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TOKENISATION OF MONEY AND SECURITIES: OPPORTUNITIES AND RISKS FOR THE FUTURE FINANCIAL SYSTEM

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ABSTRACT

It explores the opportunities and risks that the tokenisation of money and securities pose to the future financial system. Tokenisation is the expression of claims on money or financial assets on programmable digital ledgers to allow for automatic execution, transfer, settlement, and record-keeping. Recent policy and research work has highlighted factors that limit market efficiency, beyond just post-trade processes, and provides promising benefits that tokenisation offers to alleviate these. This includes through more efficient settlement, transparency, programmability, and broader access to markets. The literature also notes many serious risks such as market segmentation into incompatible platforms, cyber and operational risk, legal uncertainty over ownership and finality, liquidity risk, governance weaknesses, and potential financial stability risk, if tokenised systems scale without robust standards and interoperable settlement arrangements. Its overall goal is to identify whether tokenisation can achieve tangible enhancements in the efficiency and resilience of financial markets without compromising monetary trust, market integrity, and systemic stability. This work is qualitative and analytical in approach by way of reviewing institutional reports, policy documents, and emergent market evidence from the lens of international institutions: Bank for International Settlements, International Monetary Fund, Financial Stability Board, and European Central Bank. The research compares tokenised money and tokenised securities over core dimensions setting out the case for why it is useful to distinguish between these two categories: settlement efficiency, transparency, interoperability, legal design, liquidity

management, financial stability and regulatory readiness. The research anticipates that there will be substantive tokenization opportunities if it is based on reputable settlement assets, robust governance, cross-jurisdictional legal clarity and interoperable infrastructure. Yet where platforms are still walled off, where settlement assets are poorly anchored, or where regulatory frameworks fall behind innovation, it will at best only be partly experienced. This paper makes an original contribution to the current finance literature by conducting a systematic study of tokenization as a technological innovation and a systemic policy challenge for: 1) central banks; 2) the regulators; 3) financial market infrastructures; 4) commercial banks; and 5) institutional investors.

KEYWORDS: Tokenisation, digital money, tokenised securities, distributed ledger technology, financial stability, market efficiency, central bank money, securities settlement.

INTRODUCTION related to the study

Tokenisation is now widely considered one of the more important developments in modern finance, since it carries the promise of taking financial markets beyond their current state of electronic recordkeeping, to a more integrated, programmable, and perhaps at least partially interoperable, mechanism for transacting, settling, and managing financial claims. While money, securities, and payment instructions are effectively digitalized today in multiple respects, legacy financial architectures largely continue to operate through fragmented ledgers, multi-layered intermediaries, multi-step reconciliation, and separate messaging, clearing, and settlement processes which contribute to delays, operational complexity, and unnecessary cost across the asset life cycle. Defined in this manner, tokenisation can be seen as the recording and eventual transfer of assets on an open, programmable digital ledger where claims may be stored and communicated to one another, yet it is not the electronic form of tokens that is novel, rather, it is their combination with a certain level of sharedness, trust, and programmability that may eliminate some market frictions, but also create new institutional and policy challenges (International Monetary Fund [IMF], 2025). This is an important distinction as, in general terms, digitization is the process of digitising paper-based records or manually created records through a conventional account-based systems, whereas tokenisation arguably entails a new logic of asset representation, whereby money and securities can take the form of net native tokens with embedded programmability, automatable execution, conditional transfer rights, inherent composability with other real and synthetic assets, and a property whereby updates of ownership and settlement states are

possible on common infrastructures with near-simultaneous effects; in lay terms, digitization improves what is there, token itself may redesign it. This budding interest in tokenised money and tokenised securities, is indicative of a broader transformation. From tokenised deposits, tokenised central bank money, tokenised bonds, tokenised funds and delivery-versus-payment arrangements on distributed or otherwise programmable platforms, we expect to see sustained exploration by central banks, market infrastructures, regulators, commercial banks, and private financial firms across these frontiers, not only to achieve better efficiency but also (and at least as importantly) to facilitate new forms of collateral mobility, cross-border settlement and integrated asset servicing. The Bank for International Settlements has called tokenisation a key transformative innovation for the next-money and financial system, one that allows to bring together money and assets on the same programmable platform, to thus both improve old by reducing frictions in the current arrangements and to enable the new by novel contracting and transaction designs (Bank for International Settlements [BIS], 2025). Hence, the relevance of this issue to the future of finance is that it can change the timeliness of payment settlement, and how both securities are issued and traded, or how intermediaries, coordinate trust and compliance, and how liquidity or risk move throughout the system. Simultaneously, the benefits of tokenisation are also ambivalent: potential upsides include rapid settlement, reduced reconciliation costs, greater transparency, programmability of compliance, and market representation of dividable assets for wider access, potential downsides include litigation risk about ownership and finality of settlement, operational vulnerability, cyber risk, governance ambiguities, liquidity disaggregation, platform fragmentation and economic instability if scaled up without trusted financial assets and effective regulatory safeguards. Thus, the objective of this paper is to consider the tokenisation of money and securities as a technological and institutional development, consider its opportunities for market efficiency and innovation, the risks it may pose to market integrity and systemic stability and what conditions may allow tokenisation to be a contributor to the future financial system rather than simply transferring existing inefficiencies to a new digital form (BIS, 2025; IMF, 2025; Financial Stability Board [FSB], 2024).

Background of the Study

The motivation for tokenisation arises from the advance of a long-term historical evolution of finance from paper instruments and physically mediated transfers, towards electronic book-entry systems coupled with ever more automated market infrastructures. The old world of

traditional financial systems, which was hinged on paper securities, manual verification and long settlement cycles have eventually evolved to dematerialized securities, electronic payments, central securities depositories, real-time gross settlement systems, and digital messaging networks that remarkably improved processing throughput and cut down on some transaction frictions. Yet, for all this progress, the architecture of modern finance is still institutionally siloed: trading venues, custodians, payment systems, clearing houses, and settlement agents still mostly live on their own databases and under their own legal frameworks, which means that asset transfers still involve endless reconciliation, multiple intermediaries, and stepwise updates across disconnected systems. Therefore, distributed ledger technology and its associated programmable infrastructures emerged, these enabled various parties to directly refer to a consensus upon the record of ownership and transaction history as well as embedded conditional logic directly into the ledger context. And while the arrival of DLT by itself did not guarantee financial transformation, it created the conceptual and technological space for programmable finance, where money, securities and contractual rights can interact through automated workflows, smart rules applied at favorable cost and common transaction environments. If we think about it like this, then the rise of programmable finance is not just a technology shift: it is a market design shift, because tokenised systems may enable issuance, transfer, collateralization, coupon payment, corporate actions and settlement to be executed far more seamlessly than is the case with traditional post-trade systems. One good example would be the experimentation with tokenised wholesale transactions, with institutions trying to determine if tokenised securities can be settled in central bank money or interoperable cash equivalents with fewer handovers and lower latency than traditional methods. This shift has surfaced into the policy conversation at lightning speed. This conclusion comes after IMF analysis which claims that most financial assets are already natural — in being digital — and that the critical question is not whether finance will be digital, but rather whether or when tokenisation can make major improvements in the strengths that those inefficiencies exist at different factors in the lifestyle span of a property and under what institutional situations those gains are maintainable (IMF 2025). In a comparable expansion of the data on the state of play in tokenisation, the BIS has framed tokenised central bank reserves, commercial bank money, and other financial assets within a wider conception of a single non-FinTech ledger or common programmable platform in a new era monetary and financial system, signalling the fact that tokenisation is no longer seen merely as an interesting emerging sector of FinTech but rather as a potential re-architecture of core financial market infrastructure (BIS, 2025). Such institutional interest is

also reflected in concrete work from central banks and market infrastructures: the Euro system, for example, tested the settlement of DLT-based transactions in central bank money using interoperability solutions between May and November 2024, with 64 participants and over 50 experiments and trials (European Central Bank [ECB], 2025), showing that wholesale tokenisation on top of DLT is moving beyond conceptual discussions to structured experimentation in the public sector. Simultaneously, policy focus has sharpened because tokenisation might create systemic vulnerabilities in addition to enhancing effectiveness; for example, the FSB has cautioned that DLT-based tokenisation can create monetary stability dangers in respect of liquidity and maturity mismatch, leverage, interconnectedness, asset high quality and pricing, and operational fragilities especially because the tokenised markets change into extra interconnected with the normal monetary system (FSB, 2024). Thus, the background to this study is delineated in five related streams of development; an evolution from paper based to digital finance; the advent of DLT and shared infrastructures; of programmable financial arrangements; of experimentation by central banks and market infrastructures; and of wholesale tokenisation increasingly identified as a question of efficiency, robustness and systemic design in policies. The cumulative effect of these developments renders the current neologism not just a fringe financial science experiment, but an increasingly serious topic of institutional inquiry, infrastructure testing, and regulatory deliberation with direct consequences for the future organisation of money and securities markets (BIS, 2025; ECB, 2025; FSB, 2024; IMF, 2025).

Statement of the problem

Despite increasing policy attention, market experimentation and technological optimism, there exists a core research problem pertaining to the validity of tokenised financial arrangements to make the financial system more efficient, transparent and resilient without simultaneously reproducing new forms of legal uncertainty, operational fragility, market fragmentation, liquidity dislocation, governance weakness and systemic risk because, although many financial markets have already become increasingly digitized, their existing structure continues to rely on multiple intermediaries, separated ledgers, time-consuming reconciliations and institutionally segregated processes, with claims towards tokenisation as a potential remedy to such inefficiencies set against the backdrop of high hopes about programmable ledgers, shared infrastructures and integrated transaction processing, yet unresolved debates within both the academic and the policy debate leave ambiguous the actual potential of tokenised money and tokenised securities to achieve scalable benefits

without toppling trustworthy expectations, to shift the discourse to the broader level, the International Monetary Fund has pointed out that tokenisation may alleviate certain financial market inefficiencies spanning trading, settlement and asset servicing but has equally cautioned that these alleged efficiencies are largely contingent on institutional design, legal clarity and appropriate governance, while the Bank for International Settlements unanimously characterized tokenisation as a transformative innovation capable of reshaping the future monetary and financial system but hastened to emphasize that the safety margin upon which the integrity of tokenised finance relies rests on trusted forms of money, interoperability and resilient public pillars instead of disintegrated or loosely anchored private solutions reinforced by the Financial Stability Board's warning that linkages of traditional finance with tokenised activities may amplify vulnerabilities associated with leverage, interconnectedness, liquidity mismatch, asset repricing, and operational reliance (Bank for International Settlements [BIS], 2025; International Monetary Fund [IMF], 2025); indeed, a tokenised bond may in principle enable faster issuance, automated coupon payments and near-real-time delivery-versus-payment settlements, but, if the cash leg used for settlement, the legal determination of the token's nature or the interoperability between trading, custody and payment infrastructures are perceived as ambiguous or inconsistent across jurisdictions, the prospective efficiency may very well be cushioned by elevated legal, operational and systemic hazards not unlike a token offered as a deposit or a tokenised central bank money structure may facilitate seamless wholesale settlements but need to be counterbalanced with prudent governance, prudential safeguards and unified technical standards to avert fragmentation across different platforms, a risk that has recently been underscored by the Euro system’s exploratory work on wholesale central bank money settlements for DLT-based transactions, illustrating both the practical impetus behind tokenisation and the abiding necessity for policy harmonization, infrastructural congruence and institutional supervision (European Central Bank [ECB], 2025); thus, the pertinent issue addressed in this study is that the global momentum in favour of tokenisation of money and securities has outpaced the evolution of a fully-fledged analytic and regulatory framework to appraise its long-term repercussions, introducing a serious knowledge deficit with respect to the question of whether tokenised financial architectures foster or constrain the future financial system by diminishing frictions or culminating in new pathways to instability, fragmentation and trust erosion, and it is this quest for equilibrium between opportunity and risk that motivates the need to systematically investigate tokenisation as both a financial orientation and a policy-

sensitive reconfiguration of modern financial architecture (BIS, 2025; ECB, 2025; FSB, 2024; IMF, 2025).

Research objectives

1. To examine the concept and architecture of tokenised money and tokenised securities.
2. To assess the efficiency benefits of tokenisation in payments, trading, clearing, and settlement.
3. To analyze the major risks associated with tokenisation, including legal, operational, liquidity, interoperability, and financial stability risks.
4. To compare the policy positions of major international institutions on tokenisation.
5. To propose conditions under which tokenisation can support a safe and efficient financial system.

Research questions

1. What is meant by tokenisation of money and securities in the context of modern financial markets?
2. What opportunities does tokenisation create for payment systems and securities markets?
3. What are the principal risks associated with tokenised financial infrastructures?
4. How does tokenisation affect market efficiency, settlement finality, liquidity, and systemic stability?
5. What regulatory and institutional arrangements are necessary for successful adoption?

Literature review

It is against this background that the conceptual, institutional, and policy literature on tokenisation now increasingly conceptualizes it not as a marginal experiment in fintech, but as a potential design and redesign of how money and securities are issued, transferred, settled, and governed in modern finance, within which literature the IMF has defined tokenisation as the programming, recording, and transfer of clarity and information on widely shared, trusted, and programmable digital ledgers, while arguing that its relevance should be determined not by whether it merely digitizes existing processes, but by whether it can reduce inefficiencies across their life cycle (BIS, 2025; Financial Stability Board [FSB], 2024; IMF, 2025; IMF, 2025); the genre of critical application accompanying this literature further differentiates tokenisation by the nature of the claim being tokenised and the institutional trust structure supporting it: thus, common designations in use include: tokenised deposits as tokenised claims on commercial banks that aim to protect the singleness of money while

realizing programmable settlement and atomic delivery-versus-payment arrangements between digital assets, tokenised central bank money referring to the subset represented by tokenised reserves or wholesale central bank settlement assets having the most reliable conversion into final settlement asset to anchor trust and finality in tokenised finance and tokenized financial markets, stablecoins as privately issued digital tokens that aim to achieve price stability or stability in purchasing power or value by signalling the relative value of claims against legal tender or pole of trust or reserve assets as if they were money, tokenised bonds as debt securities issued or mirrored on programmable ledgers, tokenised equities as equity ownership stakes in corporate issuers in token form, and tokenised funds and collateral as tokenised fund shares, money market instruments, government securities, or related claims mobilizable for settlement, margining, repo, and liquidity management purposes (BIS, 2026; FSB, 2024; IMF, 2025); a central theme in the BIS literature has been that not all tokenised money in the family of issued instruments is equal, in that core trusted forms of money in the financial system must satisfy the standards of singleness, elasticity, and integrity, which means that money should be accepted at par, supplied flexibly to satisfy the highest economic needs, and protected from illicit use and the system abuse of others, and against this legal standard, the BIS has argued that tokenised central bank reserves, and tokenised commercial bank money, may turn out to be institutionally superior anchors for tokenised finance, by contrast to which private stablecoin arrangements, may indeed offer some significant new technical promise, can no longer, in degree or scope, approach their full, or any but the narrowest application for foundational purposes, as the same aggregate building blocks for foundational money system (BIS, 2025); and this distinction between money equivalents markets has thus become all the more important with the rising salience of precise taxonomies about financial tokenisation following this literature and moving beyond generic description of blockchain (IMF, 2025); the tokenised deposits literature has expanded as banks and policy institutions increasingly treat them as a regulated alternative to private payment tokens, especially for wholesale and interbank use, and since, categorically, their design matters for overall financial stability: under certain models, the emergence of secondary-market trading, deviations from par, or complexity for the singleness of money are possible if tasking tokenised deposit models are not carefully supervised and legally structured (FSB, 2024); similarly, the tokenised central bank money literature has also grown, especially for the wholesale domain where their policy work is focused on settlement finality and interoperability, while the Euro system has run practical exploratory work between May and November 2024 involving 64 participants in over 50 trials and experiments (European

Central Bank [ECB], 2025); by contrast, there is increasing division in the literature on stablecoins, where often regarded in industry discourse as tokenised money on some terms suitable for enduse payments and onchain settlement, institutional literature is more cautious, with its recent findings in innovation drawing on some recommendation of the BIS framework, the former of which finds that private tokenised stablecoin arrangements do not properly meet underlying foundational requirements of sound currency, just as it is, and, in turn, the design of the factors of private redemption risk, asset quality, leverage, liquidity mismatch, interconnectedness, and operational concentration if such assets subsidized by variable wholesale funding and reshaped financial pockets, become further embedded in the broader financial economy (BIS, 2025; FSB, 2024); emerging literature on tokenised bonds has become much more prescriptive and policy-oriented. Recent literature expands the analysis of tokenisation beyond general blockchain discourse and proposes that legal design, market structure and settlement architecture are the primary determinants of the credibility of tokenised money and securities as fungible instruments within regulated finance. Introduction Granting or denying trust: with indefinite liquidation rights, tokenisation can also be a non-option Lavayssière (2023/2025) proposes that tokenisation should not be considered a mere digital wrapping of an existing asset but an institutional arrangement where the relationship between the token and the underlying asset, the sharedeness of the infrastructure, and the expression of ownership collectively decide whether tokenisation is providing real trust minimisation and legal certainty; this contribution is of importance to the literature as it pushes it beyond a purely technical perspective to take an interdisciplinary view and looks at finance, law and infrastructure design. Similarly, Aldasoro, Doerr, Gambacorta, Garratt, and Koo Wilkens (2023) propose a "tokenization continuum," on the basis of their analysis that for claims that are particularly burdensome to tokenize, greatest efficiency gains are usually linked to the most complex legal, economic, and technical challenges—in particular with respect to the possibility to guarantee ownership rights, the certainty of settlement finality, as well as potential interoperability across platforms. All of these inputs are vital for the current analysis as they exhibit that tokenisation is not homogenous in its application across asset classes and that its value pivots on how well asset claims are able to be neatly mapped to one or more programmatic, enforceable and transferrable digital representations. A second body of literature studies tokenisation from a financial stability and interconnection perspective. According to Carapella, Chuan, Gerszten, Hunter and Swem (2023), tokenisation is the creation of digital representation of non-crypto reference assets and they highlight that tokenised structures may create interconnections between crypto-asset ecosystems and the

existing financial markets enabling risks inherent in one area to flow to the other as tokenised asset grows. They make particularly useful distinctions by identifying physical design features that are not mere features of tokenisation but (1) the asset on the blockchain (the reference asset), (2) the valuation mechanism, (3) the custody structure and (4) the redemption mechanism of the token and showing that tokenised arrangements are materially different, with respect to their risk profile, rather than a single homogeneous innovation. The relevant literature [15, 16] makes a strong case for why the potential benefits offered by tokenisation (e.g., greater transferability and programmability), cannot be considered in isolation from underlying structural risks (e.g., dependence on custodial services, redemption risk, fragile price-linkage and spillovers into the traditional financial system). It also increasingly differentiates between different vistas of tokenised money in particular, deposit tokens, central bank money tokens and stablecoins. BIS, on the other hand, recently published an influential piece by Garratt and Shin on stablecoins vs tokenised deposits that goes some way toward making this argument, explaining that stability of money is likely to be better preserved when private tokenised money remains firmly in the regulated banking and central bank backstop framework, and that private stablecoins structures likely risk not meeting the same standards of parity, elasticity and integrity required of core monetary arrangements. This distinction is found in broader academic and policy debate, as tokenised deposits are often framed as become conditional on commercial bank liabilities and programmable settlement environments (it other with respect to stablecoins, were issue more often regarding reserve quality, redemption, governance or systemic contact). This literature is pertinent to the current study in that it depicts tokenisation as a monetary architecture issue, as opposed to one solely related to asset technology, particularly where settlement is in a trusted digital cash leg in the case of tokenised securities. For example, the literature on the securities side has recently unpacked how tokenisation could disrupt issuance, settlement, corporate actions and collateral. According to Soni, Fines and Sun (2025), who treat tokenisation from the perspective of investment and a market-structure they claim that tokenisation can help create value through faster settlement, increased transparency, fractionalization and improved fund and asset servicing (where fund service providers streamline operational processes), however, they do warn that the technology's benefit in practice depends on its performance in solving existing market frictions relative to existing market infrastructures. This point of view is echoed by newer technical-financial research such as Blockchain Meets Securities: A Scalable Tokenization Framework, which demonstrates that although tokenisation seems conceptually simple, challenges arise when

decentralized-finance mechanisms meet with real world securities because pooled smart-contract constructions can obscure claims to entitlements like dividends, coupons and voting rights; as a result, the authors propose a framework aimed at maintaining security-holder entitlements while making tokenised securities more operationally viable. This work is relevant to the present study as it demonstrates how tokenised bonds and equities are not just faster digital wrappers but actually sensitive legal and operational instruments, and raises the question of whether rights, claims, and settlement outcomes are likely to remains clear under token-based market design for these instruments to work. Another strand of literature targets bond markets and tokenised government bonds, which some regard as one of the most likely wholesale use cases. That is, existing bond-market processes - with their long chains of intermediaries, numerous reconciliations, and fragmented money flows - can have an unnecessarily high transaction cost and inefficient use of collateral, if bonds can interact with settlement assets on a programmable platform (commonly referred to as tokenisation) (Cornelli et al.(2025)).BIS research goes on to argue that government bonds are particularly ripe for tokenisation. Prior design-oriented academic work on tokenised bond systems has similarly found the potential of blockchain-based architectures to offer efficiencies and lower transaction and administrative costs within bond markets, but these benefits have been contingent on meaningful compliance with legal frameworks and careful system design. This literature is pertinent for the current study since tokenised bonds set up one of the most straightforward examples of the potential of tokenisation in controlled money, yet likewise show that hugeness enabled appropriation relies upon aligned legitimate acknowledgment, specialized intercessions, and dependable settlement foundation. Recent literature also shifts toward the idea of structural transformation of features of “tokenised finance” behind the whole process rather than viewing it as product innovation. A note from the IMF, published in April 2026, claims that tokenisation is now affecting regulated finance itself, including banks, asset managers and market infrastructures, and its most important ramifications stem from atomic settlement, continuous liquidity management and embedded compliance as opposed to speculative crypto use cases. This newer line of analysis bolsters the nascent academic consensus that sustainability of tokenisation regardless of pilot projects and results will be largely contingent on whether tokenised money and tokenised securities find a place in a sound, interoperable and legally-based architecture. Overall, this bolsters the case for the exploration of tokenisation as a systemic institutional change that impacts money, settlement, securities servicing and market governance, at the heart of the research question posed in this literature review.

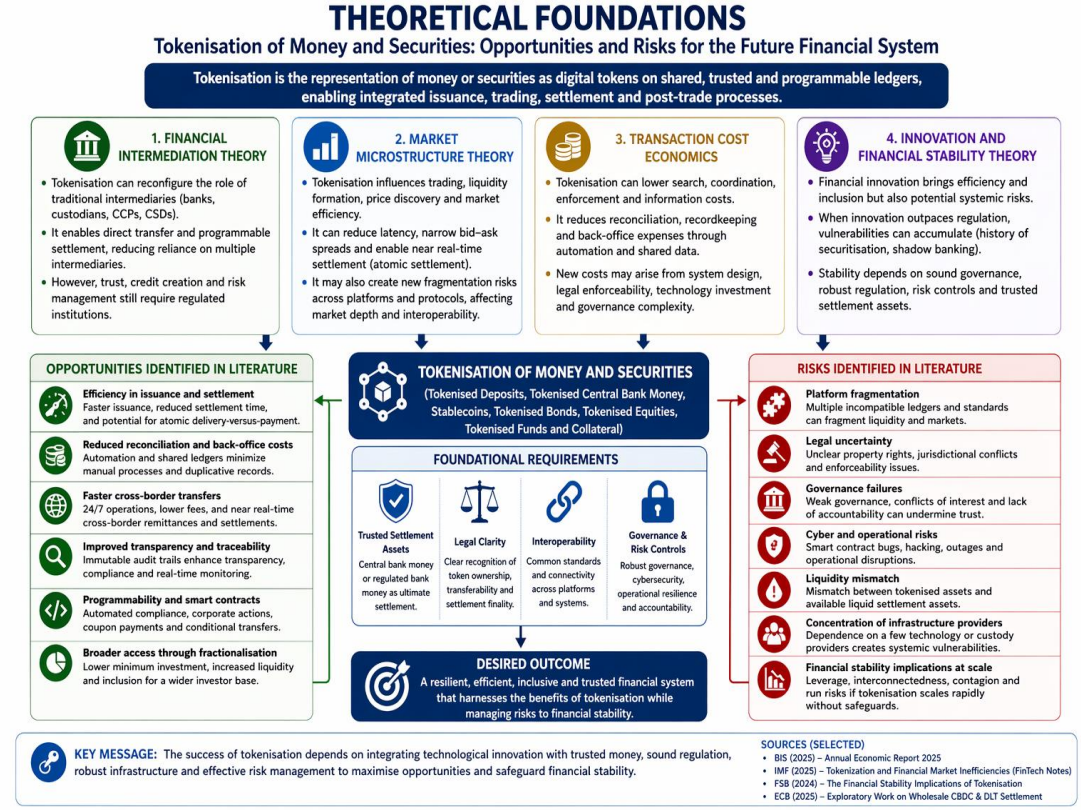
Theoretical foundations

The theoretical foundations of the study can be anchored in financial intermediation theory, market microstructure theory, transaction cost economics, and innovation–financial stability theory, given that each helps to explain why tokenisation is attracting serious attention from policy institutions and market participants while also generating concern about systemic consequences: from the perspective of financial intermediation theory, tokenisation may transform roles traditionally performed by banks, custodians, central securities depositories, and payment intermediaries, by enabling certain functions of recordkeeping, transfer, settlement, and collateral mobilization across in-built programmable platforms, yet the BIS emphasises that the trust on which the monetary system relies has so far always depended on settlement assets anchored in central bank money and regulated commercial bank money (which in this view remains the only institutionally credible form of money) not weakly anchored private substitutes so that tokenisation may reshape intermediation but cannot eliminate the need for credible institutional anchors of money and finance; in terms of market microstructure theory, tokenisation is relevant because it may alter the organisation of order, ownership record, matching, clearing, delivery versus payment, and post-trade settlement, with the IMF arguing that, by bringing asset records and transaction logic onto a common and programmable ledger, tokenisation could reduce frictions across issuance, trading, servicing, and settlement, improving transparency, traceability, and speed of execution, whilst the BIS adds that the union of tokenised money with tokenised government bonds and other assets could support better market functioning and new contractual arrangements on shared platforms; transaction cost economics further explains the appeal of tokenisation, given that one of its most frequently cited opportunities in the literature is the potential reduction of reconciliation costs, duplicate recordkeeping, manual back-office processes, and intermediary co-ordination expenses, which is why recent institutional work highlights potential gains in issuance and settlement efficiency, faster cross-border transfers, programmable compliance, smart-contract automation, and broader access to assets through fractionalization, illustrated by the Euro system's exploratory work in 2024/25 involving 64 market participants, which conducted more than 50 trials and experiments on the settlement of DLT-based wholesale transactions in central bank money, thereby showing there is practical demand for more integrated transaction processing; however, innovation and financial stability theory is also important because it makes it clear that financial innovation sometimes creates new fragilities aside from efficiency gains, and the FSB's report (2024) identifies particular risks that may heighten as tokenisation scales, including platform fragmentation across non-interoperable

systems, legal uncertainty around ownership and settlement finality, governance failures, cyber and operational vulnerabilities, liquidity mismatch, concentration of infrastructure providers, leverage and interconnectedness, and broader systemic consequences if tokenised activities become deeply embedded in core markets, so that, in sum, the literature suggests that while tokenisation has a great theoretical appeal as it promises lower friction, greater programmability, and improved market design, it also presents the classic policy dilemma whereby innovations capable of improving the efficiency of issuance, settlement, collateral use, and cross-border transfers, may also, under legal ambiguity, lack of interoperability, fragile governance, and poorly anchored settlement assets, reproduce pre-existing market failure in a more complex and potentially more fragile digital form. The tokenisation of money and securities can theoretically be placed within frameworks which go some way to describe both the disruptive promise as well as conditions which are rooted deep in systemic issues of modern financial systems. Tokenisation, from a financial intermediation theory perspective, signals a structural shift in the financial intermediation process, as traditionally banks, custodians and clearing institutions have played an essential role in creating trust, transforming risk and providing liquidity, while these roles may be partially disintermediated by shared ledger infrastructures that allow near-direct asset transfer and programmable settlement; yet, this theory also indicates that it remains unlikely that full disintermediation will occur, as trust, credit creation and risk management are functions that need to be carried out by regulated entities and remain institutionally embedded. At the same time, market microstructure theory offers a tool to assess the implications of tokenisation on price discovery, liquidity formation and trading efficiency, as tokenised platforms may reduce latency, enable near instant settlement and bring trading and post-trade activities together, changing bid–ask spreads and timing of transactions, depth of book but also potentially causing fragmentation through more incompatible trading venues and protocols.

In addition, transaction cost economics provides an important account of the increasing enthusiasm for tokenisation in that it point to ways that search, coordination, enforcement and information costs in economic exchange can be lowered; tokenised systems, by moving functions of asset trade and management into automated, shared data environments can offer the potential to materially reduce costs associated with reconciliation, remove the burden of unnecessary recordkeeping, refresh problematic assumptions and behaviours in intermediary roles and reduce frictions in operational asset lifecycle processes even substantially, however as this framework also reminds us, new costs can also arise through technological complexity, governance design and legal enforceability of smart contracts. Separately, the

theory of financial innovation and stability suggests then that financial innovation is a double-edged sword, as technological changes like tokenisation improve efficiency and expand financial inclusion, they can also create systemic new risks, especially when regulatory capture lags behind innovation or vice-versa, as the financial evolution following securitization and shadow banking taught us. Within this framework you could consider tokenisation a sort of universal financial innovation that engages with pre-existing institutional structures rather than completely supplanting them, a hybrid framework where traditional and decentralized elements each have a home alongside the other. This theoretical synthesis suggests that tokenisation is not just an upgrade of technology, but a shift of the financial architectural set-up, where efficiency arises in the specific governance quality, interoperability standards and the credibility of a monetary asset. On the positive side, the combined theories highlight the systemic, social, economic and political implications of the long-term viability of tokenisation can only be critical to the sustainability of the current financial system if the balance between decentralisation and institutional trust, efficiency and resilience, and innovation and regulation is celebrated, thus reaffirming the need for a multidimensional and analytical approach when considering its implications for the sustainable future open financial system.



Above diagram showing theoretical foundations related to the study

RESEARCH GAP

Despite a growing literature on the tokenisation of money in the form of central bank digital currencies, and the tokenization of securities in the form of digital financial assets, a major research gap remains in the absence of a comprehensive and integrative analytical framework that allows simultaneously weighing the relative merits of tokenized monetary instruments as securely central bank liabilities and tokenized financial assets as legal titles to value against their joint implications for system-wide financial stability existing studies have provided seminal insights into specific dimensions of tokenisation eg settlement efficiency, distributed ledger design, legal enforceability, wholesale central bank use cases yet, empirical assessments tend to be segregated in institutional, technical, and policy silos that do not yet fully reflect or account for the implications of interconnections along the monetary-asset nexus (for example, recent research by the IMF shows how tokenisation mitigates inefficiencies across trading, clearing, and settlement processes, yet highlights how these benefits remain contingent on individual institutional arrangements, i.e do not assure system-wide improvements (International Monetary Fund [IMF], 2024; Organisation for Economic Co-operation and Development [OECD], 2025)), one notable exception being bottom-up governance assessment frameworks for digital assets such as the condensation of market conduct, legal enforceability, and regulatory principles developed by various bodies such as IOSCO and the World Bank (International Organization of Securities Commissions [IOSCO], 2024; World Bank, 2025), however, these attempts have not yet yielded an integrated approach that would fully appreciate the associations of design, trust, and systemic implication; these complementary research lines have strong merit in the local context but remain less useful in making sense of the converging alcohols of conventional and tokenized finance, which raise new questions about cross-platform liquidity and institutional cooperation while threatening the currency of money itself; Illustratively, although theoretical studies have begun to explore the implications of tokenisation from decentralisation and governance angles (Cong, He, and Li (2021) and Chen, Bellavitis, and Luo (2023)), critical lenses which can provide avenues for theorizing interaction between platforms, they frequently scrutinize either crypto-native infrastructures or monoclass assets, rather than redrafts embodying open comparative modelling that incorporates regulated financial institutions and asset-backed settlement frameworks (one of the prime teleologies of money, social legitimacy, and systemic resilience (Lo and Wang, 2021)) as collective anchors against risk transmission; in parallel, systemic implications across national contexts and risk domains remain limited, not least since empirical evidence remains thin, and mostly framed by insular

pilot projects or small-n experimental perspectives (eg Project Helvetia [Swiss National Bank, 2024], Project Ensemble [Hong Kong Monetary Authority, 2025]), that internally validate tokenized channels under controlled conditions, but fail to provide needed longitudinal or natural data to conclude on effects such as liquidity dynamics, contagion channels, and macro-financial feedback (Lo, 2020); Consequently, our study seeks to fill this gap through the construction of an unified form of evaluation that not only compares specific opportunities and trade-offs, but also jointly scrutinizes their sources of stability, while simultaneously utilising solutions to make sense of the overall system architecture of digitalized financial markets as a single coherent framework, where traditional and tokenised infrastructures converge, develop, if not compete (Lo and Wang, 2021), at which, we argue, credibly preserving the singleness of money expands systemic onset risks, but equally new avenues for securitization and system-wide contagion channels.

Methodology Adopted for the study

The research design is qualitative, desk-based, exploratory, and analytical, grounded in secondary data analysis, because in a field like the tokenisation of money and securities, where the most credible and latest evidence is still highly concentrated in institutional reports, policy papers, official experiments, working papers, and high-level regulatory assessments rather than long historical datasets or large-sample empirical market series, a doctrinal and analytical studiousness is especially appropriate in order to critically examine how tokenised deposits, tokenised central bank money, stablecoins, tokenised bonds, tokenised equities, and tokenised funds or collateral can transform the future financial system; thus, the study is based on documentary sources such as publications from the Bank for International Settlements, International Monetary Fund, Financial Stability Board, European Central Bank, central banks, securities regulators, and peer-reviewed journal literature because these sources are still the most comprehensive, most contemporary (using data up to October 2023), and appropriately comprehensive conceptual taxonomies, capturing policy concerns, and evidence from live or simulated market applications, including the IMF's 2025 framework that assesses tokenisation through the lens of financial market inefficiencies, the BIS's assessment of the role of tokenisation as a building block of the next-generation monetary and financial system, and the FSB's assessment of the financial stability implications of DLT-based tokenisation (BIS, 2025; FSB, 2024; IMF, 2025); the analytical approach combines thematic analysis (Bryman, 2016; Braun & Clarke, 2019; King & Horrocks, 2010) with comparative policy analysis (Meissner, 2018; Meyer, 2017), meaning

that, first, the study identifies themes recurring in the literature by identifying the text segments relevant for the research objectives, then it compares how different institutions and authors have articulated their positions on the most important analytical dimensions namely efficiency, transparency, settlement finality, interoperability, legal certainty, operational resilience, liquidity management, financial stability, and regulatory readiness to reveal that tokenisation is sometimes treated as a broader technological novelty rather than as a multifaceted institutional development affecting market design, public trust, and systemic resilience; this approach suits the topic because existing evidence on tokenisation is still strongly influenced by pilot projects and policy experimentation, as the Euro system's exploratory characterization of wholesale central bank money settlement illustrates, which engaged no less than 64 contributors between May and November 2024 in a series of over 50 trials and experiments with regard to DLT-based transactions that produced rich qualitative evidence on interoperability, settlement design, governance, and operational feasibility, and would not deliver well-matured time series data for econometric testing (European Central Bank [ECB], 2025); such the rationale behind the methodology responds to the study in that it allows the researcher to synthesize recent knowledge, comparatively qualify institutional perspectives, alternative options, and associated risks along the tokenisation narrative, and aggregate a cohesive assessment of tokenisation at a time when the field is moving extremely quickly, while still too soon for more definitive empirical generalization of effects and socio-political consequences.

Scope of the study

This study is therefore intentionally limited to the tokenisation of money and securities in the context of wholesale and institutional finance, with a focus on analysing the potential ways in which tokenised monetary claims and tokenised financial instruments could transform both the functioning of specific markets and settlement architecture, as well as broader financial stability, as the most advanced and policy-relevant developments presently seem to be concentrated in certain regulated market infrastructures and in certain central bank settlement arrangements and emerging capital-market use cases and not so much in retail crypto environments; for the reasons above, this study therefore focuses on money intended to be used for institutional purposes (especially tokenised commercial bank deposits, tokenised central bank settlement assets and closely-related settlement arrangements) and wholesale or institutional market activity (especially government bonds and other financial instruments that appear to be increasingly under discussion as candidates for issuance, trading, collateral

use, and delivery-vs-payment on shared programmable platforms, supporting the premise underlying the BIS's argument for a 2025 core "trilogy" of tokenised central bank reserves, commercial bank money and government bonds for a next-generation monetary and financial system, as well as the ECB's 2025 wholesale settlement work, which reported DLT-based transactions in central bank money since May 2024 involving 64 participants and over 50 trials and experiments, confirming that the principal tokenisation policy frontier is presently largely institutional rather than retail (Bank for International Settlements [BIS], 2025; European Central Bank [ECB], 2025); substantively the study addresses that the potential benefits of tokenisation applying to money and securities include (but are not limited to) greater efficiency, flexibility, transparency, interoperability, and improved post-trade processing (eg in the form of greater and or new standardization among clearinghouses, custodians, and tackle and greater auditability either on the blockchain, accounting for foreign claims at market-prices and or so with each regulated market participant through the facilitation of cross-market exchanges of particularly tokenised forms of systemic risk) while, at the same time, tokenised commercial money and securities may also imply a range of risks, including legal uncertainty, operational vulnerability, liquidity stress, governance problems, and broader financial stability concerns; drawing in particular on international policy perspectives developed by the IMF, FSB, BIS and ECB (whereas these institutions now provide the most authoritative and up-to-date frameworks for defining and assessing whether integrated tokenisation implies meaningful implications for regulated finance and system resilience (Financial Stability Board [FSB], 2024; International Monetary Fund [IMF], 2025); at the same time, this study very explicitly excludes (1) easy retail crypto trading; (2) non-financial tokenisation such as NFTs linked to art or real estate collectibles as well as (3) the majority of purely technical software-engineering questions which lie outside an immediate finance-policy scope, because these areas entail distinct research problems, market logics and disciplinary methods from the problem at hand, which exclusively concerns the implications of tokenised money and tokenised securities for institutional market infrastructure and systemic financial architecture, as illustrated by IOSCO's considerably 2025 capital-markets work on asset tokenisation and by FSB's considerably narrower mandate to focus on DLT-based tokenisation with potential financial stability relevance rather than on the entire universe of digital assets (FSB, 2024; International Organization of Securities Commissions [IOSCO], 2025); in terms of scope, following the definitions from Kreitner et al. (2021).

Significance of the study

The value placed on this research is twofold, whereby for academics it bolsters a burgeoning but poorly integrated category of literature related to digital finance by synthesizing monetary, security and interoperability questions under a structural definition of the edges of the regulated finance universe and linking them to the question or future design with regards to tokenisation as an institutional transformation (in lieu of other blockchain or crypto technologies), while for regulators it is, simply put, timely as markets identify evidence of disruptive behaviour by tokenised assets and IOSCO notes that in order to preserve market integrity, legal certainty, and financial stability in the transition towards tokenisation, they need a more coordinated view of its market size and impact; the practical urgency in the design of tokenised money itself - with implications for settlement trust, finality, and the monetary system - assume further dimensions for topic relevance among central banks, as the BIS predicted that tokenized central bank reserves, commercial bank money, and government bonds could shape the architecture of a next-generation monetary and financial system, while the Eurosystem?s exploratory work involving 64 participants and over 50 wholesale settlement trials of central bank money illustrates that central banks are treating tokenisation less as academic fodder and more as a live infrastructure question; financial institution firms have an interest in tokenisation-related changes to issuance, custody, collateral use, compliance, and post-trade operations with the IMF's 2016 note suggesting that the most significant transformation occurs inside the regulatory perimeter where many of the other developments of new financial systems is happening, and while the risk exposure for investors will essentially depend on new settlement models and fractionalized ownership structures, IOSCO reminds us many promised liquidity benefits are largely illusory at this stage justifying any academic review (International Organization of Securities Commissions [IOSCO], 2025; Bank for International Settlements [BIS], 2025; European Central Bank [ECB], 2025; International Monetary Fund [IMF], 2026).

Discussion related to the study

This also threads into the core issue in a final aspect of the discussion of the tokenisation of money and securities in a future financial system: the debate on how far new programmable ledger arrangements can be purposed to reduce the cost of payments and of capital markets, while maintaining finality, legal certainty, and systemic resilience on which regulated finance is premised on the money-side, where the main divide in literature is between tokenized central bank money, tokenized commercial bank money and stablecoins (for example

tokenised central bank money especially in wholesale form is the highest trust settlement asset (preserving not only finality but public confidence in the unit of account); tokenised commercial bank money can extend familiar bank-based money into programmable settlement environments under existing prudential structures (and the risk of dwarfing the bank as the primary provider of credit risk bearer); and private stablecoins, while flexible and well-discussed for on-chain payments, are approached more cautiously by the BIS (who argue central bank money and commercial bank money remain foundations to monetary trust, and that privately issued stablecoins appear less able to meet the core requirements of singleness, elasticity and integrity required for money to be a foundation for a sound monetary system (e.g., Bank for International Settlements [BIS], 2025 - on financial-stability implications see section 4)); and on the securities side, where wrenches aside, tokenisation enables bonds and notes and other instruments to be issued directly on tokenised platforms, transferred through more transparent record-share solutions to retain transaction cost advantages against incumbent systems, and managed though their life-cycle through smart-contract logic for coupon payments, collateral movements, and corporate actions, while also enabling delivery-versus-payment arrangements and potentially real-time or near-real-time settlement (the Euro system exploratory work is reflective of this direction, involving between May and November 2024 64 participants and over 50 trials and experiments to explore DLT-based transactions in central bank money and generated evidence on the operational feasibility of this innovation for tokenised wholesale settlement (e.g., European Central Bank [ECB], 2025), with the main positives noted in current literature around payment areas presented as reduced transaction and reconciliation costs, improved operational efficiency, faster settlement, better data quality and traceability, enhanced programmability through smart contracts, increased collateral mobility, and stronger cross-border potential discussing common infrastructures to enable money and assets to interact (and stating that tokenisation can help reduce several core inefficiencies existing across the asset life-cycle even if not all frictions disappear (e.g., International Monetary Fund [IMF], 2025)- while however the quantity of risks remains pronounced including interoperability gaps across platforms, legal uncertainty over ownership and settlement finality, concentrations of governance risk, cyber and other operational vulnerabilities, liquidity stress, procyclicality and contagion channels as tokenised markets enter into more interrelated relations with traditional finance, all features which are front and centre to the FSBs assessment that, while threatening to be economically, including in payments and settlements, more efficient and transparent, if design, regulation, and settlement trust are inadequate,

tokenisation may amplify vulnerabilities within regulated finance, in reports beyond its remit (section 4) initiated (Financial Stability Board [FSB], 2024)

Findings related to the study

The findings from such latest institutional evidence is that tokenisation as such does not deliver inherently but only coupled to a sound market design, which ensures that trusted settlement money, legal enforceability of tokenised rights, interoperability rather than fragmentation, adequate governance, and fitting regulation enforce their value, because they manifest themselves especially as true structural shifts in financial architecture (rather than merely marginal operational improvements), bringing about not only meaningful gains in issuance, settlement, collateral use, and market transparency – but also creating material risks if core public-policy foundations are weak: the BIS finds that tokenised platforms are capably anchoring in commercial bank money, government bonds and (by virtue of its properties of singleness, elasticity and integrity) reserve balances; however it concludes that the latter are critical foundational assets as they can support a next-generation monetary and financial system that meets every other central objective of this public-policy endeavor, while private stablecoin arrangements fall short of the standards needed to serve as that system's main monetary base (Bank for International Settlements 2025); tokenisation can also reduce certain market inefficiencies across the asset life cycle through shared ledgers, programmability and integral processing, the IMF argues; yet the latter also emphasises that not all frictions disappear and new inefficiencies can emerge where institutional arrangements, governance and legal structures are incomplete (International Monetary Fund 2025), while one month later the IMF even describes this process as encompassing a real structural shift in financial architecture rather than a mere marginal operational improvement, even more so in a context of regulated finance where atomic settlement, continuous liquidity management, and embedded compliance are becoming feasible on programmable infrastructures (IMF 2026); encouragingly, the ECB offered the practical evidence backing these insights with the results from its Euro system exploratory work showing that during a period between May and November 2024, bringing together 64 participants, running as much as 50 trials and experiments, and settling nearly 1.6 billion euro in central bank money through central bank money was technically and operationally feasible while its scalability has been shown to de facto heavily depend on the development of interoperability solutions combined with legal readiness and a firm government which can ensure that continued coordination between public and private actors sustains its aggregated underlying value (European Central Bank

2025); it is thus fully deeming with the FSB which ultimately finds that tokenisation could also amplify long-standing vulnerabilities associated with traditional finance such as interconnectedness, liquidity stress, leverage, operational fragility, and concentration risk and warns these concerns are not immediately resolved with tokenisation, meaning the efficiency gains it can bring will feature as procyclical and lead to contagion phenomena where institutional safeguards are not robust enough (Financial Stability Board 2024), and notes that it is only in the presence of a trusted public or regulated private money base, the claim on tokenised assets bearing a legally enforceable status, full ledger interoperability, resilient governance, and adaptive regulation that tokenisation can yield its greatest overall benefits.

CONCLUSION

To sum up, the analysis shows how the tokenisation of money and securities could mark an important step forward in the evolution of modern finance on the back of its capacity to modernize market infrastructure, enhance issuance and settlement efficiency, enable programmable financial transactions and create new use cases in collateral management and cross-border activity, but that these benefits are conditional, because the latest BIS work establishes that tokenised platforms will be well placed to underpin a useable next-generation monetary and financial system mainly when built on robust foundations such as central bank reserves, commercial bank money and government bonds, rather than on weakly anchored private substitutes, while the IMF similarly finds that while tokenisation may alleviate some market inefficiencies over the asset life cycle, it will not do away with all frictions and may create new ones if institutional design is left incomplete or poorly coordinated (BIS, 2025; IMF, 2025); the practical evidence from Europe reinforces this conditional conclusion, as the latest results published by the ECB from the Euro system's exploratory work demonstrate between May and November 2024 a total of 50 trials and experiments were conducted by a number of 64 market participants, which also settled nearly €1.6 billion in central bank money, thereby showing that while tokenised wholesale settlement has proved just technically feasible and commercially meaningful, its longer-term value will depend on the attainment of interoperability, legal readiness, governance arrangements, and continued public-sector participation in settlement architecture (ECB, 2025); in parallel, the FSB's analysis makes it clear that tokenisation presents or amplifies vulnerabilities associated with platform fragmentation, legal uncertainty, operational and cyber risk, liquidity stress, concentration of infrastructure provision, and broader contagion channels as tokenised markets grow and become more intertwined with traditional finance, and therefore that

innovation without robust oversight will merely move familiar weaknesses into a more complex digital setting rather than resolving them (FSB, 2024); and so, the concluding takeaway of the examination is that tokenisation can be a positive contributing feature of the future financial system only if it is framed by trusted monetary arrangements, interoperable infrastructure, sound legal frameworks, fit governance, and effective supervision otherwise it may simply substitute existing inefficiencies with new forms of fragmentation and systemic vulnerability, but if it is it has the potential to become a credible ingredient of securer, more efficient, and more integrated financial markets.

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