Hong Kong to conduct testing on their operational plans, and also facilitates the two-way communication on the proposed regulatory requirements, with a view to formulating fit-for-purpose and risk-based regulatory regime

6 th Nov 2023



“The Financial Conduct Authority (FCA) and the Bank of England (the Bank) are today requesting feedback on their proposed approach to regulating stablecoins. The Bank's proposals cover any payment systems in the future that use stablecoins in the UK at systemic scale.
Stablecoins are a new type of digital asset which aim to maintain a stable value. They could be used for retail payments in the future.

5 th Oct 2023



The **Canadian Securities Administrators (CSA)** is today providing further clarity and guidance to crypto asset trading platforms about its interim approach to the trading of value-referenced crypto assets (some of which are commonly referred to as “stablecoins”)

“The transparency of value-referenced crypto assets about the composition and adequacy of their reserves and their governance are critical issues that must be addressed to protect Canadian investors and the integrity of our capital markets,”