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# Tokenisation of government bonds: assessment and roadmap

*Key takeaways*

- *Government securities play a crucial role in the financial system – as a savings vehicle for households and firms, collateral in a range of transactions and a means of pricing assets.*
- *Despite their early stage of development ($8 billion in issuance to date), tokenised bonds have lower bid-ask spreads than conventional bonds and comparable issuance costs.*
- *Government bond tokenisation could improve market efficiency and support financial innovation, but its success depends on addressing regulatory and infrastructure challenges.*

Experiments with tokenisation are gaining momentum.[1] By enabling the contingent execution of actions, tokenisation can help to enhance the efficiency of markets, reduce settlement risk, broaden investment access and spur the creation of new financial services. Similar to key monetary innovations of centuries past, the tokenisation of money and financial assets has the potential to expand the universe of possible contracting outcomes to support economic growth.[2] However, significant challenges remain, notably the need for scalable platforms, regulatory clarity and robust infrastructure.

At $80 trillion, government debt stands as the largest and most critical global asset market, and a cornerstone of the financial system. Government bonds provide a safe asset for investors, and underpin monetary policy implementation, collateral management and financial stability. Bond markets are a promising setting for tokenisation, as current trading and settlement practices involve a complex web of intermediaries, messaging instructions, reconciliation efforts and money flows. The tokenisation of government bonds could enhance liquidity by reducing transaction times and increasing market accessibility. It could also potentially support collateral management and monetary policy operations by enabling the integration of bonds with other tokenised assets, allowing for automated collateral transfers and efficient use of assets in repurchase agreements (repos) or central bank operations.

This Bulletin explores the case for tokenised government bonds. While bond tokenisation is on the rise in both number and volume of issuances, the market remains in its infancy. We build a data set of private and government tokenised bonds. Our sample features 39 tokenised bonds, of which 24 have been issued by corporations and 15 by governments or supranationals.[3] We compare tokenised bonds with their conventional (ie non-tokenised) counterparts with the same issuer, currency and coupon type. We find suggestive evidence of lower bid-ask spreads and comparable issuance costs and yields. While gains

[1] Tokenisation can be defined as the process of generating a digital representation of traditional assets on a programmable platform (Aldasoro et al (2023)).

[2] See BIS (2023) and Shin (2024) on the evolution of record-keeping and the promise of tokenisation.

[3] Our data set includes bonds with data on the issuer, issuance size, date, cost, currency, coupon rate, maturity and settlement infrastructure.

are modest, they hint at much greater potential, as small gains in large volume markets can add up quickly. We close with a discussion of pros and cons of different design options for bond tokenisation.

## The critical role of government securities in the financial system

Government bond markets are a cornerstone of the global financial system. They serve as a critical source of financing for governments, a trusted savings vehicle for households and businesses and the key locus of central banks' monetary policy operations. They provide the safest and most liquid form of collateral in secured money markets and derivatives, and act as a benchmark asset to price risk across the economy. Bid-ask spreads are generally narrower for government bonds than for other asset classes, reflecting their low credit risk and large investor base – especially in advanced economies (Graph 1.A).

Tokenised government bonds could play an equally foundational role in a future tokenised financial system. They can anchor trust and stability, act as a benchmark for other tokenised assets and play a central role in monetary policy operations. As such, they represent a natural third element for a "trilogy" of foundational instruments for a tokenised financial system, together with tokenised central bank reserves and tokenised commercial bank money (BIS (2025)).

## Experiments with tokenising bonds

Tokenisation has the potential to enhance the efficiency of bond markets, including liquidity, issuance costs and yields. Tokenised bonds could enable near-instant settlement, potentially reducing delays and counterparty risk, while their use of transparent, programmable platforms increases market confidence. Programmability enables the contingent execution of actions like payments, delivery and transfer of collateral, and could allow for new products and services to be developed (eg BIS (2023)). Together, these features hold the potential to enhance liquidity, making it easier for investors to trade bonds efficiently.

Bond tokenisation can bring benefits for both existing and new market participants. For existing investors, such as asset managers, features like programmability and composability can help to streamline issuance, shorten settlement cycles and reduce risks in delivery-versus-payment (DvP) transactions. For new investors, including retail investors and small and medium-sized enterprises (SMEs), it can build on existing initiatives by some governments to give more direct access to bond markets. By allowing for lower minimum investment thresholds, tokenisation can enable a wider pool of investors to participate in the market. This could facilitate wider use of tokenised securities as collateral, lowering credit costs and the costs of managing liquidity and, for central banks, enhancing the transmission of monetary policy through broader financial market participation.

Greater efficiency and broader investor access could, in theory, reduce yields by increasing demand for tokenised bonds. However, these outcomes depend on various factors, including the scalability of tokenised markets, the adoption of supporting infrastructure, the regulatory environment and the design of the tokenised instruments themselves.

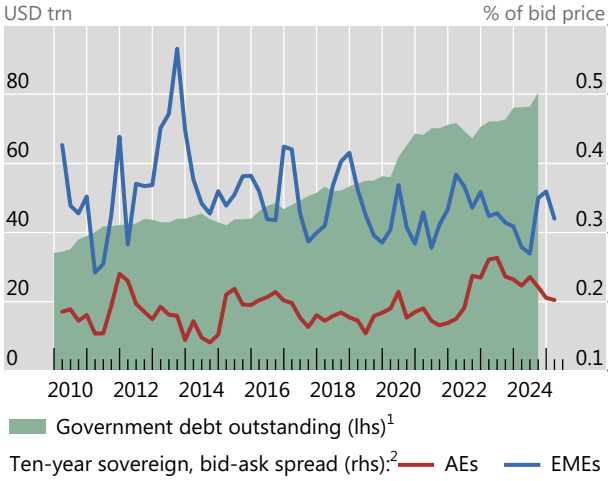
The tokenisation of bonds remains in its early stages, but it has gained momentum in recent years among both corporates and governments (Graph 1.B). To date, over 60 tokenised bonds have been issued, amounting to a total value of $8 billion. Of these, we have detailed information for 24 bonds issued by corporations with a total value of $3.8 billion, and 15 bonds issued by sovereigns, supranationals and agencies (SSAs) with a value of $1.9 billion (Graph 1.B). Table A1 in the online appendix provides an overview of the latter.[4] Issuers include the Republic of Slovenia, Hong Kong SAR, the Republic of the Philippines, the Bank of Thailand, the European Investment Bank, the World Bank and the Swiss cantons

[4] We found international securities identification numbers (ISINs) for 15 out of the 21 tokenised SSA bonds collected in Table A1 in the online appendix. In the analysis that follows, we use only those tokenised bonds for which we have ISINs. We use both corporate and SSA bonds to have a larger sample for analysis.

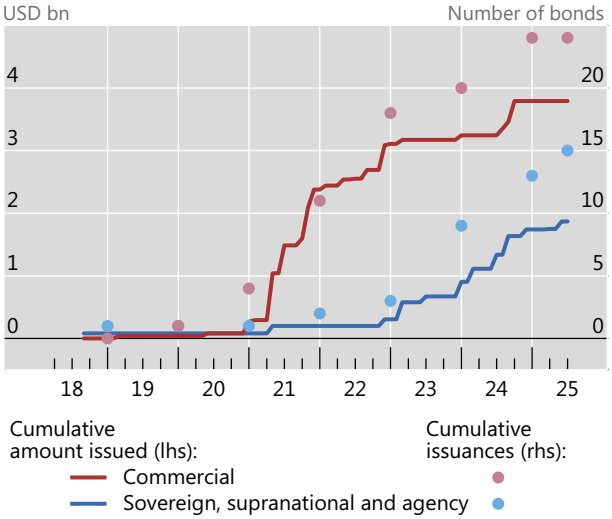
of Basel, Zurich, Lugano and St Gallen. While most issuances relied on private permissioned distributed ledger technology (DLT), some explored alternative technologies such as private (non-DLT) tokenisation platforms and public blockchains. Issuance by SSAs has been catching up with bond tokenisation by companies and currently accounts for nearly half of all tokenised bonds by value and number of issuances.

Government bond markets are a growing focus of tokenisation initiatives — Graph 1

A. Government bond markets are large and growing




B. The tokenised bond market is small but expanding[3]




[1] Based on a sample of 58 advanced (AEs) and emerging market economies (EMEs). Government debt at market value, where available, or closest substitute. [2] For AEs, simple average of AU, CA, CH, DE, DK, FR, GB, IT, JP, NO, NZ, SE and US; for EMEs, simple average of BR, CL, CN, HR, ID, IN, MY and PL. Data are winsorised at the 1st and 99th percentiles and correspond to quarterly averages of daily values. [3] Based on the subset of tokenised bonds with an available ISIN.

Sources: Leung et al (2023); LSEG Workspace; BIS; authors' calculations.

## Comparing tokenised with conventional bonds

We take a closer look at how tokenised bonds stack up against conventional ones. We consider only tokenised bonds for which we have an international securities identification number (ISIN) and data on similar conventional bonds, following the approach in Leung et al (2023). We match each tokenised bond with a conventional bond from a sample of bonds issued by the same issuer, in the same currency and with the same coupon type.[5]

Despite being in an experimental phase, initial evidence suggests that liquidity and issuance costs for tokenised bonds are already comparable with those of conventional bonds. Liquidity may actually improve: the mean bid-ask spread of tokenised bonds stands at about 19 basis points, compared with 30 basis points for conventional bonds by the same issuers (Graph 2.A). Issuance costs, measured as the difference between the price to the public and the price paid by the underwriter to the bond issuer, do not differ systematically (Graph 2.B). The minimum investment amount for tokenised bonds is also significantly lower ($110,000 on average, versus $185,000 for conventional bonds).

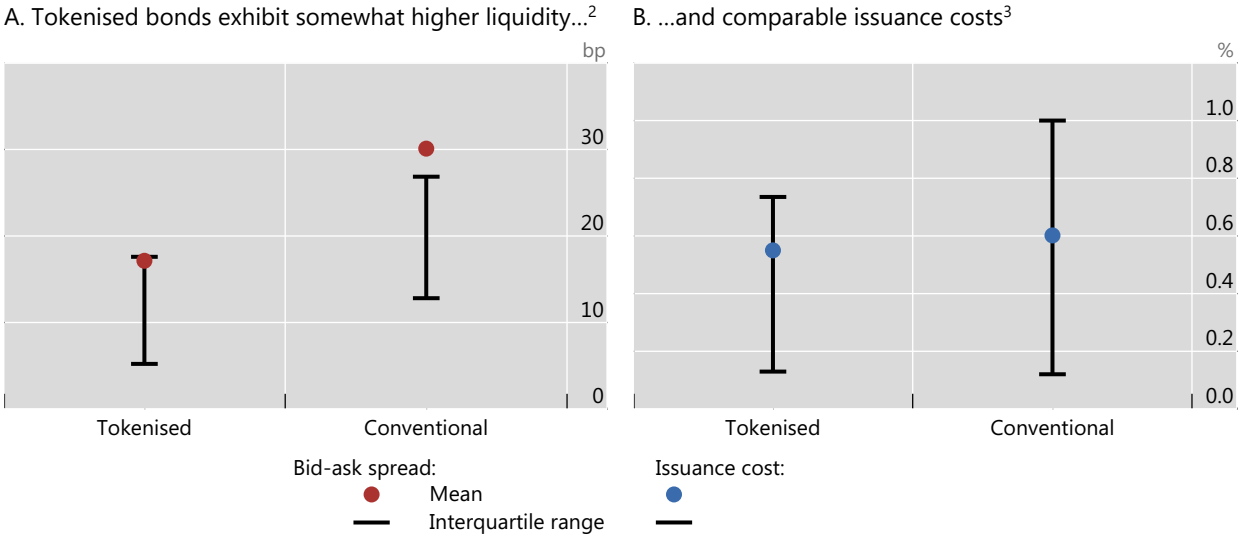
As such, liquidity and cost considerations do not appear to be an impediment to issuing tokenised bonds. Instead, legal and regulatory uncertainty and a lack of market experience are probably more

[5] Specifically, we match each tokenised bond with the closest conventional bond based on the issue date, maturity and issuance size. See the online appendix for more details.

substantial constraints. These issues can be addressed with regulatory reforms and are likely to diminish as market participants gain more experience with tokenised bonds.

Despite the novelty of the market and the upfront investment required by participants, investors show interest in holding tokenised bonds. Some tokenised bonds trade at a premium, implying a lower yield to maturity. These benefits could relate to technical reasons, akin to the "convenience yield" documented for on-the-run Treasury securities (Krishnamurthy (2002)). Alternatively, they could originate from an investor "hype factor". To be sure, evidence for lower yields remains rather idiosyncratic, and the jury is still out.

Early experiments suggest some gains from tokenised over conventional bonds[1] Graph 2




[1] Based on a matched sample of conventional bonds with same issuer, currency of denomination and coupon type of the tokenised bonds. [2] Data as of 26 March 2025. [3] Measured as the difference between the initial price offered to the public and the price paid by the underwriter to the bond issuer.

Sources: Leung et al (2023); LSEG Workspace; authors' calculations.

## Options for issuance of tokenised bonds and associated collateral

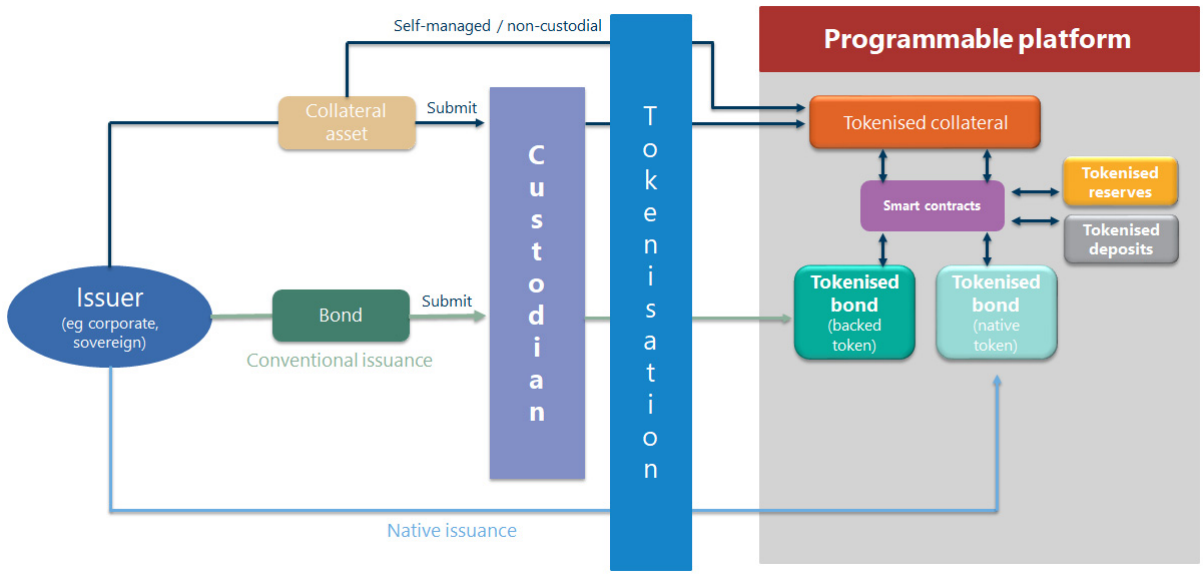
Not all tokenised assets are created equal, and their risks and benefits can vary significantly depending on issuance characteristics. Factors such as the underlying technology, investor base, market infrastructure and regulatory framework all play a role. While the early evidence suggests that tokenised bonds may exhibit somewhat higher liquidity and comparable issuance costs, these benefits are not guaranteed and will probably depend on how tokenisation is designed and implemented.

At a general level, it is possible to distinguish two types of tokenised bond issuance (Graph 3): native issuance (light blue arrow) and conventional issuance with a digital representation of the bond on the platform (light green arrows). The former implies that there is a single record of the claim, solely on the programmable platform. The latter implies that the tokenised bond is backed by a conventional bond, typically held by a custodian (purple box), before it is tokenised through a so-called ramp (blue box) (eg Aldasoro et al (2023)).[6] So far, most issuances of SSA tokenised bonds (see Table A1 in the online

[6] The entity responsible for the tokenisation (the "tokeniser") must thus be in a position to take ownership of off-platform assets and create their on-platform counterparts (and to reverse this process as needed). This could have implications for normal and emergency liquidity provision in a possible future tokenised digital asset ecosystem. Moreover, while native issuance streamlines the issuance process, it may initially introduce additional risks related to technology reliance and legal uncertainty

appendix) are native. Once on the platform, a bond can interact directly with other tokenised assets such as tokenised central bank money (ie tokenised reserves) or commercial bank money (ie tokenised deposits) through smart contracts, eg to automate interest payments.[7] This can unlock capabilities from interlinking various types of tokenised assets, such as secured bonds, which represent a crucial source of funding for borrowers. Moreover, it could help to streamline monetary policy implementation, eg by making use of tokenised repurchase agreements (repos), as illustrated in Project Pine – a joint initiative of the Federal Reserve Bank of New York and the BIS Innovation Hub (Federal Reserve Bank of New York-BIS (2025)).

Options for tokenised bond issuance and tokenisation of other assets Graph 3




Source: Authors' elaboration.

Beyond these two models, there are important design choices around the issuance of bonds or other financial assets that are secured by collateral (dark blue arrows in the upper part of Graph 3).[8] Programmable platforms have the potential to transform access to collateralised borrowing by tying claims directly to collateral and minimising the reliance on intermediaries through the use of smart contracts. This innovation is driving the exploration of various types of collateralised issuance models, each with distinct features and implications.

**Self-managed, off-platform collateralised issuance** refers to cases where the collateral that backs a tokenised asset is managed by the issuer outside the platform. In this case, the claim of the holder of the tokenised asset is on the collateral backing the asset, which is not on the programmable platform. However, there is no technological link between the tokenised bond and its backing. As such, there is an added friction for the holder in claiming the collateral if the platform fails, and in recourse mechanisms if

as the market develops, whereas conventional issuance followed by tokenisation benefits from established legal and operational frameworks but adds complexity in reconciling traditional and digital systems.

7 Operational links can help ensure that bonds can be traded and settled not only on the programmable platform but also in conventional "off-chain" markets, making them accessible to market participants in both venues (Plepi and Schwendner (2024)).

8 While most conventional SSA bonds are unsecured claims on an issuer (ie without any collateral), there are exceptions – eg covered bonds issued by supranational development banks, mortgage-backed securities issued by US government-sponsored enterprises like Fannie Mae and Freddie Mac, and municipal bonds linked to specific revenues, such as toll roads or utilities.

the issuer defaults. On the other hand, eschewing the involvement of additional intermediaries through self-custody could potentially simplify the process and make it more efficient.

**Custodial, off-platform collateralised issuance** entails management of collateral asset off-platform by a trusted third party (eg a custodian). This variant is similar to the previous one, but the custodial arrangement (as opposed to self-custody) provides an additional layer of oversight and security. This can, however, come at the cost of efficiency. The holder still assumes the risk of issuer default, but having a trusted third party that manages the collateral can mitigate operational risk and simplify collateral retrieval.

Finally, **on-platform collateralised issuance** involves tokenised collateral which is managed directly on the platform. For example, a secured corporate bond could be collateralised by tokenised government bonds already existing on the platform. Although not widely available yet, this approach leverages the full extent of potential benefits of programmable platforms. The shared nature of programmable platforms can enhance transparency in the management of collateral. In case of default, the platform's programmability feature can enable automatic transfer of ownership of the tokenised collateral to the holder, thereby reducing risk. This model underscores the transformative potential of programmable platforms.

Tokenised government bonds present an opportunity to enhance efficiency, liquidity and accessibility in bond markets, while also enabling experimentation with programmable financial instruments. The empirical evidence we present is consistent with some gains in terms of liquidity, comparable issuance costs and lower minimum investment thresholds. This highlights their potential to attract a broader investor base, and to deepen market participation. However, adoption remains at an early stage, with significant challenges left to address, including regulatory clarity, technological scalability and the development of supporting market infrastructures. While initial findings suggest modest gains, the full potential of tokenisation will depend on how these instruments are designed and implemented, as well as the ability to overcome legal and operational barriers. As experimentation continues, the practical benefits, risks and limitations of tokenisation will become clearer, providing a more informed basis for assessing its role in the future financial system.

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