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DLT and stablecoins: where do we stand?

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1. Introduction

The publication of the Bitcoin protocol in October 2008 fueled the promise that blockchain and Distributed Ledger Technology (DLT) could do away with intermediation. Decentralized verification and, later, programmable execution were expected to make financial intermediaries redundant. Almost 20 years since, this promise has proved elusive at best. Fully automated financial services have not taken over the market; human governance and formal legal frameworks, compliance, risk management, are still necessary to foster trust.

However, DLT-based infrastructure may still come to occupy an important place in the financial sector, as adopters move beyond pilots and into production-grade projects. Indeed, so far, we have not seen disruption, but rather gradual adaptation to technical change.

The question I want to address today is: can DLT be adopted at scale in a way that satisfies adequate requirements of governance, compliance, and operational resilience? Are there substantial use cases for which it is an economically viable solution?

I asked the same questions three years ago, and concluded that the jury was still out.¹ Today, my answer is a tentative yes. Yet, I would put the emphasis on the "tentative" qualifier. We are witnessing a gradual building of momentum, rather than a "big bang".

DLT in finance spans a wide array of use cases, but many initiatives fall into four main broad categories: crypto assets, for which the technology was initially developed; asset

¹ P. Angelini (2023), [Remarks at the conference "The new frontiers of digital finance"](#), organized by Consob, Rome.

tokenization; financial market infrastructure; payments and settlement, including via stablecoins.

In what follows I will focus on the last three classes of applications.² First, I will consider whether DLT adoption in finance and payments has moved beyond promise and into genuine market traction. Next, I will turn to stablecoins. I shall look at the available evidence on their usage, discuss their risks and promises, especially for cross-border payments, and briefly illustrate a possible alternative for the latter use case: fast payment system interlinking. I will conclude with some reflections from the viewpoint of the central bank and the supervisor.

2. State of the art of DLT adoption in finance and payments

There is by now a widespread sense that the DLT may become an important component of the future architecture of payment systems, finance and market infrastructures.³ In what follows I review some initiatives, with no pretense of completeness.

A market observatory identified 378 blockchain projects globally among traditional companies in 2025, a 27 percent increase on the previous year.⁴ Nearly three quarters of these projects were in the financial sector.

Many initiatives still take the form of projects or pilots that have not yet reached market adoption. For instance, last March the U.S. Securities and Exchange Commission approved a Nasdaq pilot program to trade tokenized versions of stocks alongside traditional equities.⁵ In Europe, Boerse Stuttgart Digital recently announced the launch of project Seturion, an EU-wide platform for the issuance and settlement of tokenized asset.⁶ Cooperative initiatives compliant with the EU MiCAR regulation are emerging, such as the Qivalis consortium, a group of banks set up to issue an euro stablecoin, and Bancomat's EURBA project to launch a euro-pegged stablecoin integrated into

² Concerning crypto-assets, I would venture to argue that this world is by now relatively well-understood and – with the exception of stablecoins – poses few unanswered conceptual questions. Their total value is highly volatile, and flows and ebbs according to the valuation of a handful of instruments, many of which belong to the so-called “unbacked” class. The rest is represented by hundreds of thousands of objects with little or no practical use, value or trading activity. Cryptoassets are primarily used for speculation and for illicit activities. In particular, the anonymity granted by some of these instruments makes them useful for criminal payments, creating problems for law enforcement and AML-CFT authorities. See e.g. P. Angelini (2025), [Crypto-assets, stablecoins and Anti Money Laundering](#), speech. Also, there are increasing interconnections between these instruments and traditional financial markets, with potentially significant implications for investor protection and financial stability. See e.g. Banca d'Italia (2025), [Developments in the crypto-assets market and the risks to financial stability](#), [Financial Stability Report](#), No. 1.

³ Politecnico di Milano, Osservatorio Blockchain & Web3 (2026), [Blockchain & Web3 Outlook 2025–26](#); and Broadridge (2025), [DLT in The Real World 2025](#).

⁴ Osservatorio Blockchain & Web3 (2026), *op. cit.*

⁵ See [Securities and Exchange Commission – Release No. 34-105047](#)

⁶ See [Boerse Stuttgart Digital Seturion](#).

Bancomat's platform.⁷ Survey evidence suggests that many European asset managers expect to develop tokenized funds over the next five years.⁸

Other initiatives have moved beyond the experimental stage, although with uneven degrees of development. This is the case for several payment-related initiatives, such as private forms of digital/tokenised money, especially tokenised deposits.⁹ Other initiatives are presented as potentially important building blocks of a future market architecture, but their broader diffusion is not yet clearly established.¹⁰

Yet other initiatives seem to be gaining visible traction. The available information points to the expansion of stablecoin-related initiatives by major card networks such as Mastercard and Visa.¹¹ Many tokenisation initiatives are also ongoing. BlackRock's BUIDL fund has grown from USD 530 million at the end of 2024 to nearly USD 2.9 billion by mid-2025.¹² New issuance of tokenized assets on D7 DLT, a platform introduced by Clearstream at the end of 2025, have reportedly exceeded Eur78 bn.¹³

On the infrastructure side, DLT is finding practical applications in post-trade and collateral management. For instance, Broadridge reports that daily volumes on its Distributed Ledger Repo platform have grown from almost negligible in 2023 to over US\$360 billion on average last February.¹⁴

One sector that has clearly reached the production stage is stablecoins, which are discussed in the next paragraph.

⁷ See Qivalis, Bancaforte (2025) Burlando (Bancomat): [Una stablecoin europea per rafforzare il sistema e la fiducia dei consumatori](#).

⁸ CACEIS (2025), [Tokenisation](#).

⁹ For instance, HSBC (2025) [Sibos day 3: A new era for payments](#) and HSBC (2025), [Ant International is the first to use our Tokenised Deposit Service](#) state that HSBC launched its cross-border Tokenised Deposit Service in September 2025, following earlier domestic rollouts, and identifies Ant International as its first client. J.P. Morgan (2025), [Kinexys Wins Siemens, B2C2 Mandates for Blockchain FX Payments](#), reports on-chain FX use by Siemens and B2C on Kinexys. DBS (2025), [DBS and Kinexys by J.P. Morgan to develop framework for interbank tokenised deposit transfers across multiple blockchains](#), describes an interoperability framework still being explored. Swiss Bankers Association (2025), [Milestone for the Swiss financial center: Deposit Token Proof of Concept successfully completed](#), states that the Swiss Deposit Token proof of concept established technical and legal feasibility but identifies cooperation and scaling as the next steps.

¹⁰ For instance, in 2023 the Hong Kong Exchange and Clearing Ltd. launched Synapse, a DLT-powered mechanism to bring together market and settlement agents participating in the Shanghai and Shenzhen stock exchanges. See Hong Kong Monetary Authority (2025), [Distributed Ledger Technology in the Financial Sector: A Study on the Opportunities and Challenges](#). Data on recent developments are not readily found in the public domain.

¹¹ Visa partnered to offer stablecoin-linked cards in multiple Latin American countries, while Mastercard launched global stablecoin payment integrations with MetaMask, Circle, OKX and Binance. See [Euro Money Tokens: Potential Economic Role of CBDCs and Euro-Denominated Stablecoins](#), July 2025.

¹² Osservatorio Blockchain & Web3 (2026), *op. cit.*; [BlackRock BUIDL TVL, Fees & Revenue](#).

¹³ See Clearstream, [Building the Digital Asset Ecosystem](#).

¹⁴ See Broadridge, [Press release](#).

Overall, the available burgeoning evidence suggests the following considerations. First, the application of DLT to payments and finance is making progress. At the same time, there is a wide heterogeneity across use cases, and the multiplication of initiatives should not be confused with broad-based success. Some projects are at an early stage, others appear commercially promising, others have reached the market and are rapidly expanding.

Second, in many cases the new projects are complementing, rather than replacing, existing processes. Adopters seem aware of the need to maintain full operational continuity, governance safeguards, risk management. The DLT is contributing to the evolution of the financial industry, rather than its disruption.

Third, hard data on DLT adoption and projects in finance are still limited and uneven. Some of them come from a small number of institutional sources, but most are drawn from industry reports, market surveys, vendors, and operators active in the sector, who may have vested interest in the projects. This makes it difficult to form a reliable picture of the actual diffusion, performance, and economic value of DLT-based arrangements.

Fourth, permissionless DLT platforms are inherently fragmented.¹⁵ For instance, in 2015 Ethereum emerged as the first fully programmable public blockchain; over the years volumes on the platform increased, and so did congestion problems. This caused fees to climb, and competitors to emerge, offering different combinations of security and cost. But one asset issued on one blockchain cannot be used directly on others, hence the fragmentation. Interoperability solutions are available, but they come at a cost, and so far they have shown important technical vulnerabilities. Note that fragmentation also affects permissioned DLTs, due to the limited levels of interoperability between DLT infrastructures. With the spread of financial applications of DLT, the efficiency gains within institutions might be offset by frictions across institutions, acting as a brake to the scale-up process.

3. Stablecoins: market developments and problems

3.1 What we know about stablecoins for payments usage

Stablecoins, the most mature application of DLT in finance, aim to maintain a stable value relative to a specified asset, typically a fiat currency. Today their market capitalization stands at around 315 billion (about 13 percent of the total market for crypto assets) and the vast majority are denominated in US dollars.

Regulatory conditions are an important factor to understand the stablecoin phenomenon. Tether, and Circle, the issuers of the largest stablecoins by outstanding value (about 56 and 25 percent of the market, respectively, at the time of this writing), are incorporated in El Salvador and in the US, respectively, jurisdictions that are either explicitly crypto-friendly or have been moving toward a clearer and more supportive regulatory

¹⁵ H. S. Shin (2026), [Tokenomics and blockchain fragmentation](#), BIS Working Paper no. 1335.

framework. In the EU, despite the advanced MiCAR framework aiming to reconcile innovation, financial stability, and monetary sovereignty, stablecoins are in their very early stages. Extreme regulatory approaches may be ineffective: outright bans (adopted e.g. in North Africa, some countries in the Middle East, and China) may not curb demand and may encourage users to shift to offshore platforms and decentralized channels, increasing money laundering risks; strong emphasis on investor protection (e.g. in Japan) may tend to marginalize domestic operators.

The available evidence suggests that stablecoins are still used mainly within the crypto ecosystem. Their effective use in real-economy payments remains small and difficult to assess: total annual transaction volumes are estimated at around USD 26-35 trillion, of which USD 400 billion-1.3 trillion related to real-economy payments volumes.¹⁶ The latter transactions include those made via the card-based stablecoin initiatives by Visa and Mastercard mentioned above, that have reached an estimated USD 4.5 billion in 2025. These initiatives allow users to fund card-based purchases from a stablecoin balance, while the transaction is converted into local-currency fiat at the point of sale and processed through existing card acceptance infrastructures.¹⁷

There is evidence that stablecoin usage is associated with cross-border payments for remittances and trade flows.¹⁸ Indeed, correspondent banking chains still make transfers slow and costly, especially in corridors to emerging economies.¹⁹ The Financial Stability Board has been trying to address this problem in recent years, but much remains to be done.²⁰

Some studies point to potentially significant efficiency gains from the use of stablecoins for cross-border payments, stemming mainly from shorter intermediation chains and the integration of the messaging and the settlement layers in payment systems.²¹ A study by the Bank of Italy finds mixed evidence: although measurable cost reductions can emerge in specific corridors, stablecoin-based solutions do not seem to be systematically cheaper

¹⁶ These figures are taken from McKinsey (2026), [Stablecoins in payments: What the raw transaction numbers miss](#), and Boston Consulting Group (2025), [Stablecoins: Five Killer Tests to Gauge Their Potential](#). The two estimates are not fully homogeneous: Boston Consulting Group refers to 2024 volumes, while McKinsey presents annualised estimates published in February 2026.

¹⁷ See [Mastercard unveils end-to-end capabilities to power stablecoin transactions – from wallets to checkouts](#) (Press release, 28 April 2025); [Visa and Bridge Partner to Make Stablecoins Accessible for Everyday Purchases](#), Press release, 30 April 2025.

¹⁸ R. Auer, U. Lewrick and J. Paulick (2025), “[DeFiying gravity? An empirical analysis of cross-border Bitcoin, Ether and stablecoin flows](#)”, BIS Working Papers, No 1265; IMF, [Global Financial Stability Report, April 2026, Chapter, Box 2](#).

¹⁹ For example, sending remittances to Sub-Saharan Africa can have average costs around 9 percent. See World Bank, [Remittance Prices Worldwide](#) (data release published in March 2025).

²⁰ Financial Stability Board, [G20 Roadmap for Cross-border Payments: Consolidated progress report for 2025](#).

²¹ A. Adams, M.C. Lader, G. Liao, D. Puth, and X. Wan (2023), [On-chain Foreign Exchange and Cross-border Payments](#), estimate that stablecoins could reduce remittance costs by as much as 80 per cent relative to traditional payment systems. G. Liao, T.F. Hadeed, and Z. Zeng (2023), [Beyond Speculation: Payment Stablecoins for Real-time Gross Settlements](#), provide a broader argument on the possible efficiency gains of payment stablecoins in settlement systems.

than traditional methods, as cost-effectiveness depends on the on- and off-ramp fees charged by crypto-market operators, which account for the largest share of total costs.²² In sum, the efficiency potential seems real, but the case is not yet settled.

3.2 Problems and risks associated with a widespread adoption of stablecoins

A large-scale adoption of stablecoins would create various challenges.

A first problem relates to the so-called “multi-issuance” schemes. Major stablecoin issuers are incorporated in one jurisdiction but operate globally. A host supervisor who wanted to protect domestic users could impose reserve requirements on the subsidiary of a global issuer, based on local issuance. But during times of stress, redemption requests could exceed reserves in one or more jurisdictions, and fall short in others.²³ From a financial stability perspective, such arrangements may also act as a cross-border contagion channel, as liquidity stress originating outside the EU could spill over to EU-based issuers, even for stablecoins that comply with the EU Market in Crypto-Assets Regulation (MiCAR), in spite of its safeguards.

A second issue relates to AML/CFT concerns. The safeguards provided by traditional intermediaries can be weak or absent if payments are made with stablecoins. Although EU law imposes obligations not just on issuers, but also on crypto-asset service providers, important blind spots remain. Even issuers that are fully MiCAR-compliant and willing to trace stablecoin payment chains may find it impossible to do so. This is the case in particular for the so-called unhosted or “self-custodial” wallets.²⁴ The debate on the issue is ongoing. Some argue that the technology that creates new blind spots may also support more selective and risk-based safeguards.²⁵ However, there is little doubt that from an AML/CFT viewpoint stablecoins present new challenges.

A third issue has to do with the legal and governance framework of stablecoins. Most transfers happen on permissionless blockchains such as Ethereum, Solana, and Tron, decentralized networks operated by a global community of independent validators who follow algorithmic – rather than legal – rules. When decision-making, execution and responsibility are spread across different actors, no one fully governs the system. This is a fundamental difference with respect to the existing mainstream market and payments infrastructures, that are run by clearly identified legal entities, subjected to regulatory obligations for security and business continuity, and to contractual responsibilities that can be enforced in a solid legal framework. This difference can create structural weaknesses. For instance, cybersecurity incidents may be difficult to detect and resolve in a timely

²² A. Di Iorio, E. Di Stefano, M. Mascioli, G. Trebeschi (2026), Are Stablecoins Efficient for Remittances? Evidence from a Mystery Shopping Exercise by the Bank of Italy, mimeo.

²³ See e.g. C. Scotti (2025), “[Stablecoins in the Payments Ecosystem: Reflections on Responsible Innovation](#)”, Banca d’Italia.

²⁴ See e.g. P. Angelini, [Crypto-assets, stablecoins and Anti Money Laundering](#), 2025.

²⁵ See Liao, Zeng, Belenkiy and Hirshman, [Transaction Proximity: A Graph-Based Approach to Blockchain Fraud Prevention](#) (2025).

manner.²⁶ Even assets that are fully compliant from a prudential and legal standpoint may inherit settlement and operational risks from the decentralised infrastructures on which they circulate.

Also, validators are remunerated in native tokens, rather than in fiat currency. In Ethereum, for example, validators are paid in ether, whose price is not pegged to any external asset and fluctuated in the range USD 1,200 - 4,100 over the past year. If they were to form persistently negative expectations about the future value of the native token, participation could decline, weakening network security and, in the limiting case, impairing settlement itself. In this sense, price risk in an unbacked native token may translate into settlement risk for all assets recorded on the network served by that token.²⁷ Mitigants for these risks are available, but they are unlikely to be costless.²⁸

A fourth issue has to do with fragmentation. This is a general problem of instruments relying on DLT platforms, as discussed in the previous paragraph.

The above issues contribute to the concerns about the possible macro-financial stability implications of stablecoins. This is a vast issue, with many facets.²⁹ A key one is that the value of a stablecoin depends on confidence in the issuer, which may become questionable in stressed conditions. Indeed, several episodes of de-pegging have been observed in recent times.³⁰ This problem can be mitigated: regulation in the EU and US requires stablecoin issuers to have full backing in liquid and low risk assets, and to ensure redemption;³¹ the UK is discussing a proposal to give issuers access to central bank facilities.

However, several doubts linger. Only one of the two major stablecoins in the market is compliant with strict regulations. Also, even financial instrument backed by the good quality and liquid assets can experience strong stress – think about the episodes observed in the past among money market mutual funds. More importantly, stablecoins revive an old monetary question: whether a system built around multiple issuers, like the one that

²⁶ Basel Committee on Banking Supervision (2024), [Novel risks, mitigants and uncertainties with permissionless distributed ledger technologies](#), Working Paper no. 44.

²⁷ See C. Biancotti, [What if Ether Goes to Zero? How Market Risk Becomes Infrastructure Risk in Crypto](#), Banca d'Italia, Mercati, infrastrutture, sistemi di pagamento, No. 74, January 2026.

²⁸ If a permissionless blockchain became systemically important, key users and other stakeholders would have an incentive to prevent the native token from spiraling to zero. Regulation could play a part, by mandating asset issuers to identify "contingency chains" where assets could be moved, or to perform validator duties in a crisis.

²⁹ See e.g. T. Adrian et al. (2025), [Understanding stablecoins](#), IMF Monetary and capital markets departmental paper; Banca d'Italia, [Financial Stability Report](#), No. 2, 2025.

³⁰ See e.g. C. Du, R. Sonawane, and C. Watsky (2025), [In the Shadow of Bank Runs: Lessons from the Silicon Valley Bank Failure and Its Impact on Stablecoins](#), FEDS Notes, for an analysis of the USDC depegging following the failure of Silicon Valley Bank. During the crypto crash of October 2025, even MiCAR-compliant stablecoins deviated slightly from their peg. See e.g. F. Panetta (2025), [The struggle to reshape the international monetary system: slow- and fast-moving processes](#), Bank of Italy.

³¹ In both jurisdictions, payment stablecoins are designed to be redeemable at a fixed nominal amount; however, while MiCAR prohibits redemption fees, the U.S. GENIUS Act does not prohibit them, so issuers may charge fees on redemption

prevailed in the nineteenth century in many countries, can remain stable under stress.³² History gives reasons for caution.

3.3 “Traditional” technology still has an ace up its sleeve ...

Stablecoins are not the only candidate to address the problems of costly cross-border payments. An alternative “traditional” technology consists in linking Fast Payment System (FPS). FPS are fully operational in various jurisdictions (e.g. TIPS in the the Euro area, India’s UPI, Brazil’s Pix, Singapore’s PayNow, the US’s FedNow, and many more), and allow cheap, reliable settlement of wholesale as well as retail payments in a matter of seconds on a 24-7 basis. In principle, in a systems linking various FPS each cross-currency payment would be broken down into two single-currency legs (source and destination) and all-or-nothing settlement would be ensured by means of internal, automated coordination steps.³³ Such a system could handle a large share of cross-border payment without introducing the complexity of a DLT layer, and could reduce the number of correspondent relationships – arguably a key source of cost – especially if the local central bank acted as the correspondent. The Eurosystem is currently promoting various initiatives on this matter.³⁴

Complementarities between FPS interlinking and DLTs have also been explored. The BIS developed a framework whereby cross-border payment instructions travel on interlinked FPS, and settlement happens in tokenized central bank money on a DLT.³⁵ The framework could in principle be adapted to encompass other value vectors, such as stablecoins or tokenized deposits.

4. Conclusions

The evidence points to a gradual but still selective process of maturation for DLT adoption. Some applications have reached the market, some appear to be expanding rapidly. At the same time, adoption remains uneven across sectors and functions. Hard data are still limited. Some come from a small number of institutional sources, but most are drawn from industry reports, market surveys, and operators active in the sector. This makes it difficult to form a reliable picture of the actual diffusion, performance, and economic value of DLT applications.

In many cases the new projects are complementing existing processes: the DLT is contributing to the evolution of the financial industry, rather than its disruption; adopters

³² See e.g. G.B. Gorton and J.Y. Zhang (2023), [Taming Wildcat Stablecoins](#), University of Chicago Law Review, Vol. 90, no. 3.

³³ D. Di Giulio, V. Lasorella, and P. Tiberi (2025), [“A solution for cross-border and cross-currency interoperability of instant payment systems”](#), Banca d’Italia, Mercati, infrastrutture, sistemi di pagamento, No. 69.

³⁴ See [Eurosystem moves forward on work to connect TIPS with India’s Unified Payments Interface and with Nexus Global Payments](#), 20 November 2025.

³⁵ Bank for International Settlements (2025), [Technical Report: improving instant cross-border payments using central bank money settlement](#).

seem aware of the need to maintain full operational continuity, governance safeguards, risk management.

From the viewpoint of the prudential supervisor, the diffusion of DLT applications in finance requires close attention to their potential benefits and risks, and readiness to act. As decentralised and traditional components become increasingly integrated, risks may not merely be the sum of those typical of the two components; they might interact and reinforce each other. A key challenge for supervisors is to understand this interaction.

Within the central banking community, views differ about whether and how to react to the DLT diffusion in finance. The Eurosystem has been developing the Pontes and Appia projects³⁶ to settle, in central bank money, the cash leg of transactions in tokenized assets; other central banks have taken a wait and see approach. I believe one important motivation for the Eurosystem's approach is that if asset tokenization eventually found broad adoption and scale up, lack of an appropriate central bank settlement medium would take us back to the 1980s, before real-time gross settlement was introduced. The idea behind this approach is that central bank money should remain the pivot for all other forms of money and digital assets, and that innovation should not come at the detriment of safety.³⁷

Concerning stablecoins, they have already reached meaningful scale, but mainly as instruments for crypto trading and liquidity management. Their effective use in real-economy payments remains comparatively limited and still difficult to assess with confidence. There is some evidence that stablecoins may generate efficiency gains for cross-border payments, especially those involving developing countries, which are currently slow and costly. At the same time, novel applications of traditional technology could address the same needs: the interlinking of existing fast payment systems could shorten correspondent banking chains and substantially improve cross-border payments.

Views about the risks and the benefits of stablecoins differ within the community of central banks and supervisors, but I believe there is agreement on a few points: the phenomenon should continue to be closely monitored; the adequacy of the regulatory framework should be reassessed periodically; that greater convergence in regulation and supervisory practice across jurisdictions should remain an objective, even if difficult to achieve.

³⁶ Pontes is the short- to medium-term solution to build bridges between market DLT platforms and the Eurosystem's TARGET services. It will enable delivery versus payment and payment versus payment in central bank money for e.g. digital assets, intraday repo, and potentially also for collateral management. The solution is designed to be interoperable, to guarantee immediate finality, to accommodate multiple currencies, all integrated into TARGET services, with high standards of security and operational reliability. Appia is the long-term solution, capable of accommodating tokenised financial instruments. See Banca d'Italia, "[Pontes e Appia: il futuro dei TARGET Services](#)", and F. Panetta (2025), "[The struggle to reshape the international monetary system: slow- and fast-moving processes](#)", Whitaker Lecture, Dublin.

³⁷ See P. Cipollone (2025), [Innovating for stability: central bank money in the digital era](#), speech at an event hosted by the Deutsche Bundesbank, Frankfurt am Main; P. Cipollone (2024), [Towards a digital capital markets union](#), keynote speech at the Bundesbank Symposium on the Future of Payments, Frankfurt am Main.

Considering that stablecoins are difficult, if not impossible, to stop at the border, I believe that the European Union should remain market-friendly towards stablecoin initiatives compliant with EU regulation. At the same time, it should retain the flexibility needed to remedy weaknesses and address risks as they emerge. In a rapidly evolving landscape, openness to innovation and ability to implement timely correction must remain inseparable.