III. Anchoring trust in money: innovation beyond stablecoins

Key takeaways

- *Digital innovation is transforming finance, potentially enabling greater competition and efficiency in payment systems and financial intermediation. However, it also brings new macro-financial challenges and raises the broader question of how to preserve trust in money in the digital age.*
- *Stablecoins display some of tokenisation's potential to support faster and programmable payments, but current designs fall short on foundational properties of money and threaten financial integrity. Widespread adoption would raise further challenges that depend in part on the composition of stablecoin reserves and the scale of foreign demand.*
- *Advancing the future monetary system requires coordinated efforts by policymakers along two main dimensions: tackling weaknesses in current stablecoin arrangements to mitigate risks; and bringing the technological advances of tokenisation into the two-tier system to establish trusted forms of programmable money.*

Introduction

The global monetary system is at an inflection point, as digital innovation opens new possibilities for how money and assets are recorded, transferred and settled. The path to the next-generation monetary and financial system lies in improving the old and enabling the new while safeguarding the foundations of trust in money. The unifying principle is that technology should serve – not undermine – the core public good functions of money.

Within this context, this chapter assesses evolving forms of financial architectures based on distributed ledger technology (DLT) and different instruments that provide money-like functions. Among the latter, stablecoins have emerged as privately issued tokens on public permissionless blockchains that – in contrast to private permissioned networks – are publicly accessible and, in principle, enable any participant to validate transactions. The chapter illustrates potential use cases for stablecoins, discusses shortcomings and documents the macro-financial challenges that would arise if stablecoins were widely adopted, and discusses the policy priorities ahead.

The chapter begins by pointing out foundational properties of an effective monetary arrangement. These include coordination on using a common unit of account for prices, contracts and balance sheets as well as ensuring the singleness of money. Both properties are underpinned by an elastic supply of liquidity at the system level to meet payment needs in normal and stressed times. They also hinge on interoperability across payment instruments and platforms, which serves as the connective tissue that supports these properties and the network effects of money. No less important is financial integrity, which should hold good in any monetary system. The current two-tier monetary architecture, anchored in central bank money and private sector intermediation, largely upholds these properties. However, some frictions remain, such as limited interoperability across intermediaries' systems and platforms, obstacles to competition and inefficiencies in cross-border payments.

Combining DLT and tokenisation – the digital representation of claims on programmable ledgers – offers a way to address these frictions. It enables fractional ownership and direct peer-to-peer transfers, with a single shared record that reduces the need for reconciliation, permits simultaneous exchange and supports automated, round-the-clock operations. Yet the rising number of networks introduces new challenges to interoperability and raises key questions for network governance. Private permissioned networks can help to meet the regulatory and governance needs of finance. But they risk giving rise to walled gardens that dampen competition and innovation. Public permissionless blockchains, the type of distributed ledgers where stablecoins circulate, face scalability challenges, and they may require fundamentally different rules to ensure financial integrity. Current stablecoin arrangements feature additional shortcomings, such as deviations from par value in secondary markets and limits to elasticity and interoperability. Growing use of stablecoins thus raises policy challenges. Regulation will be pivotal in shaping the design of stablecoins and, by extension, their future role in the financial system.

Against this backdrop, the chapter then discusses the potential macro-financial implications if stablecoins, despite these shortcomings, were to achieve widespread adoption. The analysis highlights the roles played by regulatory requirements on issuers' reserve composition and cross-border demand. Stylised reserve compositions illustrate various transmission channels to credit supply, monetary policy, financial stability and fiscal space. Overall effects on economic activity are likely to remain limited under these scenarios. Still, sizeable stablecoin redemptions could adversely affect money markets and funding conditions. Moreover, there is a risk of "stablecoin dollarisation" in emerging market and developing economies (EMDEs), where demand for foreign stablecoins could reshape capital flows, affect exchange rate dynamics and challenge monetary sovereignty. This puts a greater onus on central banks to ensure price stability and payment efficiency.

The chapter concludes by highlighting policy priorities to advance the future monetary system. First, risks posed by current stablecoin arrangements, such as those arising to financial integrity or related to runs, need to be addressed. This calls for robust, internationally coordinated approaches that strengthen safeguards for users and mitigate adverse spillovers arising from stablecoins across markets and jurisdictions. Second, progress on integrating the technological advances of tokenisation into the two-tier architecture needs to continue. In this context, a unified ledger – eg implemented as a system of interoperable networks – could uphold the attributes of money. By integrating tokenised central bank reserves, tokenised commercial bank money and other appropriately designed and supervised private monies as well as tokenised assets, the unified ledger could realise the benefits of tokenisation and maintain trust in money, provided robust safeguards were in place.

As digital innovations continue to push the frontiers of technological capabilities in the monetary and financial system, international cooperation becomes increasingly important. Internationally consistent regulatory approaches can prevent regulatory arbitrage and market fragmentation. They can play a key role in generating virtuous network effects domestically and across borders.

History has shown that money is far more than a technology; it is an institutional achievement. Its attributes are not incidental conveniences but hard-won solutions to fundamental economic frictions. They allow money to serve as the economy's memory, to coordinate activity at scale and to support innovation without sacrificing trust.[1] Any future monetary arrangement, whether reflecting an incremental improvement or a leap into tokenised finance, must respect that inheritance or be prepared to learn the old lessons anew.

The foundations of trust in money

Money is fundamental to the functioning of any modern economy. As digital innovation promises faster and cheaper ways to move value and record claims, it is important to clarify what makes monetary arrangements effective and to identify the attributes that allow money to serve as the economy's ultimate coordination device. These attributes provide the benchmark for judging whether new arrangements preserve, strengthen or undermine what already works.

Money is typically described as having three textbook roles: a unit of account, a medium of exchange and a store of value. What fundamentally matters, however, is that money is accepted "with no questions asked" as final settlement of an obligation. This status is what makes prices meaningful, contracts enforceable and debts dischargeable. It rests on two foundational properties, which are supported by institutional arrangements for settlement and the elastic supply of liquidity at the system level.[2]

Foundational properties of money

Two foundational properties underpin an effective monetary system. The first is coordination on expressing prices, contracts and balance sheets in a common unit of account. The unit of account is the numeraire in which value is denominated; what is key is the collective agreement to use the same unit for economic calculation. The second is the singleness of money, under which claims denominated in that unit are redeemable at par with central bank money with finality. Taken together, these properties render money an information-insensitive asset that can pass from hand to hand with no questions asked.

These properties are institutional achievements sustained by credible public authorities, central banks' commitment to price stability, robust legal frameworks and supervised financial intermediaries. The common unit of account provides the language of value by placing disparate transactions on a common footing. Singleness complements it by ensuring redeemability at par for central bank money in all states of the world, so that recipients need not test the pedigree of each claim before accepting it.[3] Singleness overcomes adverse selection among different forms of money by ensuring that one dollar, euro, yuan or peso is worth the same as any other in settlement, including under stress. The absence of par exchange, even if tiny, may suffice in fair weather, but it disintegrates when stress hits, undermining the very property that enables coordination.[4]

Elasticity of liquidity at the system level underpins the functioning of these foundational properties. It contributes to ensuring "moneyness" – the ability to perform monetary functions – by keeping payments flowing amid changing circumstances. Economic activity ebbs and flows, and tax dates, quarter-ends or shifts in risk appetite can generate abrupt swings in banks' demand for central bank settlement balances. If the supply of those balances were rigid, payments would jam and an otherwise soluble liquidity shock could mutate into a solvency crisis. Central banks avert such outcomes by supplying intraday credit for settlement and by standing ready with backstops in times of stress, consistent with the monetary policy stance.[5] Because each solvent commercial bank can always replenish its reserve balance – borrowing intraday, accessing overnight standing facilities or drawing on lender of last resort facilities in stress – deposits at commercial banks remain redeemable at par for the liabilities of the central bank and other commercial banks.[6] By expanding or contracting its own balance sheet for monetary and financial stability purposes and enforcing safe operating standards on payment systems – the underlying "rails" – the central bank thus anchors the entire hierarchy of money.

Commercial banks replicate that elasticity one layer down, since their liabilities are the most widely accepted means of payment. Credit lines and the routine creation of deposits against new loans give households and firms the means to pay precisely when they wish to pay. Regulatory frameworks and supervision mitigate the risk of excessive credit creation. Deposit insurance further bolsters trust. Non-banks, such as payment service providers, play an important further role in payment and credit markets. They bring greater competition and diversity to the financial system, although new vulnerabilities may emerge.

Money's coordination function extends across borders, but the properties that underpin it are organised by currency domains. Within each jurisdiction, the properties are anchored by the central bank and its two-tier arrangements with private intermediaries. Across jurisdictions, however, there is no single unit of account and no universal settlement asset. Instead, money's reach is mediated by foreign exchange (FX) markets, a web of correspondent banking relationships and institutional backstops that connect currency areas while preserving monetary sovereignty.[7] In this setting, singleness is achieved within each currency. Par settlement is defined against that currency's reserves, not universally.

Network effects of money

Powerful network effects arise when the unit of account and singleness are firmly in place and the system supplies liquidity elastically. Sellers accept deposits because they know other sellers will; buyers hold them because they know sellers will. Usage begets acceptance, acceptance begets wider usage and the feedback loop delivers the scale that makes modern monetary exchange so efficient. Conversely, if singleness frays or elasticity is insufficient, network externalities work in reverse and coordination can collapse suddenly.

Interoperability allows network effects to compound rather than splinter. When payment instruments and platforms can interoperate under common technical standards and sound institutional arrangements, each additional user expands the set of counterparties who can be paid at par without delay, lowering information costs and deepening trust. By contrast, fragmented systems trap liquidity, force costly intermediation across networks and erode the perception of singleness. Interoperability thus acts as money's connective tissue: it carries the common unit of account across rails, preserves par transfer across institutions and instruments, and lets liquidity flow where it is needed. This holds domestically and across borders, ensuring that the benefits of scale do not stop at the edge of any particular system or platform.[8]

Central banks do not create these network effects but enable them. Their contribution has three facets. First, they stabilise the value of the unit of account through policy tools under clear mandates to ensure price stability and safeguard financial stability. Second, they guarantee par settlement with central bank reserves by operating and/or overseeing payment systems. Third, they supply liquidity on demand to solvent borrowers in these systems, from intraday credit and regular monetary policy operations to emergency backstops. Importantly, these functions rest on a sound regulatory framework and prudent supervision of the private institutions that interface with the public. They also rely on a balance sheet backed by the sovereign's taxing power and insulated from short-term political pressures by institutional independence. That combination of capacity and credibility turns the central bank into what one might call the system's trustee: the entity around which all other balance sheets can safely revolve.[9] Across borders, this anchor operates through linkages between currency areas, with FX markets and official facilities ensuring orderly translation between units of account.

Integrity forms the complementary strand that sustains trust and supports network effects. It refers to the prevention of illicit activities in the monetary system, eg money laundering and terrorism financing. When regulatory compliance and consumer safeguards are embedded consistently at the user interface, payments can flow at par with no questions asked about the instrument. Common identity and messaging standards, auditable data trails and governance that respects data sovereignty and data privacy allow institutions to interoperate without exporting vulnerabilities. Without integrity, lapses can propagate as quickly as payments do, eroding trust, inviting financial crime (or suspicions of it) and ultimately fragmenting networks.

Today's two-tier architecture and the current wave of innovation

The central bank alone cannot deliver the no-questions-asked property of money. Commercial banks and other (non-bank) regulated intermediaries are indispensable. They provide the means of payment of their customers, onboard customers, perform know-your-customer (KYC) checks, monitor transactions for suspicious activity, extend credit and absorb credit risk. Prudential regulation, deposit insurance and resolution regimes keep risks tolerably small for society at large.

Crucially, eligible private intermediaries have accounts at the central bank. That arrangement creates a two-tier structure in which private institutions allocate credit and innovate while the public sector steers funding conditions, supplies the ultimate settlement asset and sets the rules of the game.[10] The result is an institutional setup that minimises information costs for users. The system's architecture socialises trust, leaving individual transactions free from the burden of bilateral due diligence.

Confidence in this architecture has emerged from centuries of experimentation and occasional failure (Box A). Interpersonal credit gave way to commodity monies; commodity monies yielded to heterogeneous private notes; those gave way to central bank-anchored deposits; paper-based ledgers gave way to electronic book entry systems and, more recently, real-time updating of digital balances – even as earlier forms have often coexisted for long periods. Each transition aimed to improve money's ability to uphold the foundational properties of money while enhancing speed, convenience or reach. The current wave of digital innovation is no different.

Digital initiatives in tokenised finance aim to deliver efficiency gains in transferring value and settling obligations. These represent an evolution rather than introducing genuinely new forms of money. Their prospects turn less on novelty than on whether they connect to the existing unit of account, preserve singleness through credible redeemability in central bank money at par with finality and operate within a system that supplies settlement liquidity elastically and preserves integrity. If not, they risk reviving the very frictions that the modern system evolved to solve.[11]

Box A

The historical emergence of money and of central banking

Money is a fundamental social technology that is needed for complex economic systems and commerce to flourish. In societies around the world, the earliest forms of money were simple credit relationships, where an individual or family made a promise to deliver objects of value (goods or services) at a date in the future.[1] Providing those goods or services helped to extinguish that obligation. Over time, as societies and their web of credit commitments became larger, promises to pay were replaced by commodity money, such as cowry shells or coins made of natural alloys like electrum. The fact that commodity money emerged independently in both the Old World (across Africa, Asia and Europe) and the New World (the Americas) underscores the fundamental importance of money.[2]

The institutions underpinning money have taken many forms over time, with central banks becoming increasingly important as guardians of the monetary system. In the early modern period in Europe, many cities had public banks that issued financial money of the highest possible credit quality, which was accepted for settlement of other financial claims.[3] Beyond providing a venue for settlement, the emergence of central banks reflected the need for a universally accepted, liquid liability that could anchor payments and markets. By issuing claims that were, by construction, the safest and most liquid in the currency domain, these institutions supplied the monetary numeraire and a balance sheet capable of elastic support in times of stress. This public liability, underpinned by fiscal capacity, became the anchor around which private promises to pay revolved.

A particularly prominent example was the Bank of Amsterdam (Amsterdamsche Wisselbank), founded in 1609 with the stated purpose to "check the confusion of coin" and introduce a unitary standard: the Dutch Bank guilder. By allowing merchants to settle transactions on the Bank's ledgers, with Bank guilders backed by precious metals held in the vaults, the Bank supported commerce across Europe and around the world, and thus the guilder became the first truly global reserve currency.[4] This was apparent, for instance, in the crisis of 1763. In that episode, bills of exchange linked creditors in the chief financial centre (Amsterdam) with borrowers in key emerging market economies of the time (eg Prussia). When a confidence crisis gripped the market, the Bank stepped in to stabilise the system, ensuring that bills continued to be accepted and the system continued to function. This episode foreshadowed the role of central banks in later centuries as elastic nodes in the monetary system, and as lenders of last resort. The Bank functioned effectively as a proto-central bank for over a century. Yet its downfall in the 1780s, precipitated by large-scale lending to an affiliated entity and a lack of fiscal backing, shows the limits of fiat money and how trust can falter when the institutions backing it are insufficiently robust.[5]

Other episodes have further underscored the importance of a trusted monetary numeraire. For example, in 1805 the Battle of Trafalgar cut continental Europe off from the flow of Spanish silver dollars, which had served as the money of reference throughout the 18th century. This shock precipitated a major contraction of lending and severe economic fallout in France and Spain.[6]

Some major jurisdictions have functioned without central banks for a period. In the United States, for example, after the charters of the First Bank of the United States (1791–1811) and Second Bank of the United States (1816–36) were allowed to lapse, states introduced free banking laws. These laws allowed free entry for new note-issuing banks, subject to certain requirements.[7] Because of the proliferation of private banknotes, the difficulties in determining the value and – crucially – the need for settlement of (larger) payments, new institutions arose. One example was the Suffolk Bank of Boston which, from 1825 to 1858, operated a regional note-clearing system in New England. The Bank assessed the quality of private banknotes and would even stamp the notes of failed banks with red ink to prevent further circulation. This worked with some success, but the large profits of the institution underscored that this business is a natural monopoly.[8] Ultimately, these functions were taken over by the Federal Reserve System, founded in 1913. This mirrors the evolution from private to public banknotes in other jurisdictions, including Canada and Sweden.[9]

In the past two centuries, central banks have thus moved from being a novelty of some countries to being a ubiquitous feature of monetary systems (and nation states) around the world. Having started life primarily as bankers to the government or for specific commercial purposes, central banks have become key public institutions that are entrusted with ensuring the stability of the currency, generally with mandates for price stability and financial stability.[10]

[1] See Mitchell Innes (1913) and Graeber (2011). [2] There are parallels in other areas of technology, such as the parallel emergence in the Old and New Worlds of written language, number systems, astronomy and mathematics. For descriptions of commodity money in the pre-European contact Americas, see Griswold (1970) and Carlos (2023). [3] See Bindseil (2019). [4] See Schnabel and Shin (2004) and Quinn and Roberds (2016). [5] See Bolt et al (2024) and Bell et al (2024). [6] See Bignon et al (2026). [7] See Rolnick and Weber (1982). [8] See Rolnick et al (1998). [9] In some jurisdictions, such as Hong Kong SAR and Scotland, private banknotes continue to circulate. Yet in these cases, they are fully backed by reserves at the central bank. [10] See Clement et al (2026).

Digital innovation and the quest for new forms of money

By challenging the status quo, digital innovation prompts a reassessment of how monetary arrangements can evolve to meet users' needs while preserving the foundational properties that anchor money. The current system is robust but burdened by frictions that constrain functionality. Proprietary, non-interoperable databases, for instance, fragment data, hinder automated processing and restrict competition. Complex, sequential chains of messaging, clearing and settlement require repeated reconciliation. Core financial intermediaries can become single points of failure, raising systemic risk.[12] These shortcomings raise costs, slow the movement of value and amplify settlement and operational risks, especially across borders, where differing time zones and rules compound delays.

Technological innovations seek to address these frictions.[13] Innovations include targeted upgrades to financial infrastructures (eg retail fast payment systems, upgrades to real-time gross settlement systems) as well as proposals to more fundamentally rebuild the underlying rails. Among the latter, DLT and tokenisation could embed money and assets in programmable environments, integrating messaging, reconciliation and transfer into unified, automated workflows.[14]

DLT network settings

DLT decouples assets from the specific platforms that transfer them. It provides a shared, programmable infrastructure where tokenised assets can move across multiple platforms. Relative to today's siloed databases residing within individual financial intermediaries as well as sequential messaging and settlement chains, DLT can unify data, execution and transfer within programmable workflows. This capacity has supported the growth of the crypto ecosystem and spurred industry efforts to integrate tokenisation into mainstream financial applications.

Programmability does not strictly require DLT – many functions can be implemented on traditional infrastructures – but combining DLT with tokenisation can deliver notable benefits. This combination changes the way assets are held and transferred, creating new possibilities for fractional ownership, peer-to-peer payment and settlement. Potential benefits include a shared, tamper-evident record that reduces reconciliation across institutions and enables atomic (ie simultaneous execution of all legs of a transfer) settlement within the same ledger. The execution of processes can be automated via smart contracts and operate around the clock.[15] Reaping the benefits of tokenisation and developing new use cases, however, crucially depends on the availability of reliable forms of money on the ledger.

Today's DLT networks can be broadly grouped by their design choices into two main categories: public permissionless and private permissioned designs.[16] This distinction determines who may participate, how transactions are validated and how integrity and resilience are achieved.

Public permissionless networks are open to any user and, in principle, allow any participant to validate transactions. This open design fosters transparency and competition while widening access to financial services.[17] The network consensus relies on dispersed, often anonymous validators (ie participants that propose and attest blocks to update the ledger) rather than centralised bookkeepers. However, the resulting design, governance and incentive structures have introduced validator rents, congestion episodes and fragmentation across blockchains (Box B).[18] All of these erode network benefits. Public visibility of all transactions may also raise challenges related to privacy needs in financial markets. Moreover, in today's public permissionless networks, large multifunction cryptoasset intermediaries bundle significant activity off-chain and perform risk transformation, often without adequate prudential safeguards. This configuration can amplify risks of illiquidity, market incidents and hidden leverage. Such arrangements, as currently implemented, struggle to support monetary network effects at scale.[19]

Private permissioned networks restrict participation to approved entities, rely on identifiable validators and can embed governance to reflect regulatory safeguards. By supporting financial integrity and operational resilience, they align more closely with the needs of regulated finance. Supporting financial integrity and operational resilience, they lend themselves more naturally to use cases such as tokenised deposits within closed user groups for institutional treasury, intraday liquidity management and automated cash sweeps.[20] At the same time, constrained access can lead to walled gardens that limit competition and innovation.[21]

Interoperability remains challenging in both network settings. Public permissionless networks are split across many base networks and secondary networks built on top of them that do not seamlessly communicate (Box B); permissioned platforms often use different rules, identities and data policies. The result is that assets cannot move easily between networks, forcing reliance on ad hoc links (eg so-called bridges) that introduce new operational risks and may undermine resilience. From a monetary perspective, fragmented designs make it harder to sustain self-reinforcing network effects and the singleness that underpins uniform acceptance of money.

Within permissioned, interoperable rails that settle in central bank reserves and feature clear functional separation, tokenisation could address long-standing frictions without sacrificing integrity. Cross-border payments are a salient example. In the current correspondent banking model, sequential processes, limited overlap in operating hours and multiple hand-offs raise complexity and costs. Tokenisation can streamline these steps by aligning instruction, compliance checks and settlement into a coordinated workflow with atomic settlement of all payment balances.[22]

Public-private experimentation suggests that this architecture is feasible within a two-tier setup. Project Agorá brings together eight central banks and over 40 regulated institutions to test a shared cross-border platform with a unifying ledger for tokenised commercial bank deposits and separate, jurisdiction-specific ledgers for tokenised central bank reserves. The prototype shows that, after the validation steps are completed and the required balances are reserved and locked, payments can settle atomically, that is, across currencies in an all-or-nothing manner. Participation rules and domestic control over reserves are preserved, and privacy safeguards limit data-sharing to relevant parties. Legal analysis indicates that tokenisation does not change the nature of deposits or reserves and that settlement finality can be aligned with national frameworks through clear rules. Taken together, these efforts point to shorter settlement cycles, fewer errors and stronger integrity. Evidently, any move to production would require further measures to strengthen resilience and to establish firm governance and operating rules.[23]

Box B

The economics of public permissionless blockchains

The current crypto ecosystem, built on public permissionless blockchains, offers a vision for the monetary system grounded in decentralised trust.[1] Rather than relying on regulated intermediaries to provide centralised trust, these networks seek consensus among dispersed, often pseudonymous validators. By displacing trusted bookkeepers, public permissionless blockchains aim to raise efficiency and bolster operational resilience by avoiding single points of failure or control.

The economics of blockchains ("tokenomics") encompasses the overall economic design of blockchain networks, with consensus mechanisms as a key component. Since blockchains operate as a system without a central coordinator, a consensus mechanism is essential to establish trust among network participants, maintain a single ledger state and prevent double-spending. These mechanisms define how validation rights are allocated to participants and how rewards are distributed for their participation. Fees paid to validators (eg transaction fees in Bitcoin or gas fees in Ethereum) act as incentives to encourage honest behaviour and support the confirmation of transactions. This incentive design aligns participants' behaviour and deters malicious actions.

Despite this vision and associated technological innovations, the current reality of public permissionless blockchain ecosystems is one of rents, negative externalities and congestion, with fragmentation eroding network benefits. Achieving consensus and enforcing honest behaviour requires paying fees (rents) to validators, as defined by the tokenomics of the network. But as the number of transactions increases, updating the blockchain ledger becomes more computationally intensive, leading to higher fees and longer confirmation times. These challenges are not merely technical flaws, but structural features of decentralised systems.[2] While they sustain the incentives for validators, they also distort fairness, increase transaction costs and weaken users' incentives to remain on a given network.[3] These effects can ultimately undermine a network's long-term viability, efficiency and scalability.

The plethora of blockchain consensus mechanisms

Table B1

Consensus mechanism	Example chains	Key features
Proof-of-work	Bitcoin	• Participants expend computing power to add blocks • Miners solve hash puzzles • The protocol adjusts difficulty to maintain steady block times as computing power changes
Proof-of-stake	Ethereum	• Participants lock up ("stake") native tokens (ETH) and are selected to propose/verify blocks • Misbehaviour can forfeit part of the stake • Finality is achieved through many stakers attesting to the same block
Delegated validator sets (proof-of-staked authority, delegated proof-of-stake)	BNB Chain, Tron	• A small, elected or rotating group of validators produces blocks • Selection is based on votes or delegated stake

ETH = ether.

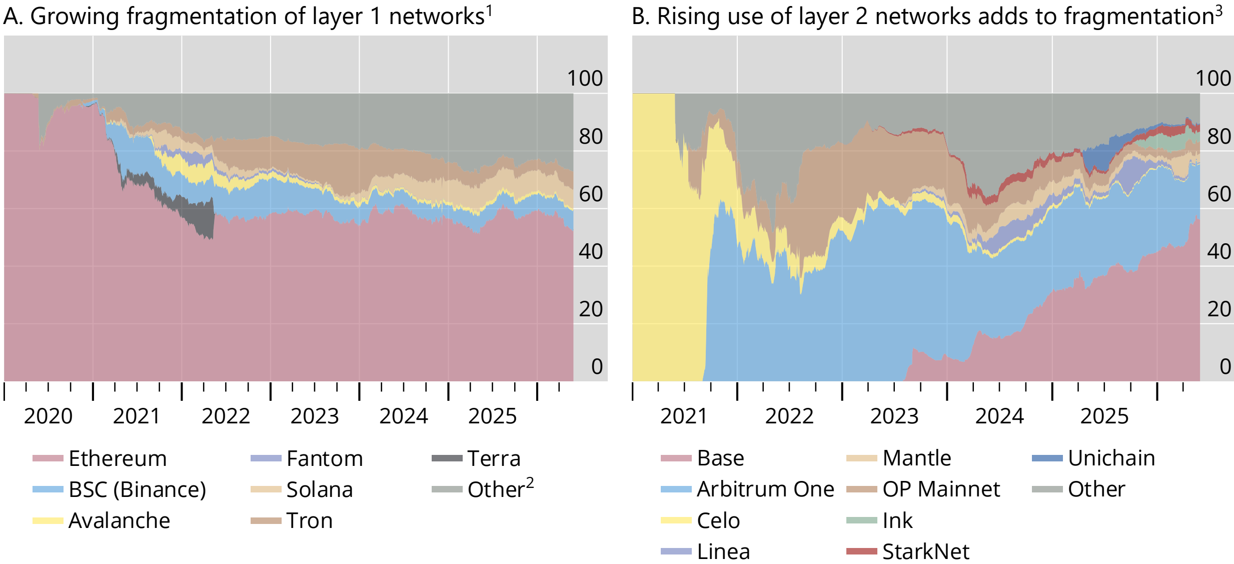
Sources: Eidan et al (2026); Shin (2026).

Efforts to address these issues focus on adjusting fee structure and consensus mechanisms and improving network capacity.[4] Updates to the blockchain protocol (a set of rules governing the network) that changed the fee mechanism have increased fee predictability for users and partly address volatility, but network inefficiencies persist (eg in Ethereum). In addition, some blockchain networks have adopted modified consensus mechanisms, such as proof-of-staked authority and delegated proof-of-stake, which delegate validation rights to a small group of participants (Table B1). The solutions proposed to address these challenges may improve efficiency and reduce costs for individual networks, yet they reflect a shift away from the vision of decentralisation and the removal of intermediaries.

Moreover, the crypto ecosystem exhibits ensuing fragmentation across both base networks (layer 1) and their scaling layers (layer 2) (Graph B1.A).[5] Layer 1 blockchains are the foundational networks that validate, process and record transactions directly. Layer 2 solutions are secondary frameworks that sit atop layer 1 to improve efficiency and scalability. Differences in design and implementation across these layers can disconnect users, fragment liquidity and limit functionality, creating silos that hinder interoperability. Proliferation of base networks and the absence of shared account or identity standards limit interoperability across chains. Even when the same issuer releases a stablecoin on multiple networks, each chain-specific version effectively behaves as a distinct asset; moving value across networks can be difficult or costly. Crypto exchanges and bridges help to connect disparate chains, but coverage is incomplete and these intermediaries often face meaningful cost efficiency and security challenges.

Rising fragmentation across layer 1 and layer 2 networks

As a percentage of total value locked — Graph B1



[1] Total value locked corresponds to the aggregate of all the funds locked in a decentralised finance smart contract. [2] Also includes layer 2 networks. [3] Layer 2 networks have been selected based on the categorisation applied by Token Terminal.

Sources: Eidan et al (2026); DefiLlama; Token Terminal; BIS.

Fragmentation across a rising number of layer 2 solutions introduces additional challenges. While such networks aim to reduce congestion by processing transactions on distinct chains, their proliferation further deepens fragmentation of the ecosystem (Graph B1.B). This patchwork quilt of fragmented systems hinders interoperability, as transactions and assets processed on one layer 2 solution may not be easily transferred or integrated with another. Consequently, the benefits of scalability and efficiency are often undermined by the absence of cohesion among these frameworks.

[1] See Nakamoto (2008). [2] See Boissay et al (2022) and Shin (2026). [3] See Auer, Frost and Vidal Pastor (2022). [4] See BIS (2025). [5] See Shin (2026) and Eidan et al (2026).

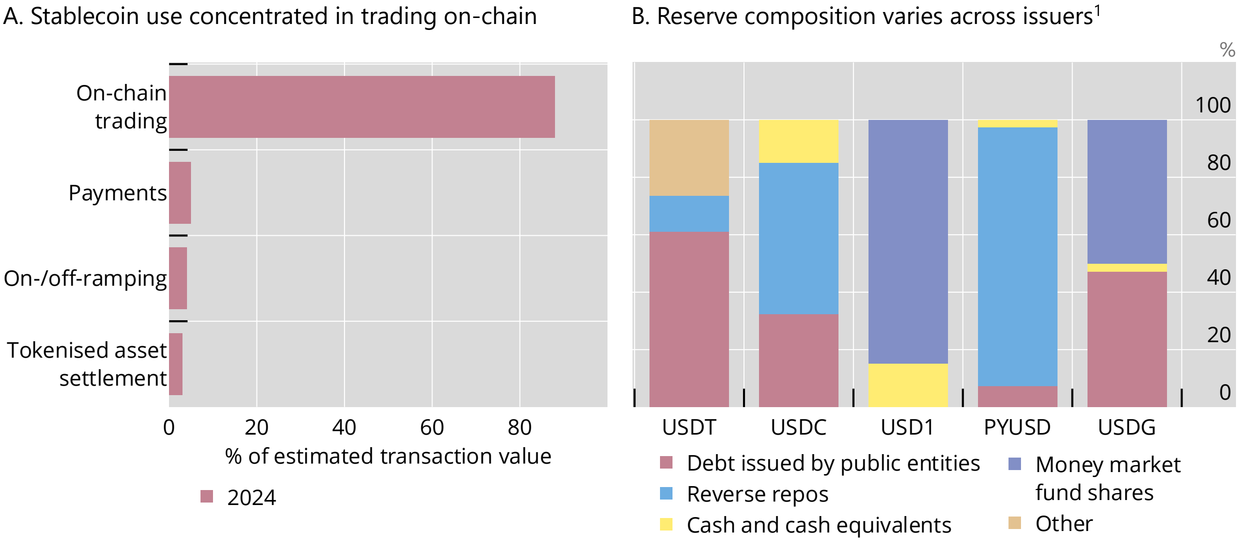
Emergence of stablecoins on public permissionless blockchains

Public permissionless blockchains have, to date, seen the widest uptake of all tokenisation initiatives, catalysing new instruments and applications. Amid this growth, fiat-backed stablecoins have emerged as privately issued tokens that provide money-like functionality on ledgers.[24] Other strands of money-like tokens on these blockchains include tokenised money market fund (MMF) shares. These often enable programmability for eligible ("allow-listed") holders, thereby introducing some elements of permissions. These shares are being piloted as reserve assets for stablecoins and more broadly as collateral available on the ledger.[25]

Stablecoins are tokens on a programmable ledger that aim to maintain a stable value against a reference asset (or basket of assets). They do so in the absence of the institutional underpinnings that sustain the foundations of money in the two-tier system. Unlike tokenised deposits, which require the coordinated onboarding of deposit-taking institutions and linkage to settlement accounts, bearer-like instruments such as stablecoins can be issued unilaterally and circulate widely on open infrastructures. To date, 99.4% of fiat-backed stablecoins (by market valuation) are pegged to the US dollar – thereby leveraging on the unit of account provided by the leading international reserve currency.

Stablecoins have a number of potential use cases. They are generally easily accessible via hosted wallets and, in principle, also via "unhosted" wallets (or "self-custody").[26] They can be integrated with smart contracts that enable programmability. They can serve as on- and off-ramps to the crypto ecosystem or provide exposure to a foreign currency, most importantly the US dollar. And, as cross-border payment instruments, they promise faster and cheaper transfers than conventional alternatives.

Stablecoin use focuses on crypto trading, with coins backed by low-risk assets | Graph 1



USDT: issued by Tether; USDC: issued by Circle; USD1: issued by BitGo, sponsored by World Liberty Financial; PYUSD: issued by Paxos Trust Company for PayPal; USDG: issued by Paxos entities (Singapore and EU).

[1] As of March or April 2026, subject to availability.

Sources: Boston Consulting Group (BCG); individual stablecoin filing reports; BIS.

In practice, the main use cases of stablecoins so far have been for crypto trading (Graph 1.A) and, to a lesser extent, as offshore stores of value in EMDEs with currency vulnerabilities.[27] As cross-border payment instruments, their performance is uneven once fees, spreads and on-/off-ramp costs are considered.[28] Risks of use for illicit transactions also looms.

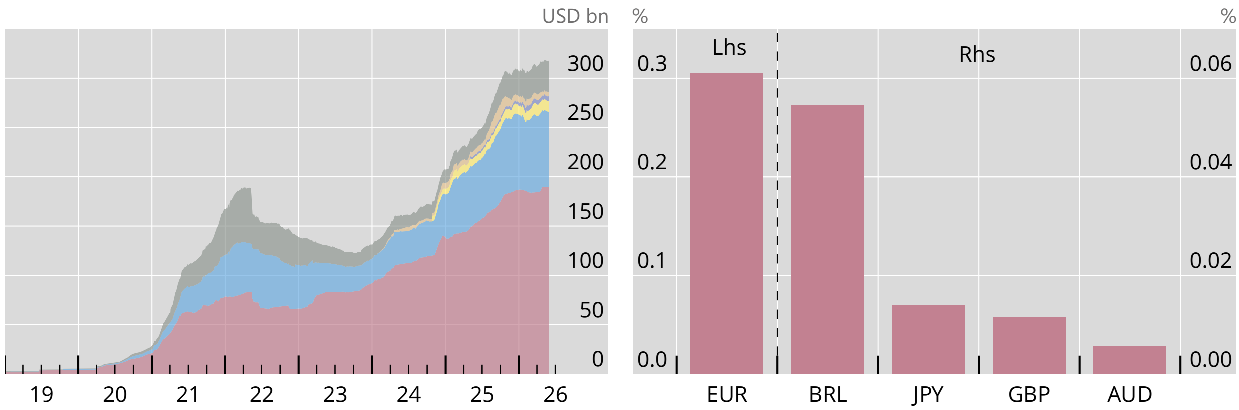
Given the prevalence of US dollar-linked stablecoins, reserve portfolios of large fiat-backed stablecoins are heavily concentrated in dollar-denominated instruments. Issuers typically hold combinations of short-dated public debt and claims on banks in the form of cash or reverse repos, in varying proportions (Graph 1.B). Their holdings of Treasury bills have risen to levels comparable with those of large jurisdictions and government MMFs.

Notwithstanding phases of rapid growth, the use of stablecoins remains modest. Stablecoin market capitalisation, for instance, was around $320 billion as of end-May 2026 (Graph 2.A). While the market remained relatively resilient against the broader rout in crypto markets in late 2025 and early 2026, it remains dwarfed by trillions of US dollars in bank deposits. Experience so far also shows that robust domestic regulatory frameworks have not, by themselves, catalysed large non-US dollar regulation-compliant stablecoin markets. Issuance of these coins remains a minute fraction compared with US dollar-pegged issuance (Graph 2.B). Annual stablecoin transaction volume amounted to an estimated $28 trillion in 2025, equivalent to less than three business weeks of settlement volumes of the largest US wholesale payment systems; values net of transactions between wallets owned by the same party are far lower.[29]

Stablecoin market growth concentrated in two US dollar-pegged coins[1] — Graph 2

A. Market capitalisation remains highly concentrated amid recent signs of stagnation[2]

B. Market capitalisation of non-USD stablecoins remains low relative to USD stablecoins



Market capitalisation (29 May 2026):
USDT, USDS, USDE, USDC, USD1, Other stablecoins

Share of USD stablecoin market capitalisation:[3]
29 May 2026

USDT: issued by Tether; USDC: issued by Circle; USDS: Sky protocol; USD1: issued by BitGo, sponsored by World Liberty Financial; USDE: Ethena protocol.

[1] Based on the classification by Kosse et al (2023). [2] Five largest stablecoins by market capitalisation. [3] Fiat-backed stablecoins only.

Sources: Kosse et al (2023); CoinGecko; BIS.

Challenges associated with today's stablecoin arrangements

Stablecoins are salient because they aspire to money-like functionality while dispensing with the institutional underpinnings that sustain trust in today's monetary and financial system. Assessing that aspiration calls for an assessment of two sets of issues. First are issues related to the design of stablecoin arrangements, including financial integrity and moneyness, ie the ability of stablecoins to perform monetary functions, such as providing a means of payment or store of value. Second are issues related to the rails – the operation, scalability, security, governance and settlement properties of public permissionless ledgers. This distinction clarifies what ultimately depends on credible institutions, sound regulation and legal certainty, and what needs to be addressed by network design.

Financial integrity and moneyness

Financial integrity concerns are a central consideration for any role stablecoins might play in the current and future monetary system. Experience to date suggests that stablecoins account for a significant share of illicit on-chain activity. In traditional finance, financial intermediaries are required to play a key role in ensuring anti-money laundering and countering the financing of terrorism (AML/CFT) compliance. Banks and other supervised intermediaries perform KYC checks, monitor transactions, file suspicious activity reports and can stop or reverse payments when warranted. By contrast, stablecoins circulate on public permissionless blockchains, where pseudonymity and the use of unhosted wallets can undermine KYC and AML/CFT compliance and create avenues for evasion. These can include mixers and cross-chain bridges that obscure flows and weaken oversight.[30] Moreover, much stablecoin activity is handled by multifunction cryptoasset intermediaries whose borrowing activities create short-term redeemable liabilities economically similar to deposits, but typically without capital/liquidity buffers or consolidated supervision. This strengthens the case for robust prudential and conduct frameworks alongside AML/CFT controls.[31]

Measures to improve compliance with financial integrity rules are ongoing. Stablecoin issuers maintain control of the outstanding balances of their coins. They have, in many cases, frozen balances at specific on-chain addresses, and blockchain analytics firms are supporting law enforcement in high-profile cases. These are positive developments that show the potential of technological capabilities in blockchains. However, such measures cannot replace routine, large-scale AML/CFT controls in everyday payments. Some jurisdictions are moving towards frameworks that restrict circulation to KYC-verified addresses and require issuers and intermediaries to meet AML/CFT standards akin to those for traditional account-based payments. Yet the borderless nature of public permissionless chains creates a persistent risk of regulatory arbitrage, underscoring the need for internationally consistent approaches.[32]

Integrity by design is essential if programmable rails are to support large-scale coordination of market participants in a safe and inclusive way. Permissioned platforms that embed AML/CFT pre-screening, sanctions screening and auditable data trails in the transaction flow – while aligning with data sovereignty constraints – could uphold financial integrity at scale. In this setting, programmable controls could support proportionate compliance that reduces unnecessary alerts and the burden on intermediaries. At the same time, cross-border supervisory cooperation and technical capacity-building to implement these controls effectively will be key.[33]

Design questions also arise regarding stablecoins' moneyness. At present, stablecoin transfers settle neither directly nor indirectly on central bank balance sheets. By construction, they cannot currently ensure exchange at par across issuers and blockchains under all conditions.[34] Secondary market prices of stablecoins to date deviate from par, even if mostly moderately. Redemption frictions are common, indicating that current stablecoin designs resemble exchange-traded fund (ETF) shares rather than a means of payment.[35]

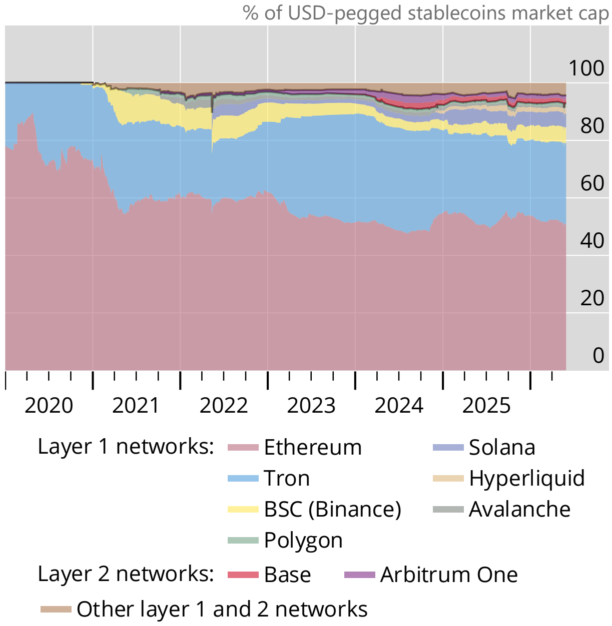
Elasticity, in turn, remains constrained by a cash-in-advance issuance model and by the liquidity and market depth of reserve assets. Easing these balance sheet constraints would require stablecoins to achieve broad payments acceptance, enabling issuers to acquire assets and extend credit through new coin issuance rather than by drawing on their bank balances, as at present.[36]

Public permissionless rails and fragmentation

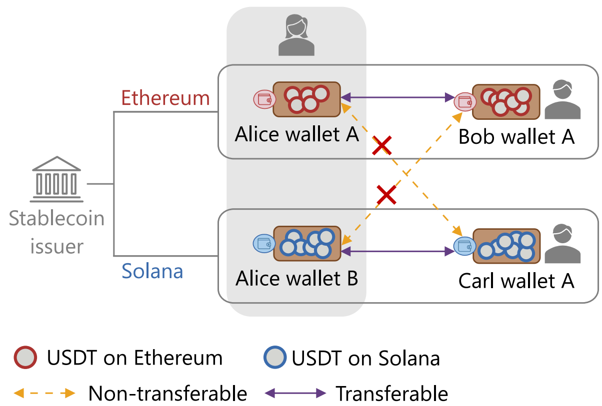
A key impediment concerning the rails is the fragmentation inherent in public permissionless blockchains. Stablecoins and other tokenised assets circulate on a growing array of competing networks (Graph 3.A). Aside from Ethereum and Tron, other base blockchains (layer 1 networks) are also emerging, as well as further secondary networks based on top of these (layer 2) (Box B). Even though stablecoins typically have centralised issuers, the public permissionless blockchains on which they circulate lack a common approach for recognising accounts and verifying identities across the chains. This leads to interoperability challenges: a coin on Ethereum is not equivalent to a coin of the same name on Solana, as they reside on separate ledgers that do not natively communicate with each other (Graph 3.B). This can undermine

Stablecoin fragmentation and the lack of interoperability across blockchains — Graph 3

A. Stablecoin circulation across blockchains



B. Stablecoins lack interoperability across blockchains[1]



[1] A stylised example of how a stablecoin (eg USDT) can be issued natively on multiple blockchains (eg Ethereum and Solana). While this improves availability across blockchains, tokens remain siloed and non-transferable across chains. Without supporting mechanisms, sending stablecoins between wallets on different blockchains may fail, risking permanent loss.

Sources: Eidan et al (2026); Hernández de Cos (2026); DeFiLlama; BIS.

the singleness of money in the absence of an agreed clearing and settlement system across ledgers.

The fragmentation within the current crypto ecosystem demonstrates that achieving the positive network effects of money remains challenging. Indeed, the division of blockchain networks raises new questions about the feasibility of achieving stable interoperability across them. This lack of interoperability highlights the inherent trade-offs between decentralisation and security on the one hand and scalability and efficiency on the other.

Moreover, flaws in smart contract design, weaknesses in mechanisms to support interoperability across blockchains and oracles (ie transmitters of off-chain data to the network), and deficient governance structures can undermine the operational reliability of underlying rails. To enhance interoperability across different blockchains, various mechanisms have been developed. These include bridges to transfer tokens or data, native multi-chain issuance where tokens are issued natively by the same issuer on multiple blockchains and interoperability protocols that enable coordination across chains. Oracles, which provide blockchains with external data such as price feeds or real-world event information, are critical in blockchains that lack a trusted intermediary. However, these mechanisms reveal various limitations, particularly in terms of operational resilience and security, and face challenges in effectively ensuring the integrity of external data inputs.[37] These challenges are particularly acute in public permissionless blockchain environments due to the absence of centralised mechanisms or authority to resolve errors or reverse transactions. Collectively, these issues can disrupt transfers, hinder redemptions and erode confidence in both the underlying rails and the tokens circulating on them.

Stablecoin design choices along a continuum

Design, regulation and use cases will ultimately determine whether stablecoins can become more money-like or whether they are likely to resemble securities, such as ETFs. From a system-wide perspective, stablecoin arrangements can be mapped onto a continuum with two polar designs. At one end are money-like stablecoins that aim to function as means of payment with redeemability at par under all market conditions. At the other are stablecoins that operate as investment instruments with possible deviations from par, redemption restrictions and a focus on store of value characteristics. Where on this spectrum an arrangement falls depends on reserve composition, redemption conditions, access to central bank accounts and backstops, and the regulatory framework in which it operates (Box C). The implications for the broader financial system, including banks, MMFs, central banks and sovereign debt markets, could differ markedly across designs. Moreover, disclosure and investor protection frameworks will need to ensure that users understand the risks entailed by the different types of stablecoins.

Money-like stablecoins, particularly if used at scale, would require par redeemability at all times, anchored in low-risk reserves and credible backstops. In practice, this would probably require reserve asset pools consisting of high-quality liquid assets with minimal credit and liquidity risk (such as central bank money). These would need to be supported by adequate regulation and mechanisms that provide intraday liquidity and backstop redemptions under stress.[38] Absent redemption frictions, some form of standing facility access or equivalent support would be necessary to contain runs and prevent destabilising fire sales of reserves.[39]

Stablecoins operating as investment instruments would relax par redeemability in favour of investment style features, with more limited payments functionality. In a design resembling securities, issuers could hold a broader set of reserves, accept deviations from par in the secondary market similar to ETFs and impose redemption fees or gates to manage liquidity mismatches.[40] Such designs align better with a store of value use case, including demand for FX exposure in EMDEs, but they are ill suited as means of payment precisely because transactions would require "questions asked". The greater distance from par would probably limit their integration with retail payment schemes, not to mention wholesale market settlement. From a regulatory perspective, use cases contained within crypto markets may be able to function with less stringent price stability and moneyness standards, but instead with a focus on investor protection, disclosure, market conduct and containment of spillovers to traditional markets.

Box C

Regulatory frameworks for stablecoins

Regulatory frameworks for stablecoins are taking shape across jurisdictions, with a focus on setting safeguards to minimise risks to user protections and financial stability. In this context, a comparison of jurisdictions where regulatory frameworks have been developed or are already in effect – the European Union (EU), Hong Kong SAR, Japan, Singapore, the United Kingdom and the United States – highlights common pillars of par redemption, fully backed reserves and restrictions on interest to holders.[1] Approaches diverge in redemption conditions, reserve composition, central bank access and the calibration of capital. For cross-border activity (eg multi-jurisdictional issuers), such differences may shape business models and the channels through which risks transmit, underscoring the value of continued international monitoring and, where appropriate, greater consistency in regulatory outcomes.

Redemptions. Across major jurisdictions, frameworks for fiat-referenced stablecoins converge on mandatory redemption at par, but differ in timelines and fee treatment. In the EU, e-money tokens must be redeemed promptly and free of charge at one-to-one value in fiat, with limited scope for fees only after recovery plans are triggered. In Hong Kong, holders have a statutory right to par redemption, with requests processed within one business day and subject to reasonable fees, including pro rata claims on reserve assets in insolvency. In Singapore, issuers of regulated single-currency stablecoins must provide a direct legal claim for par redemption within no more than five business days, with any conditions reasonable and disclosed upfront. In Japan, issuers of electronic payment instruments must ensure redemption at face value in fiat under specified terms, although no numeric deadline is prescribed. In the UK, for sterling systemic stablecoins the Bank of England proposes same-day redemption at par, with fees permitted only if fair, transparent and proportionate. In the US, the GENIUS Act requires timely redemption policies with clear, pre-disclosed fees and elevates holders' priority over reserves in bankruptcy.

Reserve assets. Reserve requirements are anchored in full coverage across all six jurisdictions but vary in composition, custody and concentration. Under the EU regime, reserves must fully cover outstanding tokens, with a minimum share held as deposits at banks and the remainder in segregated low-risk and currency-matched assets. Hong Kong requires segregated, high-quality and highly liquid assets held in trust with qualified custodians, with over-collateralisation as a prudential buffer and coverage at or above par at all times. Singapore mandates reserves at least equal to outstanding stablecoins, denominated in the peg currency and held in cash, cash equivalents or very short-maturity government and high-grade supranational debt, segregated in trust with permitted custodians. Japan requires issuers to hold funds corresponding to outstanding instruments, with fund transfer service providers using cash and government or other bonds coupled with statutory segregation, and trust-type issuers holding demand deposits (with forthcoming permission to hold a portion in short-term government bonds). Last year's consultation by the Bank of England proposes that systemic sterling stablecoins maintain at least 40% of backing as unremunerated central bank deposits and up to 60% in short-dated UK government securities, with reserves ring-fenced under statutory trust and kept in the UK. The US GENIUS Act prescribes identifiable one-for-one reserves consisting of US currency, Federal Reserve balances, insured bank deposits, short-dated US Treasuries, certain Treasury-backed repos and qualifying government money market instruments, with strict limits on rehypothecation.

Remuneration. Restrictions on remuneration to holders apply broadly across jurisdictions. The EU prohibits issuers and service providers from paying interest or similar returns on holdings of e-money and asset-referenced tokens. Hong Kong similarly bans interest or yield linked to holding period, par value or market value. Singapore's framework treats regulated single-currency stablecoins as non-interest-bearing instruments intended for payments rather than investment. In Japan, the framework does not contemplate interest to holders. In the UK, the Bank of England proposes that systemic stablecoin issuers do not pay interest to coin holders. In the US, the GENIUS Act prohibits permitted issuers from paying interest or yield solely for holding or using stablecoins.[2]

Central bank accounts. Access to central bank accounts and facilities is generally restricted, with targeted exceptions to support resilience and redemption. In the EU, non-bank issuers typically lack access to central bank services, although licensed e-money institutions, including those issuing stablecoins, are eligible for TARGET accounts for payment system participation. Hong Kong and Singapore do not provide stablecoin issuers with central bank accounts or facilities. Japan confines access to the Bank of Japan's accounts to eligible financial institutions under separate law. The UK proposes granting systemic issuers access to an unremunerated deposit account at the Bank of England for holding backing assets and is considering lender-of-last-resort access, alongside expectations for direct payment system connectivity. In the US, eligibility for Federal Reserve accounts remains governed by existing statutes, though the Federal Reserve has sought comments on a special purpose payment account prototype for eligible institutions to support clearing and settlement.

Capital. Capital requirements range from explicit minima to tailored prudential expectations reflecting business models and risks. Under EU rules, non-bank issuers of e-money and asset-referenced tokens must hold own funds equal to at least €350,000 or a proportion of reserves or fixed overheads, with banks subject to their existing capital regimes and significant tokens facing more stringent standards. Hong Kong SAR sets a paid-up share capital floor for issuers, complemented by broader prudential and conduct requirements. Singapore requires the higher of S$1 million or 50% of annual operating expenses as base capital, alongside liquid asset buffers calibrated to recovery and wind-down needs. Japan applies issuer type-specific prudential regimes, with banks and trust companies under their sectoral frameworks and other issuers required to maintain sound financial condition to meet obligations. The UK proposes an approach for systemic issuers that is aligned with the Principles for Financial Market Infrastructures,[3] with capital sized as the higher of the cost of recovery from the largest plausible loss event or six months of operating expenses, and with both capital and reserves held domestically. The US GENIUS Act mandates that regulators set capital standards that are sufficient to ensure ongoing operations and may include tailored buffers, while clarifying that bank capital rules do not automatically extend to a bank subsidiary's stablecoin operations.

[1] See also the findings of the Financial Stability Board's thematic peer review on global regulatory frameworks (FSB (2025)). [2] Non-issuing third parties may, subject to applicable constraints, be allowed to provide remuneration or similar benefits on holdings or related activities. [3] See CPMI-IOSCO (2012).

Macro-financial implications of stablecoins

If, despite current design challenges, stablecoins began to play a key role in the financial system, as some industry estimates predict, a variety of macro-financial effects could arise.[41] These effects would depend in part on the composition of stablecoin reserves and the corresponding adjustment by the banking sector and other market participants.[42] Additional effects, including on fiscal space, could arise from sizeable foreign demand for stablecoins.

Scenarios for stablecoin reserve assets

Stablecoins' reserve asset composition plays an important role in shaping the macro-financial implications of stablecoin adoption. Three stylised scenarios in a closed economy are considered below. They entail simplified reserve allocations relative to the more diversified portfolios of current issuers (Graph 1.B). In a first scenario, issuers hold only wholesale deposits at banks; in a second, they hold short-dated government bonds (eg treasury bills); and in a third, issuers hold central bank reserves. These scenarios illustrate the varying implications in terms of their first-round effects and subsequent macroeconomic adjustments that could affect credit provision, financial stability and the interaction with monetary and fiscal policy.

The first-round effects are shown as simple, static balance sheet relationships (Graph 4). Each scenario features a distinct immediate impact, as illustrated by the example of a $100 purchase of stablecoins by households with the corresponding amount debited from households' bank deposits.[43]

In the bank deposit reserve scenario, households' purchases of stablecoins displace retail deposits (–$100). These are recycled as wholesale deposits from the

The first-round balance sheet effects of introducing stablecoins under different reserve asset scenarios[1]

Graph 4

Bank deposit reserve scenario

Stablecoin issuer

Assets	Liabilities
+$100 deposits	+$100 stablecoins

Banks

Assets	Liabilities
	–$100 HH deposits
	+$100 SC deposits

NBFIs (ex SC issuers)

Assets	Liabilities

Government bill reserve scenario

Stablecoin issuer

Assets	Liabilities
+$100 t-bills	+$100 stablecoins

Banks

Assets	Liabilities
–$25 t-bills	–$100 HH deposits
	+$75 NBFI deposits

NBFIs (ex SC issuers)

Assets	Liabilities
–$75 t-bills	
+$75 deposits	

Central bank reserve scenario

Stablecoin issuer

Assets	Liabilities
+$100 CB reserves	+$100 stablecoins

Banks

Assets	Liabilities
–$100 CB reserves	–$100 HH deposits

NBFIs (ex SC issuers)

Assets	Liabilities

CB = central bank; HH = household; NBFI = non-bank financial institution; SC = stablecoin; t-bills = treasury bills.

[1] Stylised scenarios, showing the initial impact of a $100 purchase of stablecoins by households with the corresponding amount debited from households' bank deposits. All scenarios assume that households use existing deposits to purchase stablecoins rather than, for example, selling assets to banks or obtaining a bank loan, which would imply the creation of additional deposits. The government bill reserve scenario assumes that the stablecoin issuer, using the receipts from the issuance of stablecoins to households, purchases $75 worth of treasury bills initially owned by other NBFIs and $25 initially held by banks. The central bank reserve scenario assumes that the stablecoin issuer can hold reserves at a central bank account, which is currently not possible for stablecoin issuers without a banking licence in many jurisdictions (see also Box C).

Source: BIS.

stablecoin issuer (+$100) back into the banking system (Graph 4, top row). The first-round effect is a compositional shift in banks' liabilities even as the total size of deposits remains unchanged: granular, often unremunerated, retail deposits decline and are replaced by concentrated, potentially more rate-sensitive wholesale deposits from the issuer. Banks' asset levels are initially unchanged at the sector level, but liquidity metrics deteriorate on average. This is because regulatory run-off rates for wholesale deposits are higher than for retail deposits (reducing the Liquidity Coverage Ratio (LCR)) and wholesale deposits are considered a less stable source of medium-term funding (reducing the Net Stable Funding Ratio (NSFR)).[44]

The government bill reserve scenario (Graph 4, middle row) involves a further step. The stablecoin issuer uses its deposits (–$100) to purchase treasury bills (+$100) from other non-bank financial institutions (NBFIs) (–$75) and banks (–$25). This results in an increase in these NBFIs' deposits at banks, with the net change in banks' deposits equivalent to the amount of treasury bills sold by the banks themselves. As in the previous scenario, banks' liquidity position weakens due to the rebalancing of funding from retail to wholesale deposits, with the government bill reserve scenario also featuring a decline in high-quality liquid assets (HQLA).

In the central bank reserve scenario, households' purchases of stablecoins not only reduce retail deposits (–$100) but also lower banks' reserves with the central bank – the most liquid asset – by the same amount (–$100). Reserves are now credited to the issuer's central bank account (Graph 4, bottom row). These shifts weaken banks' liquidity position, on average. The relative strength of the impact across the three scenarios depends on the banking sector's initial position.

Macroeconomic implications

All three scenarios feature an initial weakening of the banking sector's funding position, potentially triggering adjustments by banks that could affect credit provision. Clearly, the effects will depend strongly on the distribution of the impact across banks and available alternatives to bank credit. They will also depend on the degree to which stablecoins substitute or complement current means of payments and stores of value. Predictions about macroeconomic adjustments are therefore uncertain, and quantitative projections will necessarily need to rely on various modelling assumptions (Box D).[45]

Credit provision and financial stability

Stablecoin demand can affect credit provision and financial stability. Rising competition for funding from stablecoins would generally imply rising pressure on banks to raise deposit rates, increasing banks' funding costs. As the marginal cost of bank lending increases, banks would probably reprice loans and rebalance their assets in favour of more liquid ones to reestablish their original liquidity metrics. If stablecoin issuers' deposits with banks were segregated to protect coin holders, their usability for banks' internal treasury purposes would be further reduced, intensifying the pressure on banks' liquidity management. A substitution of retail with wholesale deposits at the aggregate level, most visible in the bank deposit reserve scenario, could also imply distributional effects; larger banks could benefit from relatively cheaper access to wholesale funding markets and would more likely be recipients of fund inflows from stablecoin issuers. Credit to small and medium-sized enterprises (SMEs), if primarily supplied by smaller banks, could thus be adversely affected.[46]

The three scenarios outlined above could have different implications for financial stability. In the government bill reserve scenario, sizeable holdings of bills by stablecoin issuers would raise the possibility of asymmetric, outsize effects on sovereign yield curves during episodes of large redemptions. In a run, fire sales of reserve assets would transmit stress to money markets. In the bank deposit reserve scenario, stress originating from the banking sector could, in the extreme, result in flight-to-safety flows into stablecoins, with banks' greater reliance on wholesale funding amplifying the risk of deposit outflows. In such a situation, the fact that the total amount of deposits remained unchanged at the system level might offer only partial relief, since stablecoin issuers would probably keep their deposits at only a few large institutions. In the central bank reserve scenario, users might consider the stablecoin a close substitute for central bank money. This would raise the risk of large, rapid reallocations of liquidity between banks and stablecoin issuers in times of stress.[47] Of course, the central bank could be in a position to re-intermediate funds to solvent banks against collateral.

To the extent that a greater share of credit would be intermediated by NBFIs, the nature of overall credit supply in the economy might change. On the one hand, procyclicality in lending might increase, since NBFI funding costs and risk appetite tend to be closely tied to market conditions, although to varying degrees across different types of NBFIs.[48] At the same time, the elasticity of credit supply in the economy might fall, as NBFIs do not create credit as elastically as banks.[49] Past episodes have underscored that liquidity mismatches in NBFIs can trigger runs and fire sales, frequently requiring central banks to act as market-makers of last resort to contain systemic stress (see Chapter II). That said, the riskiness of NBFIs varies significantly between different types of institutions and between individual intermediaries.

Competitive effects on intermediation can also deliver benefits to users. By compressing excess margins and raising deposit remuneration, stablecoin competition can reduce payment fees and raise households' and firms' interest income. In response, banks would tend to cut operating costs, invest in digital capabilities and pass through policy rates more swiftly, outcomes that can improve the allocation of credit in the economy over time. While adjustments in the financial sector are difficult to anticipate, historical experience suggests that when new competitors emerge, incumbent intermediaries adapt to sustain lending while offering improved and less costly services. These effects may offset, to a degree, the headwinds to loan supply. Indeed, financial history shows that banks were consistently able to adapt and defend their position in the financial system whenever they faced competition from financial innovation, such as from MMFs or online payment platforms.[50] Finally, the crypto ecosystem itself could play a growing role in credit provision, partly compensating for any disintermediation of the traditional financial system.

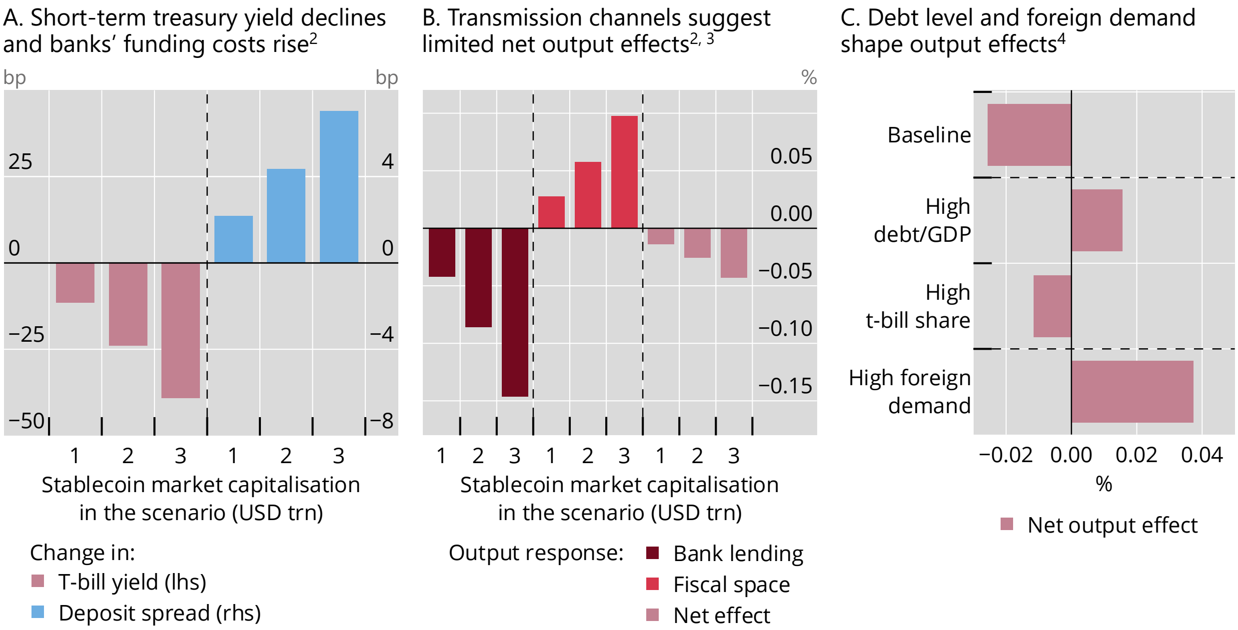
Fiscal space

Under the government bill reserve asset scenario, changes in stablecoin demand can further affect fiscal space. Empirical evidence suggests that increases in stablecoin market capitalisation can push down the short end of sovereign yield curves in issuing jurisdictions.[51] Persistent growth in stablecoins could therefore lower short-term funding costs of some sovereign issuers, providing additional fiscal space to cut taxes or expand spending, and potentially easing aggregate financing conditions by compressing money market yields. In addition, collateral available for repo transactions could shrink. At the same time, frequent stablecoin in- and outflows may weigh on money market liquidity and heighten the volatility of repo rates and yields. Moreover, widespread use of stablecoins for tax evasion could constrain fiscal space by lowering fiscal revenues, while any net reduction in demand for central bank reserves or cash would lower seigniorage revenue.

The additional fiscal space could exert expansionary macroeconomic effects in the issuing jurisdiction, countervailing possible adverse credit supply effects. But quantifying the macroeconomic effects of stablecoins is difficult given the uncertain path of future stablecoin adoption and attendant adjustments by banks and other market participants. In a quantitative macroeconomic model calibrated on US data (Box D), the output effects of stablecoins operating through fiscal space turn out to be positive under the assumption that stablecoin issuers hold government bills as reserve assets, even when accounting for the loss in seigniorage. The net effect on aggregate economic activity is, however, negative in the medium term because the adverse effect on bank funding costs and lending tends to outweigh the benefits of additional fiscal space in the issuing jurisdiction (Graphs 5.A and 5.B). Yet even for substantial scales of potential stablecoin adoption (a market capitalisation of $1 trillion, $2 trillion or $3 trillion), the projected effect is quantitatively modest. Further simulations suggest that the net impact on economic activity remains small when other types of stablecoin reserve assets are considered (Box D). The output analysis abstracts from liquidity benefits arising from stablecoins. Once these benefits are accounted for, stablecoin adoption could conceivably increase welfare even if there is no increase in aggregate output.

In the event of a significant increase in stablecoin adoption, fiscal parameters could play an important role for the macroeconomic effects (Graph 5.C, second and third bars). High levels of government debt and, to a lesser extent, strong reliance on

Quantifying the macroeconomic effects of stablecoin adoption[1] Graph 5



[1] Simulations are based on a quantitative New Keynesian model with stablecoin issuers, calibrated to US data; see Box D and additional notes to graphs for details. [2] The model-implied impact on the shown macroeconomic variable for each of three scenarios for future total stablecoin market capitalisation ($1 trillion, $2 trillion and $3 trillion). [3] Projected contributions of the bank lending and fiscal space channels to aggregate output, as well as the resulting net output effect. [4] Three margins relative to the baseline model with stablecoin market capitalisation of $2 trillion (panel B; baseline).

Source: Hofmann, Kaldorf and Rottner (2026).

short-term financing raise the benefits of additional demand from stablecoins for the issuing jurisdiction. They improve the overall output effects for the domestic economy, relative to the baseline case (first bar).

Foreign demand for domestic stablecoins, eg reflecting store of value use cases, also has a bearing on domestic macroeconomic implications. Foreign purchases of domestic stablecoins involve net capital inflows. This affects both the bank lending and fiscal space channels. When stablecoin issuers hold government bills as reserve assets, higher foreign demand (for a given volume of stablecoin issuance) implies less upward pressure on bank funding costs. This raises domestic output under broad stablecoin adoption (Graph 5.C, fourth bar).

Box D

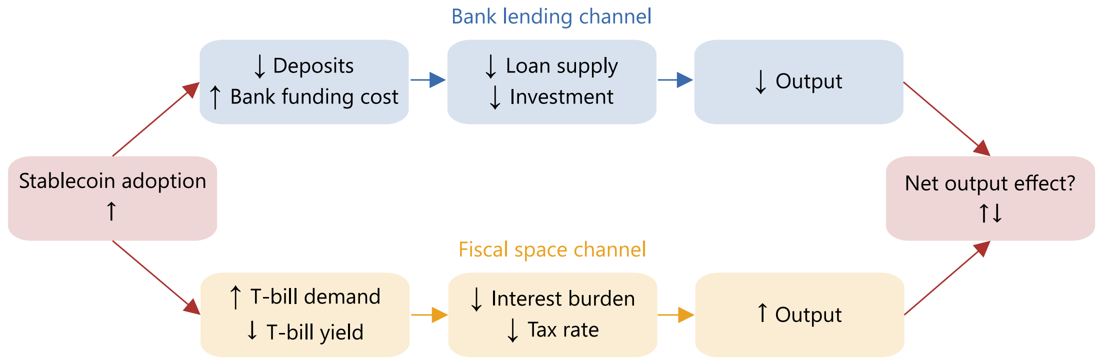
Quantifying the impact of stablecoins on bank lending and fiscal space

A quantitative model can help to evaluate the channels through which stablecoins could affect macroeconomic outcomes, while taking account of adjustments in a general equilibrium setup.[1] The model considered features domestic and foreign households, a domestic banking sector, (domestic) stablecoin issuers, non-financial firms and the government sector. Domestic households hold stablecoins as an unremunerated alternative to bank deposits and cash, reflecting transactional or other services stablecoins provide. In addition to domestic demand, there can also be foreign demand for stablecoins, depending on the considered scenario.

Stablecoin issuers are required to invest their issuance proceeds in specific asset classes, depending on the underlying regulatory environment. The main scenario considers only short-term government bonds as the stablecoin reserve asset, while alternative scenarios also include wholesale deposits and central bank reserves. To capture the potential fiscal implications of stablecoins, the model features a government that finances expenditure with distortionary taxes and issues short- and long-term debt. The government also receives seigniorage revenues from the central bank, which issues cash.

Bank lending and fiscal space channels of stablecoin adoption[1]

Graph D1



[1] Model-implied channels through which stablecoin adoption affects key macroeconomic variables.

Source: Hofmann, Kaldorf and Rottner (2026).

Two countervailing channels that determine the macroeconomic impact are at work in this framework: a bank lending channel and a fiscal space channel (Graph D1). The bank lending channel arises because stablecoin demand by households raises deposit rates and increases banks' funding costs. As a consequence, banks tighten their credit supply to the real economy, which, in turn, lowers investment and output.[2] The fiscal space channel, in turn, arises due to stablecoin issuers' demand for short-term government bonds. As stablecoin issuers bid up the price of treasury bills, the government's funding costs decline. Since the government finances itself with distortionary taxes in the model, the additional fiscal space allows the government to either lower taxes or increase spending, both of which raise output.

As the two channels operate in opposite directions, the overall effect of stablecoins on output is both qualitatively and quantitatively ambiguous (Graph D1). Calibrating the model to data for the United States, however, provides some tentative indication of possible net effects on output by quantifying the impact of the underlying channels. The aggregate output response is modestly negative under the assumption that stablecoins hold government bills as reserve assets but high public debt and high foreign demand can change the direction of this effect (Graphs 5.B and 5.C in the main text). At the same time, the effect depends to some extent on stablecoin design and the regulatory environment.

A bank deposit reserve scenario, in which stablecoin issuers hold some of their reserve assets as wholesale deposits at banks, could result in a more negative impact. There is less additional demand for short-dated government bonds coming from stablecoin issuers, which mutes to some extent the positive effects of the fiscal space channel. An additional effect could come from increased funding costs as banks partially shift from retail to wholesale funding, resulting in increased financing costs for banks.

In a central bank reserve scenario, the model suggests that the net output effect of widespread stablecoin adoption could turn positive. In this case, the stablecoin issuers are assumed to hold a fraction of their issuance proceeds in unremunerated central bank reserves. The impact on the treasury bill and deposit market is largely unchanged relative to the case with only government bills as the reserve asset. However, the allocation of stablecoin profits changes. As the reserves are assumed to be unremunerated, the central bank receives the seigniorage revenue associated with stablecoin issuance. The fiscal authority can use the additional revenue to reduce distortionary taxation, which strengthens the fiscal space channel and generates positive output effects. The effect weakens for remunerated reserves. If the central bank remunerated reserves at the same rate that stablecoin issuers earn on short-dated treasury bills, the central bank reserve scenario would become equivalent to the government bill reserve scenario.

[1] The model is based on Hofmann, Kaldorf and Rottner (2026), which contains the full model description. [2] The model accounts for households benefiting from higher deposit rates due to increased competition between banks and stablecoin issuers, but this effect is second-order.

Monetary policy transmission

The implications for monetary policy transmission are shaped by the resulting funding mix in the financial system. A shift from retail to wholesale funding typically increases the pass-through of policy rates to banks' marginal funding costs and lending rates, thereby strengthening the interest rate sensitivity of loan supply but increasing dispersion across institutions depending on their funding structures. Greater competitive pressure on deposit pricing could also reinforce pass-through to retail rates, affecting transmission on the saving margin.[52]

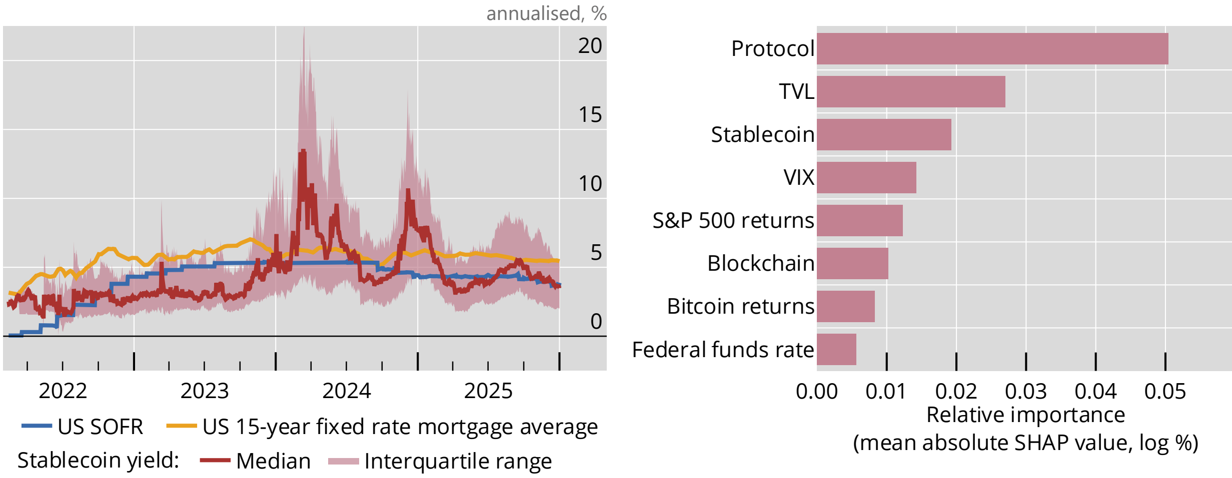
A transition to greater stablecoin adoption could increase uncertainty about monetary policy transmission – similar to the effect of other structural changes in the financial system. To the extent that stablecoins are unremunerated, changes in policy rates would not directly affect stablecoin holders, which as such weakens transmission. Even so, such changes alter the opportunity cost of holding stablecoins, which can indirectly affect stablecoin demand. Moreover, the crypto ecosystem has developed arrangements through which stablecoin holders can earn returns. One example is decentralised finance (DeFi) lending pools, where depositors' stablecoins are lent to borrowers. The evolution of yields earned in lending pools, however, has remained largely disconnected from traditional US interest rates (Graph 6.A). These yields also vary widely across pools. This is because they are strongly driven by DeFi-specific factors, most notably the features of the lending protocol that define how yields are calculated (Graph 6.B). As a result, DeFi yields tend to react mostly to events that directly impact the crypto ecosystem, such as USDC's substantial deviation from parity in March 2023. By contrast, US policy rate changes that steer benchmark rates

Limited pass-through of changes in interest rates to stablecoin yields from lending pools in decentralised finance[1]

Graph 6

A. Stablecoin yields from lending pools are highly volatile…

B. …and are largely shaped by DeFi-specific factors[2]



DeFi = decentralised finance; SHAP = Shapley additive explanation; SOFR = secured overnight financing rate; TVL = total value locked; VIX = Cboe Volatility Index.

[1] See additional notes to graphs for details. [2] Mean absolute SHAP values, representing each factor's importance for predicting log stablecoin yields. Factors specific to the DeFi pool include the pool's protocol (ie the smart contract determining the terms of lending), the total value locked, the stablecoin used for lending and the blockchain on which the pool operates.

Sources: Federal Reserve Bank of St Louis; Bloomberg; CoinGecko; DefiLlama; BIS.

in core markets do not seem to strongly affect stablecoin yields to date, pointing to persistent market segmentation.[53]

Stablecoin dollarisation

The macroeconomic effects of stablecoins can reach beyond the borders of the jurisdiction in whose currency a stablecoin is issued. In addition to affecting macroeconomic conditions in the domestic economy, foreign demand for stablecoins has implications in other economies, particularly EMDEs. Experiences from previous decades with dollarisation can provide some clues as to how dollarisation through stablecoins might evolve. At the same time, stablecoin dollarisation can give rise to new challenges and transmission channels.

To some degree, the demand for foreign currency-denominated stablecoins ("foreign stablecoins") resembles more conventional financial dollarisation, in which households hold foreign currency deposits or cash as a store of value. Deposit dollarisation has tended to rise during periods of macroeconomic instability, including episodes of high inflation and sovereign debt strains (Graph 7.A). While data on cross-country stablecoin flows are probably less reliable than those on foreign currency deposits and are available for only a few years, the evidence so far suggests that similar factors are relevant for stablecoin flows (Graph 7.A).[54] If stablecoins are used for cross-border payments, eg remittances, this may add to the stock of (foreign) stablecoins. And if past experience of deposit dollarisation is taken as a guide, dollarisation through stablecoins could prove quite persistent (Box E).

Dollarisation through stablecoins also raises new challenges. For one, foreign stablecoins provide a readily accessible substitute for domestic currencies in jurisdictions with restrictions on foreign currency deposits. Relatedly, rising demand for foreign stablecoins (ie US dollar-referenced stablecoins held by non-US residents) could also lead to more volatile, and potentially more sizeable, capital flows.

Box E

Deposit dollarisation and stablecoins

The use of foreign currency-denominated stablecoins ("foreign stablecoins") as a store of value bears some resemblance to conventional dollarisation. Holding foreign currency assets as a store of value – be they deposits or cash – has a long tradition, especially in a number of emerging market and developing economies (EMDEs). Indeed, the prevalence of deposit dollarisation – which shares certain similarities with dollarisation via stablecoins in its current form – has changed little over the past decades (Graph E1.A).[1] Foreign stablecoins could lead to further dollarisation by providing fast and round-the-clock access to foreign currency assets, potentially bypassing domestic foreign exchange (FX) restrictions and capital controls. The possible use of foreign stablecoins for remittances could add to these trends.

Macroeconomic and financial instability have been some of the key factors associated with higher deposit dollarisation in the past (Graphs 7.A and E1.B). Foreign currency deposits provide a hedge against domestic currency depreciations. And while volatile inflation should curb the share of domestic currency in the domestic depositor's portfolio, a higher volatility of the *real* exchange rate – taking into account differences in price levels between countries – discourages holding foreign currency.[2] Various market failures and low institutional credibility have also accounted for dollarisation trends.[3] Meanwhile, FX restrictions imposed on regulated banking systems have curtailed the use of foreign currency deposits – something that stablecoins circulating with limited regulatory and supervisory oversight can challenge (Graph 7.B).

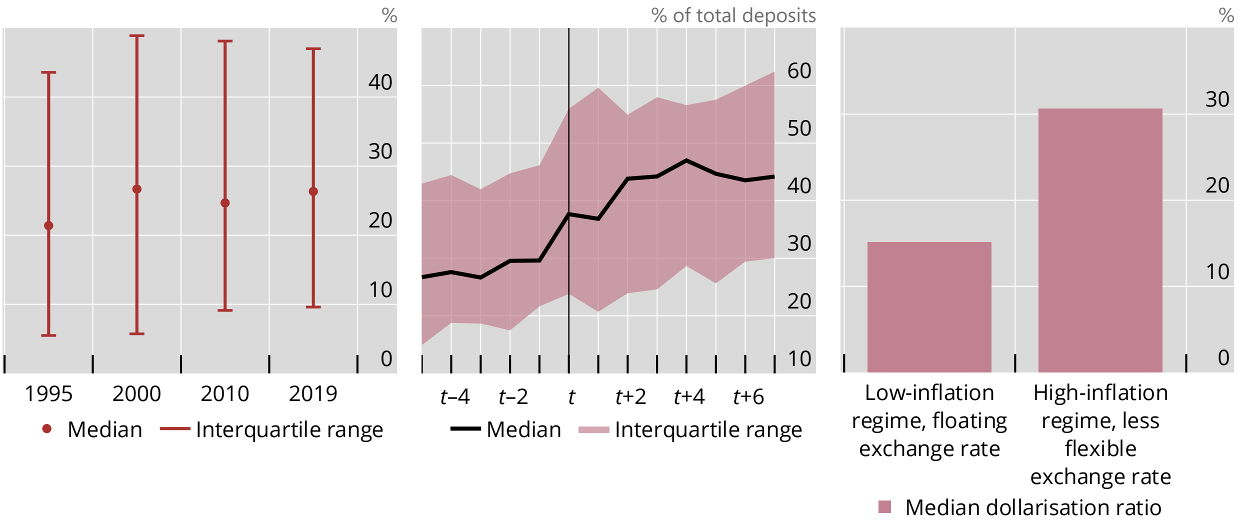
Deposit dollarisation over time

Graph E1

A. Deposit dollarisation has changed little over time…[1]

B. …remains elevated long after currency crises…[2]

C. …and varies by macroeconomic regimes[3]



[1] Distribution of the ratio of foreign currency deposits to total deposits (dollarisation ratio) for a sample of up to 136 economies, subject to data availability, including both advanced economies and EMDEs. [2] Dollarisation ratio for the years before and after currency crises (year *t*; 25 crises in 25 EMDEs during 1981–2005). [3] Median dollarisation ratio for years corresponding to different macroeconomic regimes in a sample of 107 EMDEs during 1995–2019. High-(low-)inflation regime refers to years where the five-year moving average of the inflation rate is at or above (below) 5%. The exchange rate arrangement classification is based on Iltzetzki et al (2019, 2021).

Sources: Ha et al (2023); Hofmann, Mehrotra and Paulick (2026); Ilzetzki et al (2019, 2021); Levy-Yeyati (2021); Mueller et al (2025).

What are the implications of deposit dollarisation for monetary policy? While a smaller part of domestic liquidity would be directly affected by domestic interest rates, monetary policy would have additional wealth effects as exchange rate changes affect the domestic currency value of foreign currency deposits. Monetary expansions have tended to have greater inflation effects in economies with higher deposit dollarisation, perhaps in part as the possibility to shift to foreign currencies is readily available.[4] While shifts to foreign currency deposits could make domestic money demand unstable, dollarisation generally has not impeded inflation control.[5] That said, if an increase in foreign currency deposits subsequently leads to capital outflows out of the domestic banking system, monetary policy's impact on bank lending could weaken.[6]

Experience with deposit dollarisation suggests that, once established, it tends to persist. As one example, the share of foreign currency deposits remains sizeable for several years following currency crises (Graph E1.B). Several factors are likely to matter, including the time and effort it takes to build trust in a currency that has been battered by inflation and crises. There could also be costs in opening and closing accounts, and behavioural inertia that prevent further shifts. That said, a number of economies have seen declines in deposit dollarisation in the past. Sound policy regimes have played a role in de-dollarisation, including the introduction of inflation targeting regimes (Graph E1.C). Prudent fiscal policy and legislation to safeguard monetary policy independence, together with financial market development and prudential regulations to encourage the use of local currency instruments, are also likely to have been important.[7]

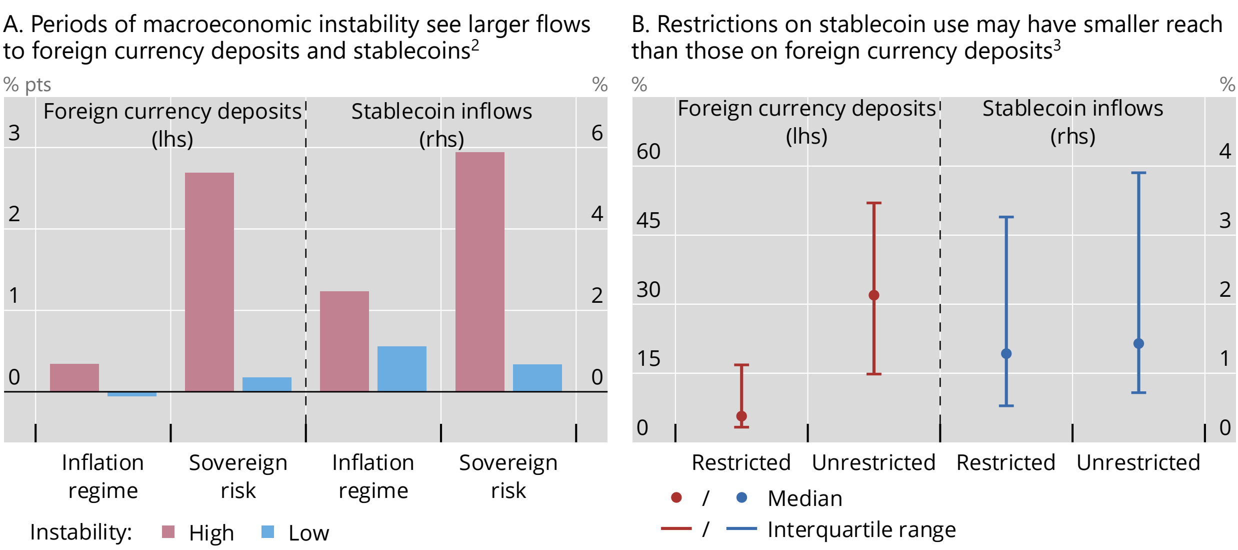
While deposit dollarisation bears some resemblance to the store of value use of stablecoins, other forms of dollarisation – also familiar from the past – might also become increasingly relevant. Liability dollarisation, such as the foreign currency-denominated loans of firms and households, has historically been a major source of financial fragility when borrowers do not have foreign currency income. It may have led to more procyclical monetary policy in downturns, due to considerations that lower policy interest rates could lead to steep depreciations and adverse balance sheet effects.[8] If greater foreign stablecoin use leads to higher borrowing in foreign currency, vulnerabilities could rise significantly. Finally, should the use of foreign stablecoins expand to settlement of real transactions ("real dollarisation"), this could further impair the reach of domestic monetary policy, weaken monetary transmission and curtail monetary sovereignty.[9]

[1] Deposit dollarisation here refers to any foreign currency deposits, be they in US dollars or other currencies (for example, euro deposits prevalent in central and eastern Europe), and regardless of their maturity. The share of foreign currency deposits in total deposits can be considered a de facto measure of deposit dollarisation, as opposed to de jure measures such as adopting a foreign currency as legal tender. [2] See Honohan and Shi (2001). [3] See Levy-Yeyati (2006). [4] See Levy-Yeyati (2006). [5] See Reinhart et al (2014). [6] See Balino et al (1999). [7] See Levy-Yeyati (2021) [8] See Hausmann and Panizza (2010). [9] See Cipollone (2026).

Circulating partly outside the regulatory perimeter, stablecoins may be used as a conduit to evade capital controls. Controls on cross-border stablecoin transactions can mitigate capital flow management circumvention to a degree, particularly when domestic intermediaries are barred from facilitating unapproved coins.[55] A number of countries, especially EMDEs, have set up restrictions on cross-border stablecoin use. Such measures are, however, likely to be imperfect given the digital bearer-like nature of tokens and the availability of unhosted wallets. While deposit dollarisation has been lower in economies with approval requirements on domestic foreign currency deposits, inflows into stablecoins have been broadly similar in economies with or without restrictions on stablecoin use between residents and non-residents (Graph 7.B).

Stablecoins vs foreign currency deposits[1]

Graph 7



[1] See additional notes to graphs for details. [2] Average annual change in the foreign currency deposit ratio and average annual gross stablecoin inflows as a share of GDP in different macroeconomic environments. [3] Share of foreign currency deposits and gross stablecoin inflows to GDP under different regulations.

Sources: Auer, Lewrick and Paulick (2025); Ha et al (2023); Hofmann, Mehrotra and Paulick (2026); Kose et al (2022); Levy-Yeyati (2021); Mueller et al (2025); IMF; Chainalysis; BIS.

The adoption of foreign stablecoins could also link conventional FX markets with the crypto ecosystem. Recent evidence points to rising inflows of non-US dollar fiat currencies into stablecoins (Graph 8.A). These flows can weaken the domestic fiat currency in the spot market (Graph 8.B, red line) and reveal frictions to arbitrage between the crypto and conventional FX markets (blue line). They may also increase the cost of buying dollars through the FX swap market.[56]

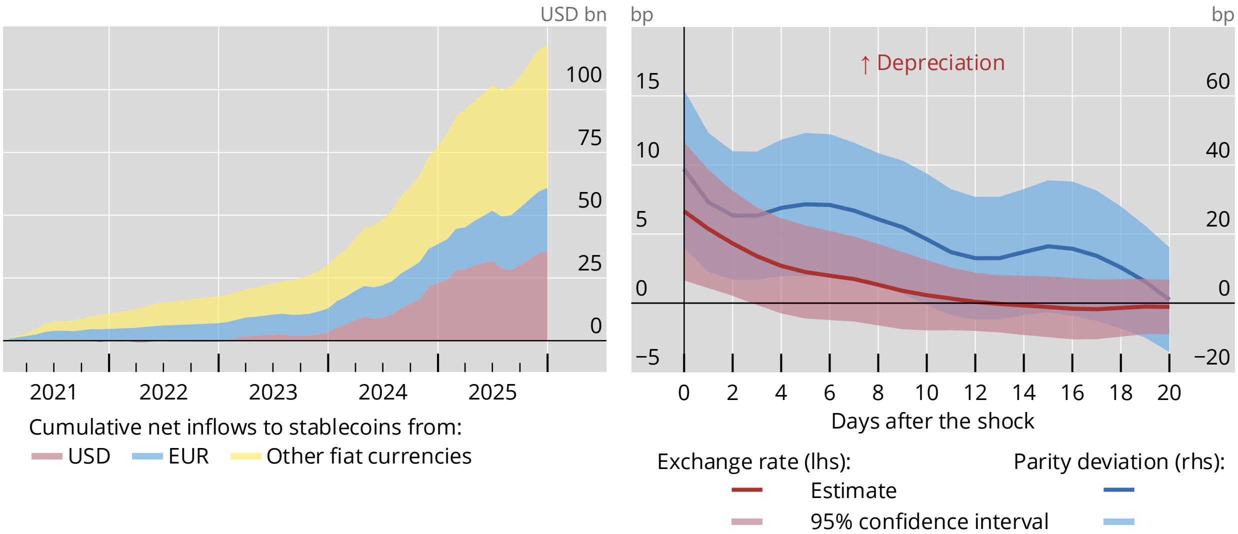
If foreign stablecoin usage expands from the (still limited) store of value holdings to sizeable transaction settlement, the domestic currency's unit of account role would erode, further weakening the reach of domestic monetary policy. Foreign monetary conditions – those of a stablecoin's reference currency – would exert larger influence on the domestic economy. This would be particularly problematic when the monetary stances in the domestic and foreign economy – and their business and financial cycles – were not aligned. Even when stablecoins do not pay interest directly, any indirect remuneration to holders would still be affected by foreign monetary policy. Widespread digital currency substitution could sharply curtail domestic monetary policy autonomy.[57]

Notwithstanding these risks, currency substitution pressures can, at the margin, sharpen incentives to entrench sound macroeconomic policies and upgrade domestic payment options. The ready availability of foreign stores of value raises the premium on ensuring price stability, maintaining prudent fiscal positions and setting up efficient domestic payment systems. Past de-dollarisation episodes suggest that sustained improvements in policy frameworks and the development of markets and instruments in local currency can gradually reverse foreign currency use. In this sense, the challenge posed by foreign stablecoins could catalyse reforms that ultimately strengthen monetary sovereignty.[58]

Demand for foreign stablecoins connects FX markets with crypto ecosystem[1] — Graph 8

A. Increasing inflows to US dollar-pegged stablecoins from non-USD currencies

B. Stablecoin inflows depreciate the local currency and widen stablecoin-fiat currency parity deviations[2]



[1] See additional notes to graphs for details. [2] Impact of a 1% increase in net inflows into US dollar-pegged stablecoins; regressions based on 27 fiat currencies. Cumulative change for the exchange rate. The parity deviation refers to the price gap between obtaining dollar exposure by purchasing US dollar-pegged stablecoins and obtaining the corresponding exposure through traditional FX markets.

Sources: Aldasoro, Beltran and Grinberg (2026); BIS.

Moving towards the next-generation monetary system

The discussion in the previous sections highlights that stablecoins present both benefits and challenges. They leverage the technological innovations of tokenisation, enabling features such as programmability and atomic settlement. However, widespread adoption of stablecoins in their current form would also come with macroeconomic and financial risks. Most critically, they threaten financial integrity and provide channels for regulatory evasion, while also raising dollarisation risks in EMDEs. More generally, stablecoins in their current form do not uphold the properties that support trust in money, which might dent the foundations of monetary stability if, despite their drawbacks, stablecoins were adopted widely.

As digital innovations mature, the central policy challenge is to connect novel instruments to the core monetary and financial system without diluting the foundational properties that underpin trust in money. The aim is to reinforce the foundations of payment and settlement even as new capabilities are introduced. Harnessing tokenisation to improve the rails of the monetary system calls for careful design choices that safeguard the properties of money while enabling efficiency gains. The assessment of cost and benefits should be holistic, recognising how policy choices may influence the payment market structure as well as the broader macroeconomic and financial environment in which novel payment instruments operate at both domestic and global levels.

While moving towards the next-generation monetary system, policymakers need to act on two fronts. One involves addressing the shortcomings of existing stablecoin arrangements to mitigate risks. The second relates to the broader vision of bringing technological innovation into the two-tiered system.

Addressing issues in current stablecoin arrangements

Technological advances and regulatory measures play a crucial role in addressing the risks associated with current stablecoin arrangements. A number of risks can be mitigated with policy interventions. Key measures include capital requirements for stablecoin issuers and liquidity requirements for stablecoin reserve holdings, such as foreseen in many regulatory frameworks. Other measures include instituting protections for coin holders, exploring conditional access to central bank liquidity under stringent safeguards and establishing well defined disclosure and resolution mechanisms for issuers. When complemented by strong risk management practices that avoid moral hazard, such measures could reduce the risk of runs and strengthen the resilience of stablecoin arrangements. At the system-wide level, enhancing regulatory capabilities, monitoring and infrastructure will be key to assessing financial stability risks.[59]

Certain structural vulnerabilities related to stablecoins present more complex challenges. For example, the use of stablecoins on public permissionless blockchains introduces significant challenges in addressing financial integrity concerns, such as AML/CFT. New tools harnessing artificial intelligence and the public ledger of transactions can provide solutions,[60] but the integrity challenges remain substantial. Furthermore, fragmentation across multiple blockchains introduces new operational risks, hinders interoperability and limits the realisation of network effects, posing additional obstacles to the development of a resilient, cohesive and efficient system. Alongside these concerns, there is a need to adequately regulate the underlying platforms. In particular, in public permissionless blockchains, governance lacks transparency and accountability remains unclear.

At the same time, as with any structural change in the financial system, policymakers should be mindful of new vulnerabilities that may build up. For example, a setup in which stablecoins hold government debt at scale may disincentivise necessary fiscal consolidation in the issuing economy, raising risks for monetary policy down the road (see Chapter II). A rapid sale of reserve assets by stablecoins may prompt the need for central bank intervention. Economies with high demand for foreign stablecoins, in turn, could potentially face tighter financial conditions.

Notably, many challenges are shared across jurisdictions. In this light, there is particular value in international cooperation to tackle risks. Already, regulatory cooperation on financial integrity is well developed, and multiple standard-setting bodies are cooperating on the implications of stablecoins for their own area of work.

Cooperation on the regulation and supervision of stablecoin issuers is an area of further development. This could include cross-border supervisory colleges and resolution planning for significant issuers, common data templates and cooperation arrangements that explicitly cover financial stability. Where regulatory regimes deliver comparable outcomes, proportionate mutual recognition could also reduce frictions while preserving safeguards and legal clarity.[61]

Bringing technological innovation into the two-tier system

Another priority for policymakers is to integrate technological advances into the two-tier system. Indeed, the possibility to provide programmability, atomic settlement and fast payments is not limited to stablecoins. Providing central bank money in new ways – either as tokenised central bank reserves on a programmable platform or via synchronised links to reserve accounts – could anchor par redeemability of tokenised private money and support network effects by helping to overcome fragmentation. Adverse macroeconomic implications associated with widespread adoption of poorly designed stablecoins could be mitigated, while still enabling new competitors to challenge banks and other incumbent financial institutions.

Several initiatives showcase how the benefits of tokenisation could be reaped. Pilot projects have explored how jurisdiction-specific policies and regulatory requirements can be encoded in a shared protocol for cross-border compliance. They have also addressed how actors can collaborate on analysis while respecting data sovereignty. Together, these efforts indicate that next-generation correspondent banking can increase the speed of cross-border payments, reduce errors and failures, and strengthen integrity.[62] In parallel, banks are experimenting with tokenised deposits to automate margining and intraday liquidity. These experiments show how programmability can reduce pre-funding and operational frictions within prudential perimeters.

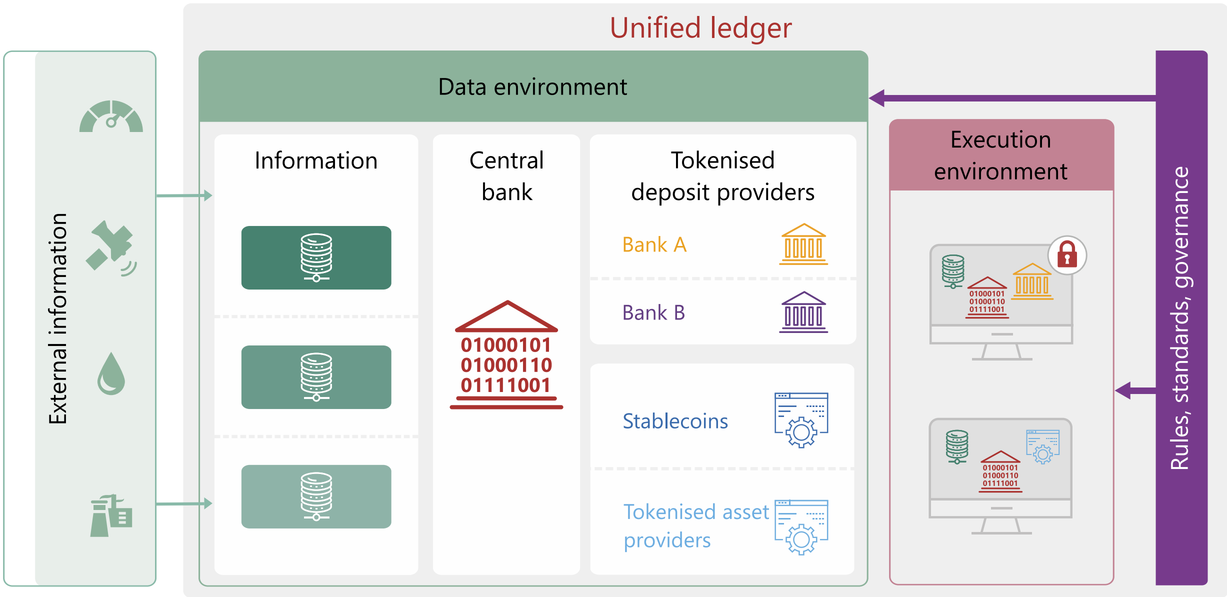
The potential benefits of tokenised cross-border rails may extend to collateral mobility and liquidity management more broadly. Programmability can enable continuous collateral management and support intraday repos. Tokenised wholesale operations in simulated settings have also shown how monetary policy operational frameworks could be codified in smart contracts.[63]

A proposed organising principle is for tokenisation to build on the two-tier architecture anchored by central bank reserves, while upgrading functionality through programmable platforms. A "unified ledger" that integrates tokenised central bank reserves, tokenised commercial bank money, other regulated private money and tokenised assets in the same venue can combine messaging, reconciliation and asset transfer (Graph 9). It can also support atomic settlement in a manner consistent with legal finality. There may be different ways to implement interoperability across such an ecosystem, including by establishing a system of fully interoperable ledgers. Within this design, maintaining trust in the currency and fostering the safety and efficiency of the payment system remain core central bank functions: central bank money is the trust anchor and the basis for the singleness of money, and it needs to be available as a settlement asset wherever this is desirable for the public interest and practical.[64]

A unified ledger could support a diversity of regulated private monies – including tokenised commercial bank deposits and, where appropriately designed and supervised, other reserve-backed private instruments – provided that participation is conditioned on strong safeguards. These would include redeemability at par against central bank money at the wholesale layer, robust governance and risk management, transparency over backing assets and compliance with financial integrity and consumer protection requirements. By allowing contingent execution of actions – such as delivery versus payment (DvP) – on programmable rails, such platforms can reduce operational frictions and errors. They can also shorten settlement cycles and lower pre-funding needs, while enabling healthy private innovation at the user interface level.[65] Interoperability across platforms, in turn, requires careful

Unified ledger, anchored in central bank money, to host different forms of tokenised private money

Graph 9



The lock indicates that some operations may be performed on confidential encrypted data.

Sources: Shin (2023); BIS.

architectural choices that balance composability against governance and data requirements.[66]

A key question for central banks is whether and how to provide central bank reserves for token arrangements in ways that preserve singleness, elasticity and integrity, while ensuring secure, scalable infrastructures that harness positive network effects. Delivering on this objective entails choices about the technical form of central bank reserves, the governance and access model for tokenised platforms, liquidity facilities and legal and data frameworks. Each choice involves trade-offs in the innovation process and must take account of potential system-wide implications, underscoring the need for a holistic assessment of macro-financial interactions. In this context, the prototype developed in Project Agorá illustrates how public-private collaboration can provide a common framework to identify, assess and balance these trade-offs.

The technical form of central bank money on tokenised rails could, among other options, be based on linking existing reserve accounts to a programmable platform or issuing tokenised claims on reserve accounts. Platform governance and access models will be pivotal in safeguarding monetary sovereignty and financial integrity while fostering competition and inclusion. Defining who may hold and use tokenised central bank money – and under what prudential and conduct requirements – is central to ensuring stability and maintaining a level playing field. Broader non-bank access to central bank settlement accounts, or liquidity facilities and backstops, can bring benefits in some cases, but it also raises questions on risk management, supervision and necessary guardrails. Clear governance arrangements for operating the platform where central bank money is provided, including roles and responsibilities for the public and private sectors, are necessary to ensure resilience, accountability and alignment with the foundations that establish trust in money.

Platform resilience and interoperability are preconditions for scaling safely for, and coexisting with, legacy systems. Tokenised rails must meet high cyber and operational standards, with robust contingency procedures, backup capabilities and error handling mechanisms for edge cases such as erroneous instructions or disputed transactions.

In the meantime, further enhancements and innovations in the conventional payment ecosystem can and should continue. For wholesale transactions, upgrades to real-time gross settlement (RTGS) systems can deliver tangible benefits, including basic forms of programmability, without necessarily moving towards a fully tokenised financial system. Moreover, a further extension and alignment of RTGS operating hours with retail fast payment systems could further enhance the safety of the payment ecosystem within a currency area. Interlinking fast payment systems, further aligning operating hours and messaging standards and other enhancements to correspondent banking could further improve cross-border payments.[67]

Overall, a promising way forward is a coordinated, phased approach in which central banks promote innovation while preserving the institutional foundations of trust in money. By offering tokenised central bank reserves and facilities on permissioned, interoperable platforms, and by articulating clear governance and access policies, central banks can anchor a next-generation monetary and financial system that improves the old while enabling the new. Public-private collaboration, internationally consistent approaches and standards and rigorous experimentation will be critical to ensure that tokenised rails generate virtuous network effects domestically and across borders. Such an approach can be calibrated to national circumstances and, by design, should take into account cross-border spillovers through close cooperation among authorities.

Conclusion

Policy design should ensure that any form of money, public or private, is safely integrated into the monetary system. For any role touching systemic payment systems or wholesale settlement, preserving the singleness of money requires timely redeemability into central bank money at par value and elastic provision of liquidity. Within a two-tier architecture, central banks can offer tokenised central bank reserves, providing the anchor for tokenised deposits and other – well designed and regulated – tokenised monies. When governance and access policies are well specified, this can help to harness the opportunities of tokenisation while maintaining trust in the monetary and financial system.

Policy choices should be guided by a holistic perspective that evaluates how design features for new instruments – stablecoins or others – may shape the payment ecosystem as well as macroeconomic and financial outcomes. Any projections assuming widespread adoption of new instruments and infrastructure remain uncertain given the financial system's flexibility in adjusting to new conditions. But scenario analysis can inform about the range of possible outcomes on credit provision, policy transmission and international spillovers.

As work progresses towards the future monetary system, policymakers should foster innovation while preserving confidence in money. Achieving this requires coordination across technical, legal and policy domains. Given the global footprint of digital finance, deeper cooperation among authorities will be needed to support consistent, interoperable outcomes. Aligned implementation of international recommendations and practical tools for supervision – such as information-sharing arrangements, supervisory colleges and common data/reporting templates – can close monitoring gaps and support financial stability assessments.[68] International cooperation will be indispensable to avoid harmful fragmentation or regulatory arbitrage. It will also help to ensure consistent regulatory outcomes and to promote financial stability. Through sustained collaboration, authorities can enable private innovation to flourish on safe and efficient rails that serve the public interest.

Endnotes

1 The classic statement of money as memory is Kocherlakota (1998). A more modern exploration of similar ideas can be found in Auer, Monnet and Shin (2025).

2 On the "no questions asked" principle, see Holmström (2015). On money as a unit of account, see Doepke and Schneider (2017).

3 This refers to the receiver's assessment of the money itself, not the identity of the payer. Modern anti-money laundering and countering the financing of terrorism (AML/CFT) requirements oblige intermediaries to verify customer identities and monitor transactions for suspicious activity, but these checks concern the parties to the transaction rather than the creditworthiness or acceptability of the settlement medium.

4 For example, during the so-called wildcat banking era in the United States, banks issued notes that often traded at a small discount when far from their home state. These deviations appeared harmless until a shock hit confidence; then discounts widened abruptly, merchants refused unfamiliar notes and commerce stalled. What had looked like a tolerable approximation to singleness proved fragile. On 19th century US banking, see Rolnick and Weber (1982) and Rolnick et al (1998), among others.

5 On the importance of intraday credit, see Borio (1995). Bagehot (1873) provides the classic treatment of lender of last resort; Mehrling (2011) restates it for modern times in terms of the dealer of last resort. For a recent assessment of the importance of elasticity in the monetary system, see Banerjee et al (2025).

6 Of course, singleness may fail for bank deposits above deposit insurance limits, when there is no explicit or implicit government backing to ensure that all deposits are interchangeable at par value.

7 Monetary sovereignty can be broadly defined as the ability of a jurisdiction to make decisions and exercise influence over the monetary system within its borders.

8 See Claessens and Rice (2026).

9 On settlement infrastructures, see CPSS (2003); on the importance of central bank independence, see Carstens (2025).

10 See Goodhart (1988) and BIS (2023, 2025).

11 On programmability and atomic settlement, see BIS (2023, 2025); on the comparison of tokenised deposits and stablecoins and implications for the singleness of money, see Garratt and Shin (2023).

12 Other frictions include mismatched message formats in cross-border payments, settlement fails in securities markets, fragmented KYC standards, reliance on batch processing at core processors and limited application programming interface access for third-party innovators.

13 See eg Feyen et al (2021) for an overview.

14 DLT refers to a family of shared data and execution technologies that maintain a synchronised, tamper-evident record across multiple nodes through

consensus. Tokenisation is the representation of physical or intangible assets as digital tokens on a programmable platform (see eg Aldasoro et al (2023)).

15 A smart contract is machine-executable code that automatically enforces predefined actions on a programmable platform when stated conditions are satisfied (see eg BIS-CPMI (2024)).

16 See Maechler (2025). The distinction is by design choices and governance, not the underlying technologies. In practice, there can be further features of networks that go beyond the bounds of this simple distinction, including public permissioned networks; these are not dealt with here in depth.

17 See eg Schär (2024) and the references therein for a discussion of the benefits and challenges associated with public permissionless blockchains.

18 A blockchain is a type of distributed ledger that organises records into discrete data bundles that are cryptographically linked in sequence. Blockchains can be operated in permissionless or permissioned settings and are one among several designs within DLT.

19 See Garcia Ocampo et al (2026).

20 Tokenised deposits are digital representations of commercial bank money recorded on a programmable platform. They confer a direct claim on the issuing bank and are redeemable at par for central bank money of the same currency.

21 Hybrid designs increasingly blend permissionless and permissioned features. For example, some private, permissioned layers run on top of public permissionless base networks, aiming to combine broad reach and programmability with stronger governance, privacy and compliance. "Network of networks" approaches have also been explored. These connect separate permissioned applications while keeping sensitive data compartmentalised and enabling coordinated transactions across them. Permissioned networks of networks, for instance, seek to connect applications while preserving privacy and enabling atomic transactions across sub-ledgers, representing a hybrid approach under regulated governance.

22 For a discussion of frictions in cross-border payments and the potential for tokenisation to address some of these, see eg G7 Working Group on Stablecoins (2019), CPMI (2022), Garratt et al (2024) and BIS (2025).

23 For more details on Project Agorá, see BIS (2026).

24 This chapter focuses on fiat-backed stablecoins, the largest share of stablecoins in terms of market capitalisation and trading volume. See Kosse et al (2023) for a discussion of other types of stablecoins.

25 See eg CCAF-Fii (2026) for an overview.

26 A hosted wallet is a custody arrangement in which a third-party provider (eg an exchange or platform) manages private keys and assets on behalf of the user. An unhosted wallet (also called self-hosted, self-custody or non-custodial) is a custody arrangement in which the user controls the private keys and assets (see eg BIS-CPMI (2024) and the sources discussed therein).

27 On the use of stablecoins, see also Auer, Lewrick and Paulick (2025), Aldasoro, Frost and Ito (2026), Chainalysis (2026a) and Schär et al (2026). As on-ramps and off-ramps for leveraged crypto trading, stablecoins facilitate position-taking and leverage (Gorton et al (2025)). Tokenised investment funds have emerged as a

yield-bearing complement on public permissionless networks, but liquidity remains thin and participation typically restricted to allow-listed holders (see eg Aquilina et al (2025) and Azar et al (2025)).

28 It is often claimed that cross-border remittances are an area where stablecoins are attractive. In practice, the costs of on-ramps and off-ramps to stablecoins mean that the total, or all-in, cost of a cross-border stablecoin transaction may be as high or higher than a bank transfer. See Du et al (2026).

29 Adjusted annual stablecoin transaction volumes are from Chainalysis (2026b). According to company data, Clearing House Interbank Payments System (CHIPS), the largest private sector US dollar clearing and settlement network, clears and settles about $2.2 trillion in domestic and international payments each business day. According to Visa data, cited in Aldasoro, Frost and Ito (2026), adjusted stablecoin transaction values are closer to $390 billion annually – less than 1% of the total value.

30 For empirical analysis of illicit use of stablecoins, see eg Chainalysis (2026a) and Griffin et al (2025). Risks related to the use of unhosted wallets are discussed in eg FATF (2026).

31 For a discussion of liquidity and capital requirements to enhance regulation of stablecoins and multifunction cryptoasset intermediaries, see Goel et al (2026) and Garcia Ocampo et al (2026), respectively.

32 Good practices include placing explicit AML/CFT obligations on stablecoin issuers and intermediaries, programmable controls such as allow-/deny-listing and freeze/burn functions, proactive secondary market monitoring with blockchain analytics, and enhanced measures for interactions with unhosted wallets (FATF (2026)). Allow-listing approaches are applied by tokenised investment funds but pose additional operational challenges (Aquilina et al (2025)).

33 For a discussion of compliance challenges and policy implications associated with unhosted wallets and the use of stablecoins, see eg Minto et al (2026), Aldasoro et al (2025a), BIS (2025) and CPMI (2023).

34 In addition to settlement in central bank money, robust regulatory and supervisory frameworks for issuers of private money also contribute to the singleness of money (BIS-CPMI (2024)).

35 See eg Adrian et al (2025) and Aldasoro et al (2025a).

36 See Borio et al (2026).

37 Flaws in design could lead to a variety of operational and financial issues (see eg Aronoff et al (2026) and Eidan et al (2026)). For instance, unintended creation or destruction of tokens could destabilise token supply, while frozen balances might prevent users from accessing their funds. Failures in bridges can block or misroute cross-chain transfers, potentially causing delays or even permanent loss of assets. Oracles might feed incorrect external data that lead to transactions being wrongly paused or rerouted. Additionally, unclear governance over upgrade authority could delay critical actions by issuers, leaving the system vulnerable to inefficiencies.

38 See Bank of England (2025).

39 See Aldasoro et al (2024) and Goel et al (2026).

40 See Huang and Keister (2025) and Voellmy (2021).

41 Some forecasts by the industry see the stablecoin market at $2 trillion–4 trillion by 2030 (see eg Citi (2025)).

42 A growing number of studies are assessing the effects of stablecoin issuance on the financial sector, and of different scenarios for remuneration of stablecoins. See eg Cong (2025), Nigrinis (2025) and CEA (2026).

43 The stylised examples are based on the simplifying assumption that households' balance sheet size remains unchanged.

44 See eg Bouis et al (2024) and Coste (2024) for a discussion. If, under an alternative assumption, banks create additional deposits by eg purchasing assets (eg treasury bills) from households, which then use these deposits to purchase stablecoins, the balance sheet size of the banking sector increases (+$100 treasury bills on the asset side; +$100 deposits from the stablecoin issuer on the liability side). This would mitigate, but typically not offset, the decline in the banking sector's LCR and would be largely neutral for the NSFR under standard assumptions.

45 For an analytical perspective centred on balance sheet accounting, see Benigno and Hofmann (2026).

46 Altavilla et al (2026) model how deposit rate competition from stablecoins raises banks' marginal funding costs and shifts portfolios towards liquid assets. Bindseil (2026) analyses the liquidity implications of segregating stablecoin reserve deposits at banks. Wang (2025) examines distributional effects from a retail-to-wholesale funding shift and potential SME credit headwinds. Liao and Caramichael (2022) map how reserve composition and inflow sources affect credit intermediation, finding that two-tier, bank deposit reserve scenarios are broadly neutral for lending, whereas central bank reserve scenarios risk deposit migration and credit disintermediation.

47 Ahmed and Aldasoro (2025) document Treasury bill yield sensitivity to stablecoin inflows and outsized redemption effects. Goel et al (2026) highlight run externalities via fire sales of reserve assets. Altavilla et al (2026) point to amplification when flows are intermediated through concentrated wholesale markets. Bindseil (2026) notes risks when stablecoins are perceived as close substitutes for central bank money.

48 Financial stability implications will depend on the robustness of the NBFIs filling the void in credit supply. Empirical research suggests that NBFIs may curtail lending by more than banks during episodes of stress (Aldasoro et al (2025b)).

49 If stablecoins were to become a widely accepted means of payment, stablecoin issuers could create credit to some degree, eg by purchasing government bonds in the primary market (Borio et al (2026)).

50 See Hempel et al (2026).

51 See Ahmed and Aldasoro (2025).

52 On the potential effects on the pass-through of changes in policy rates, see eg Altavilla et al (2026) and Hofmann, Kaldorf and Rottner (2026). Monetary policy adjustment may also be needed to offset unintended effects on the monetary policy stance that could arise due to stablecoin adoption. In the central bank reserve scenario, the compression of banks' reserve holdings and retail liabilities

tends to shrink bank balance sheets and could curtail credit supply (see eg Bouis et al (2024) and Clouse (2024)). To preserve aggregate reserves in the banking sector and maintain its policy stance under "non-abundant" reserve frameworks, the central bank may need to expand assets by lending to banks or purchasing securities.

[53] See also Barbon et al (2026) for an analysis of impediments to policy rate pass-through to DeFi lending pools.

[54] See eg Auer, Lewrick and Paulick (2025) and Hofmann, Mehrotra and Paulick (2026) on the drivers of deposit dollarisation and stablecoin flows.

[55] For a discussion of the risk of evasion of capital controls, see Graf von Luckner et al (2024) and Auer, Lewrick and Paulick (2025). He et al (2022) discuss related policy implications. Reuter et al (2025) show that lower frictions in cross-border payments can increase capital flows.

[56] See Aldasoro, Beltran and Grinberg (2026).

[57] See Benigno et al (2022).

[58] See eg Waller (2025).

[59] See eg Bindseil (2026), FSB (2025) and Goel et al (2026).

[60] See Aldasoro et al (2025c).

[61] See also FATF (2026), FSB (2025), CPMI (2023) and CPMI-IOSCO (2022).

[62] See BIS (2024a; 2024b).

[63] See Federal Reserve Bank of New York-BIS (2025) and BIS (2025).

[64] For previous discussions, see BIS (2023; 2025).

[65] A tokenised "trilogy" of central bank reserves, commercial bank money and government bonds could provide a robust foundation for network effects on programmable rails. Tokenised central bank reserves anchor singleness and provide elastic settlement liquidity, tokenised deposits allow private innovation at the customer interface and tokenised government bonds may unlock efficiencies in securities settlement and collateral management. By rooting executable money and assets in trusted balance sheets, the trilogy aligns technological advances with the institutional bedrock of the current system (BIS (2025)).

[66] Composability is the ability to assemble modular building blocks (eg tokenised money and assets, smart contracts) into higher-order workflows that execute as a single, coordinated transaction.

[67] For retail payments, fast payment systems, which allow for real-time or near real-time around-the-clock transfers of funds between end user accounts, are being rolled out in a rising number of jurisdictions. Such systems can have a transformational impact on domestic payment efficiency and financial inclusion (see eg Aurazo et al (2024)). Tokenised central bank money for retail purposes is economically similar and could have similar benefits (Frost et al (2025)).

[68] See also FSB (2025).

Additional notes to graphs

Graph 5.A: Projected change in the treasury bill (t-bill) yield and the deposit spread. The latter is a measure of banks' funding costs and is defined as the difference between the deposit rate and the risk-free rate.

Graph 5.C: The three margins are: (i) the public debt-to-GDP ratio rises from 122% to 175%; (ii) the treasury bill share increases from 18% to 24%; and (iii) 50% of stablecoins are held abroad.

Graph 6: Excludes observations for which the stablecoin yield was equal to or below zero or above 50%, or for which the DeFi lending pool's TVL was equal to zero.

Graph 6.B: The underlying regression includes three lags of log yields as control variables for which the results are not shown.

Graph 7.A: For "high instability", the inflation regime comprises years where the five-year moving average of the inflation rate is at or above 5%; sovereign risk comprises years with sovereign debt crises (foreign currency deposits) and years with low sovereign credit ratings (stablecoins). For "low instability", the inflation regime comprises years where the five-year moving average of the inflation rate is below 5%; sovereign risk comprises years without sovereign crises (foreign currency deposits) and years with high sovereign credit ratings (stablecoins). High (low) sovereign credit ratings refer to the three highest (lowest) ratings in Kose et al (2022). For foreign currency deposits, data for 1995–2019; for stablecoins, 2019–23; for up to 190 economies subject to data availability. Data for stablecoin inflows exclude outliers below the 2.5th and above the 97.5th percentiles.

Graph 7.B: Restrictions on foreign currency deposits refer to approval requirements on domestic foreign currency deposits (2000–19); for stablecoins, restrictions on stablecoin use between residents and non-residents (2022–23). Distributions for foreign currency deposits are based on annual data; for stablecoins, sum of gross inflows over 2022–23. The sample covers up to 132 economies.

Graph 8.A: Cumulative sum of daily net inflows from fiat currencies into US dollar-pegged stablecoins (USDT, USDC, DAI and BUSD); sample as in Aldasoro, Beltran and Grinberg (2026).

Graph 8.B: The sample period spans from January 2021 to November 2025.

References

Adrian, T, P Bains, M Bechara, E Cerutti, S Forte, F Grinberg, A Gullo, M Hengge, A Jekabsone, K Kao, T Mancini Griffoli, S Martinez Peria, M Miccoli, M Reuter and N Sugimoto (2025): "Understanding stablecoins", *IMF Departmental Paper*.

Ahmed, R and I Aldasoro (2025): "Stablecoins and safe asset prices", *BIS Working Papers*, no 1270.

Aldasoro, I, M Aquilina, U Lewrick and S H Lim (2025a): "Stablecoin growth – policy changes and approaches", *BIS Bulletin*, no 108, July.

Aldasoro, I, P Beltran and F Grinberg (2026): "Stablecoin flows and foreign exchange parity deviations in segmented markets", *BIS Working Papers*, no 1340.

Aldasoro, I, S Doerr, L Gambacorta, R Garratt and P Koo Wilkens (2023): "The tokenisation continuum", *BIS Bulletin*, no 72.

Aldasoro, I, S Doerr, H Zhou (2025b): "Non-bank lending during crises", *Review of Finance*, vol 29, no 6.

Aldasoro, I, J Frost and H Ito (2026): "The impact of stablecoins on the international monetary and financial system", *BIS Papers*, no 170.

Aldasoro, I, J Frost, S H Lim, F Perez-Cruz and H S Shin (2025c): "An approach to anti-money laundering compliance for cryptoassets", *BIS Bulletin*, no 111.

Aldasoro, I, P Mehrling and D Neilson (2024): "On par: a money view of stablecoins", *Journal of Financial Market Infrastructures*, vol 11, no 4.

Altavilla, C, M Boucinha, L Burlon, R Adalid, R Fortes and F Maruhn (2026): "Stablecoins and monetary policy transmission", *ECB Working Paper Series*, no 3199.

Aquilina, M, U Lewrick, F Ravenna and L Schönleber (2025): "The rise of tokenised money market funds", *BIS Bulletin*, no 115.

Aronoff, D, C Calabia, A Brownworth, A Samuel and N Narula (2026): "The hidden plumbing of stablecoins: financial and technological risks in the GENIUS Act era", *MIT Digital Currency Initiative*, February.

Auer, R, J Frost and J M Vidal Pastor (2022): "Miners as intermediaries: extractable value and market manipulation in crypto and DeFi", *BIS Bulletin*, no 58, June.

Auer, R, U Lewrick and J Paulick (2025): "DeFiying gravity? An empirical analysis of cross-border Bitcoin, Ether and stablecoin flows", *BIS Working Papers*, no 1265.

Auer, R, C Monnet and H S Shin (2025): "Decentralised ledgers and the governance of money", *Journal of Financial Economics*, vol 167, 104026.

Aurazo, J, J Frost and A Kosse (eds) (2024): "Faster digital payments: global and regional perspectives", *BIS Papers*, no 152.

Azar, P, F Carapella, J Perez-Sangimino, N Swem and A Vardoulakis (2025): "The emergence of tokenised investment funds and their use cases", Federal Reserve Bank of New York*, Liberty Street Economics*, 24 September.

Bagehot, W (1873): *Lombard Street: a description of the money market*, seventh edition.

Balino, T, A Bennett, A Berg, E Borenzstein, Z Chen, A Ize, D Robinson, A Selasie and L Zamalloa (1999): "Monetary policy in dollarized economies", *IMF Occasional Paper*, no 171.

Banerjee, R, M Chui, J Frost and J M Vidal Pastor (2025): "Elasticity in the monetary system", *BIS Bulletin*, no 101.

Bank for International Settlements (BIS) (2023): "Blueprint for the future monetary system: improving the old, enabling the new", *Annual Economic Report 2023*, Chapter III.

——— (2024a): "Project Aurora: the power of data, technology and collaboration to combat money laundering".

——— (2024b): "Project Mandala: shaping the future of cross-border payments compliance".

——— (2025): "The next-generation monetary and financial system", *Annual Economic Report 2025*, Chapter III.

——— (2026): *Project Agorá: a shared programmable platform for wholesale cross-border payments*.

Bank for International Settlements and Committee on Payments and Market Infrastructures (BIS-CPMI) (2024): *Tokenisation in the context of money and other assets: concepts and implications for central banks*: *report to the G20*.

Bank of England (2025): "Proposed regulatory regime for sterling-denominated systemic stablecoins", consultation paper.

Barbon, A, J Barthélemy and B Nguyen (2026): "DeFi-ying the Fed? Monetary policy transmission to stablecoin rates", *SSRN Working Paper*, 4673325.

Bell, S, J Frost, B Hofmann, D Sandri and H S Shin (2024): "Central bank capital and trust in money: lessons from history for the digital age", *BIS Papers*, no 146.

Benigno, G and B Hofmann (2026): "Stablecoin 101: A T-account sectoral analysis across regulatory regimes", mimeo.

Benigno, P, L Schilling and H Uhlig (2022): "Cryptocurrencies, currency competition, and the impossible trinity", *Journal of International Economics*, vol 136, 103601.

Bignon, V, B Mojon and M Ortiz Serrano (2026): "The Trafalgar squeeze of global liquidity", *BIS Working Papers*, no 1347.

Bindseil, U (2019): *Central banking before 1800: a rehabilitation*, Oxford; Oxford Academic.

——— (2026): "Regulatory responses to the financial stability implications of stablecoins", *SAFE Working Paper*, no 470.

Boissay, F, G Cornelli, S Doerr and J Frost (2022): "Blockchain scalability and the fragmentation of crypto", *BIS Bulletin*, no 56.

Bolt, W, J Frost, H S Shin and P Wierts (2024): "The Bank of Amsterdam and the limits of fiat money", *Journal of Political Economy*, vol 132, no 12.

Borio, C (1995): "Payment and settlement systems: trends and risk management", in G Kaufman (ed), *Research in Financial Services: Public and Private Policy*, vol 7.

Borio, C, P Disyatat and N Tarashev (2026): "Stablecoins and the exorbitant privilege of money creation", *VoxEU*, 1 February.

Bouis, R, G Gelos, F Nakamura, P Miettinen, E Nier and G Soderberg (2024): "Central bank digital currencies and financial stability: balance sheet analysis and policy choices", *IMF Working Papers,* no 24/226.

Cambridge Centre for Alternative Finance and Financial Innovation for Impact (CCAF-Fii) (2026): *Tokenised money: use cases, interoperability and regulation*.

Carlos, A (2023): "The country they built: dynamic and complex indigenous economies in North America before 1492", *The Journal of Economic History*, vol 83, no 2.

Carstens, A (2025): "Origins and foundations of central bank independence", speech at "Central bank independence in the face of present and future challenges", Bank of Spain, Madrid, 17 January.

Chainalysis (2026a): *The Chainalysis 2026 Crypto Crime Report*.

——— (2026b): *The new rails – how digital assets are reshaping the foundations of finance*.

Cipollone, P (2026): "Europe and monetary sovereignty", speech at the Accademia Nazionale dei Lincei, Rome, 12 February.

Citi (2025): "Stablecoins 2030 – Web3 to Wall Street", *Citi Institute Global Perspectives and Solutions*, 25 September.

Claessens, S and T Rice (2026): "Cross-border payment technologies: innovations and challenges", *BIS Papers*, no 167.

Clement, P, J Frost and B Hofmann (2026): "Central banks: an indispensable institutional innovation", mimeo.

Clouse, J (2024): "A field guide to monetary policy implementation issues in a new world with CBDC, stablecoin and narrow banks", Board of Governors of the Federal Reserve System, *Finance and Economics Discussion Series*, 2024-001.

Committee on Payment and Settlement Systems (CPSS) (2003): *The role of central bank money in payment systems*.

Committee on Payments and Market Infrastructures (CPMI) (2022): *Extending and aligning payment system operating hours for cross-border payments*.

——— (2023): Considerations for the use of stablecoin arrangements in cross-border payments.

Committee on Payments and Market Infrastructures and Board of the International Organization of Securities Commissions (CPMI-IOSCO) (2012): *Principles for financial market infrastructures*.

——— (2022): *Application of the principles for financial market infrastructures to stablecoin arrangements*.

Cong, L W (2025): "Stablecoins and banking: deposit dynamics, financial stability, and regulatory design", white paper.

Coste, C-E (2024): "Toss a stablecoin to your banker: stablecoins' impact on banks' balance sheets and prudential ratios", *ECB Occasional Paper*, no 353.

Council of Economic Advisors (CEA) (2026): *Effects of stablecoin yield prohibition on bank lending*.

Doepke, M and M Schneider (2017): "Money as a unit of account", *Econometrica*, vol 85, no 5.

Du, W, C Huang and D Scharfstein (2026): "Competing rails for cross-border payments: banks, fintechs, and stablecoins", Harvard Business School, working paper.

Eidan, D, J Frost, R Kansal, U Lewrick, S H Lim, T Rybarczyk (2026): "Blockchain consensus mechanisms and fragmentation", *BIS Bulletin*, forthcoming.

Federal Reserve Bank of New York and BIS (2025): "Project Pine: central bank open market operations with smart contracts".

Feyen, E, J Frost, L Gambacorta, H Natarajan and M Saal (2021): "Fintech and the digital transformation of financial services: implications for market structure and public policy", *BIS Papers*, no 117.

Financial Action Task Force (FATF) (2026): *Targeted report on stablecoins and unhosted wallets*.

Financial Stability Board (FSB) (2023): *High-level recommendations for the regulation, supervision and oversight of global stablecoin arrangements: final report*.

——— (2025): *Thematic review on FSB global regulatory framework for crypto-asset activities: peer review report*.

Frost, J, H S Shin and M Verdier (2025): "Competing digital monies", *BIS Working Paper*, no 1301.

G7 Working Group on Stablecoins (2019): *Investigating the impact of global stablecoins*.

Garcia Ocampo, D (2025): "Stablecoin-related yields: some regulatory approaches", *FSI Insights on policy implementation*, no 27.

Garcia Ocampo, D, P Goodrich and G-P Lovicu (2026): "Cryptoasset service providers as financial intermediaries: risks and policy approaches", *Financial Stability Institute Occasional Paper*, no 27.

Garratt, R, P Koo Wilkens and H S Shin (2024): "Next generation correspondent banking", *BIS Bulletin*, no 87.

Garratt, R and H S Shin (2023): "Stablecoins versus tokenised deposits: implications for the singleness of money", *BIS Bulletin*, no 73.

Goel, T, U Lewrick and I Agarwal (2026): "Making stablecoins stable(r): can regulation help?", *BIS Working Papers*, no 1355.

Goodhart, C (1988): *The evolution of central banks*, MIT Press.

Gorton, G, E Klee, C Ross, S Ross, A Vardoulakis (2025): "Leverage and stablecoin pegs", *Journal of Financial and Quantitative Analysis*, vol 61, no 1.

Graeber, D (2011): *Debt: the first 5,000 years*, Melville House.

Graf von Luckner, C, R Koepke, S Sgherri (2024): "Crypto as a marketplace for capital flight", *IMF Working Paper*, no 133.

Griffin, J, K Mei and Z Wang (2025): "Are crypto anti-money laundering policies effective?", mimeo.

Griswold, G (1970): "Aboriginal patterns of trade between the Columbia Basin and the Northern Plains", *Archaeology in Montana,* vol 11, no 2–3.

Ha, J, M Kose and F Ohnsorge (2023): "One-stop source: a global database of inflation", *Journal of International Money and Finance*, vol 137, 102896.

Hausmann, R and U Panizza (2010): "Redemption or abstinence? Original sin, currency mismatches and counter-cyclical policies in the new millennium", Harvard University John F Kennedy School of Government, *Growth Lab Working Papers*, vol 23.

He, D, A Kokenyne, X Lavayssière, I Lukonga, N Schwarz, N Sugimoto and J Verrier (2022): "Capital flow management measures in the digital age: challenges of crypto assets", International Monetary Fund *Fintech Note*, no 2022/005.

Hempel, S, J P Perez-Sangimino and J X Wang (2026): "Banks in the age of stablecoins: lessons from their historical responses to financial innovations", *FEDS Notes*, 1 May.

Hernández de Cos, P (2026): "Stablecoins: framing the debate", speech at a Bank of Japan seminar, Tokyo, 20 April.

Hofmann, B, M Kaldorf and M Rottner (2026): "The macroeconomics of stablecoins", mimeo.

Hofmann, B, A Mehrotra and J Paulick (2026): "Dollarisation and monetary control: what lessons for the rise of stablecoins?", mimeo.

Holmström, B (2015): "Understanding the role of debt in the financial system", *BIS Working Papers*, no 479.

Honohan, P and A Shi (2001): "Deposit dollarization and the financial sector in emerging economies", *World Bank Policy Research Paper*, no 2748.

Huang, X and T Keister (2025): "Can redemption fees prevent runs?", *Federal Reserve Bank for New York Staff Reports*, no 1160.

Ilzetzki, E, C Reinhart and K Rogoff (2019): "Exchange arrangements entering the 21st century: which anchor will hold?", *Quarterly Journal of Economics*, vol 134, no 2.

——— (2021): "Rethinking exchange rate regimes", in G Gopinath, E Helpman and K Rogoff (eds), *Handbook of International Economics*, vol 5.

Kocherlakota, N (1998): "Money is memory", *Journal of Economic Theory*, vol 81, issue 2.

Kose, M, S Kurlat, F Ohnsorge and N Sugawara (2022): "A cross-country database of fiscal space", *Journal of International Money and Finance*, vol 128, 102682.

Kosse, A, M Glowka, I Mattei and T Rice (2023): "Will the real stablecoin please stand up?", *BIS Papers*, no 141.

Levy-Yeyati, E (2006): "Financial dollarization: evaluating the consequences", *Economic Policy*, vol 21, no 45.

——— (2021): "Financial dollarization and de-dollarization in the new millennium", Fondo Latinoamericano de Reservas, working paper.

Liao, G and J Caramichael (2022): "Stablecoins: growth potential and impact on banking", Board of Governors of the Federal Reserve System *International Finance Discussion Papers*, no 1334.

Maechler, A M (2025): "How deposits can harness tokenisation", remarks at the Singapore Fintech Festival, Singapore, 12 November.

Mehrling, P (2011): *The new Lombard Street: how the Fed became the dealer of last resort*, Princeton University Press.

Minto, A, A Kosse, T Shirakami and P Wierts (2026): "From cash to crypto: towards a consistent regulatory approach to illicit payments", *BIS Papers*, no 166.

Mitchell Innes, A (1913): "What is Money?", *The Banking Law Journal*, May.

Mueller, K, C Xu, M Lehbib and Z Chen (2025): "The global macro database: a new international macroeconomic dataset", *NBER Working Paper*, no 33714.

Nakamoto, S (2008): "Bitcoin: a peer-to-peer electronic cash system", white paper.

Nigrinis, A (2025): "The lending impact of stablecoin-induced deposit outflows", mimeo.

Quinn, S and W Roberds (2016): "Death of a Reserve Currency", *International Journal of Central Banking*, vol 12.

Reinhart, C, K Rogoff and M Savastano (2014): "Addicted to dollars", *Annals of Economics and Finance*, vol 15, no 1.

Reuter, M, I Agur, A Copestake, M Martinez Peria and K Teoh (2025): "Payment frictions, capital flows, and exchange rates", *IMF Working Paper*, no 2025/171.

Rolnick, A, B Smith and W Weber (1998): "Lessons from a laissez-faire payments system: the Suffolk Banking System (1825–58)", *Federal Reserve Bank of Minneapolis Quarterly Review*, vol 22.

Rolnick, A and W Weber (1982): "Free banking, wildcat banking, and shinplasters", *Federal Reserve Bank of Minneapolis Quarterly Review*, vol 6.

Schär, F (2024): "Enhancing financial services with permissionless blockchains", *European Commission Report*.

Schär, F, A Kosse, T Rice, T Shirakami and J Siridhasanakul (2026): "The anatomy of stablecoin transactions", *BIS Working Papers*, no 1359.

Schnabel, I and H S Shin (2004): "Liquidity and contagion: the crisis of 1763", *Journal of the European Economic Association*, vol 2, no 6.

Shin, H S (2023): "A blueprint for the future monetary system", speech on the occasion of the BIS Annual General Meeting, 25 June.

——— (2026): "Tokenomics and blockchain fragmentation", *BIS Working Papers*, no 1335.

Voellmy, L (2021): "Preventing runs with fees and gates", *Journal of Banking & Finance*, vol 125 (C), 106065.

Waller, C (2025): "Embracing new technologies and players in payments", speech given at the Payments Innovation Conference, Federal Reserve Board, Washington DC, 21 October.

Wang, J J (2025): "Banks in the age of stablecoins: some possible implications for deposits, credit, and financial intermediation", *FEDS Notes*, December.