# Post-trade settlement fragmentation and the case for a unified ledger

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*The fragmented nature of securities settlement is one of the hurdles that stand in the way of closer integration of European financial markets. Streamlining post-trade settlements could broaden the investor base and improve liquidity for securities traded on European exchanges. In addition to improving resource allocation, a broader investor base would reinforce market functioning and strengthen financial stability in Europe.*

*There may be also an opportunity to use distributed ledger technology (DLT) to create a unified digital ledger for securities settlement. In addition to broadening the investor base for European securities, the higher transaction speeds enabled by DLT settlement have the potential to improve the overall efficiency of the economy by acting as a lubricant for the financial system. The current geopolitical situation makes the need for closer integration of Europe's financial markets more urgent. The case for reducing post-trade settlement fragmentation is compelling, and there is an opportunity to act that should not be wasted.*

## What is causing the fragmentation in securities settlement?

**The fragmented nature of securities settlement is one of the hurdles that stand in the way of closer integration of European financial markets.**[1] As such, it is a common theme in policy discussions surrounding savings and investments union (SIU). The fragmentation is driven by the large number of central securities depositories (CSDs) in the European Union (EU). There are 28 CSDs in the EU, compared to one in the United States (US). Because of divergent national securities and tax legislation (Table 1), European CSDs essentially operate on a national level. Intra-European transactions are routed through a plethora of interconnected banks and/or CSDs, leading to complex settlement procedures. Moreover, the EU's settlement patchwork effectively reduces investor choice by making only securities registered at national CSDs easily accessible.

**Table 1: Groups of CSDs in the EU**

| DEUTSCHE BÖRSE GROUP | EUROCLEAR | EURONEXT |
|---|---|---|
| **Clearstream Banking SA (ICSD)**<br>**Clearstream Banking AG LuxCSD** | **Euroclear Bank (ICSD)**<br>**Euroclear Belgium**<br>**Euroclear Finland**<br>**Euroclear France**<br>**Euroclear Nederland**<br>**Euroclear Sweden** | **Euronext Securities Copenhagen**<br>**Euronext Securities Milan**<br>**Euronext Securities Oslo**<br>**Euronext Securities Porto** |

Source: European Securities and Markets Authority, "Provision of cross-border services by CSDs", 2024

**Streamlining post-trade settlement could broaden the investor base for securities issued and listed on European exchanges**, thus increasing primary and secondary market liquidity. In addition to improving resource allocation, higher liquidity would reinforce market functioning and strengthen financial stability in Europe.

As progress is made on the European Commission's agenda for a SIU, the share of market financing in the European economy is expected to increase. With further growth in the size and systemic importance of the non-bank financial sector, ensuring that capital markets function well becomes a key policy priority to safeguard financial stability – a concern at the core of the mandate of the European Stability Mechanism (ESM).

Securities settlement is also one of the priorities on the European Commission's SIU agenda and was discussed during a recent conference sponsored by the ESM and the Florence School of Banking and Finance. Looking ahead, there may be an opportunity to leverage DLT to create a unified digital ledger for securities settlement.

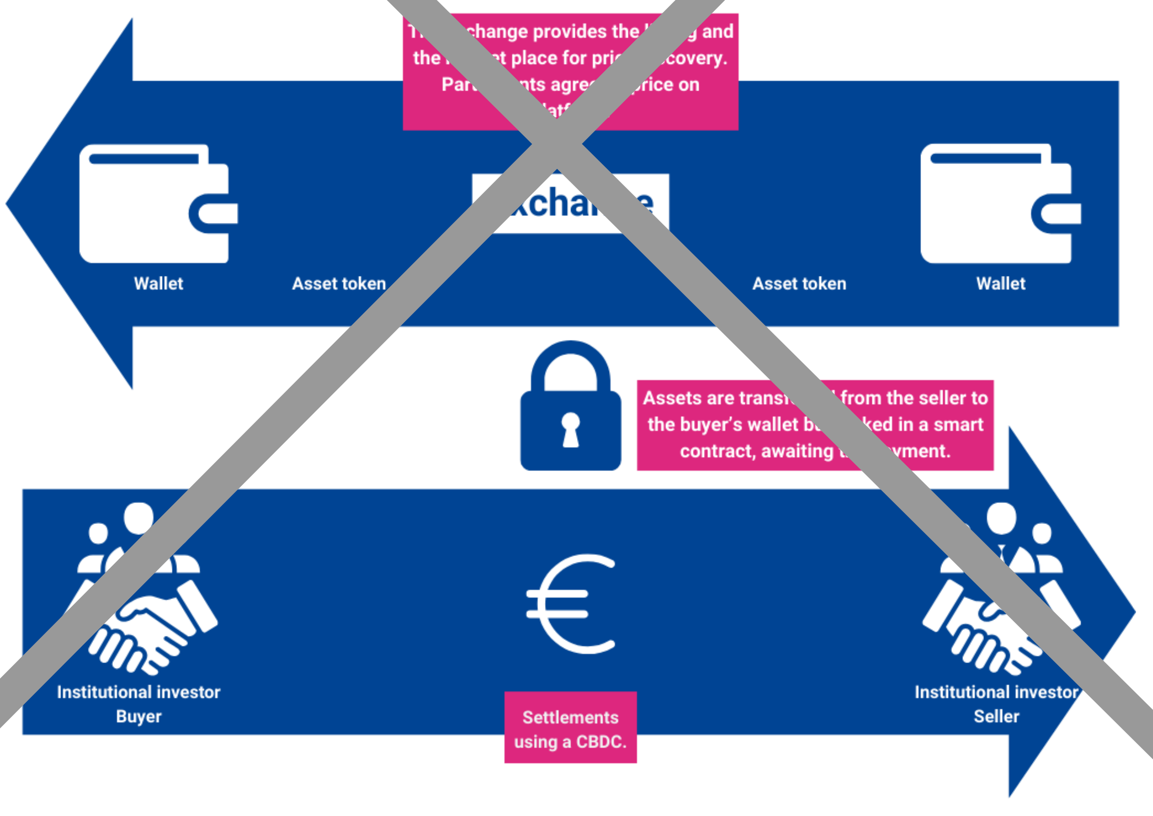
**Several initiatives have been taken to address this issue.** The Target 2 Security (T2S) initiative was launched by the European Central Bank (ECB) in 2008 and started operating in 2015. The T2S is a centralised platform through which national CSDs can connect and settle cross-border securities transactions in central bank money. However, the cross-border flow of securities on T2S relies on the establishment of links between national CSDs and the technical settlement process on the platform. A 2024 report by a panel chaired by Christian Noyer argued that the T2S system should be expanded to allow it to directly hold a pool of securities accessible by national CSDs, effectively giving it CSD status. But doing so would require greater convergence of securities and taxation law among EU Member States. While efforts to create a single rulebook for the EU financial sector have reduced national differences, fragmentation among national systems persists (Gargantini, 2025), particularly when it comes to shareholder rights and insolvency law. As argued by Donnelly and H[illegible]vart (2025), this reflects Member State differences rooted in national variants of capitalism and bankruptcy laws. This legal divergence is the root cause of settlement fragmentation. While full harmonisation of securities law will take time, swifter progress has been made on resolving issues related to withholding taxes on dividends through the so-called FASTER Directive.[2]

## The potential for distributed ledger technology

**In addition to expanding the scope of the T2S platform, several recent reports illustrate potential advantages of DLT settlement over traditional delivery versus payment settlement.**[3] First, a unified digital ledger for all securities holdings and transactions would make the current profusion of national CSDs redundant, bringing considerable cost-efficiency gains.[4] Second, the technology would allow for near instantaneous settlement, once all parties to the transaction have agreed to it. Instantaneous settlement would reduce the amount of operational capital and liquidity that market participants need to hold, as a buffer for the time lags currently involved in [illegible] the higher transaction speeds enabled by DLT settlement thus have the potential to improve the overall efficiency of the economy by acting as a lubricant for the financial system.

**Figure 1 shows a schematic illustration of DLT settlement of a securities transaction using a central bank digital currency (CBDC).** Agreement to trade and consequent price discovery continues to take place on a securities exchange. However, instead of the securities being registered and ownership recorded in a CSD, ownership is recorded and transferred on a digital ledger, which is distributed among a network of parties. Each owner of an asset token has a digital wallet in which the asset is kept and also allows for holding CBDC funds. Once an agreement to trade has been made, the asset tokens are transferred from the seller’s wallet to the buyer’s but locked in a smart contract awaiting payment. When the payment has been verified, a key is released, and the assets are transferred to the buyer.

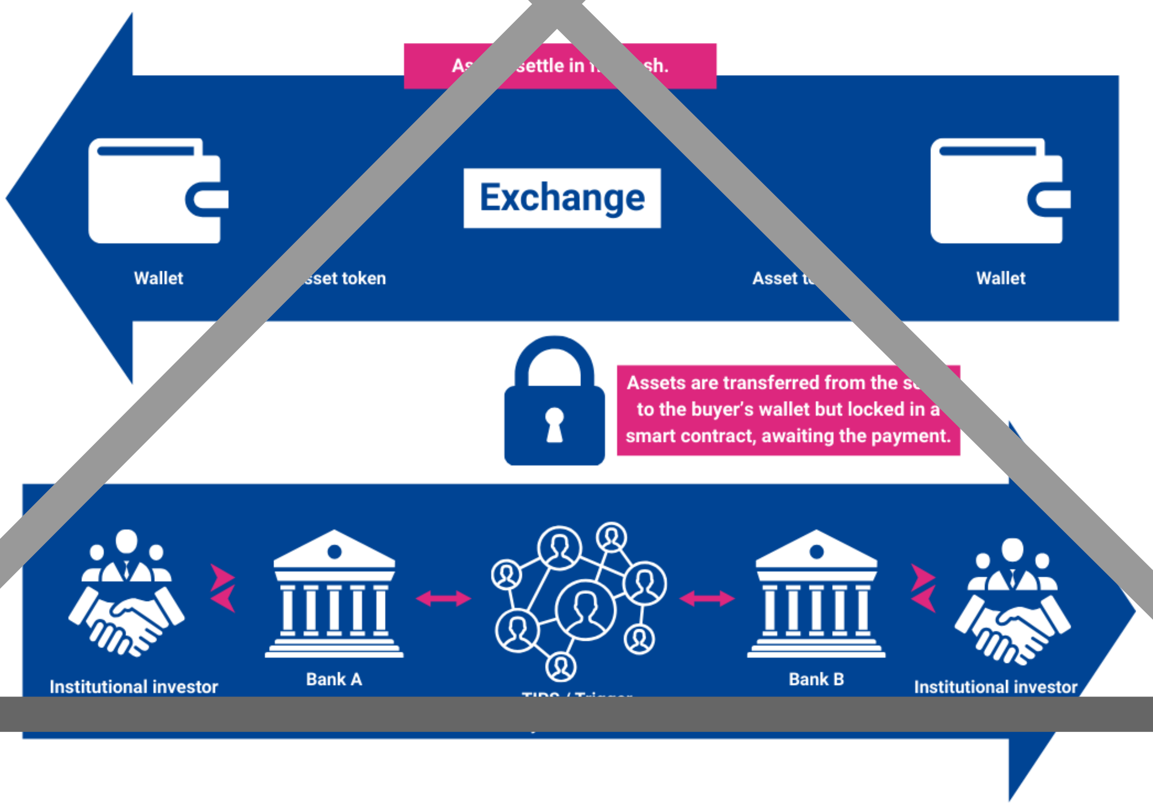
**Figure 1: DLT securities settlement using a CBDC**




Source: ESM

**One factor holding back the development of DLT trade settlement is a lack of agreed technical standards for the medium of settlement.** There is broad agreement that securities transactions in Europe should be settled in central bank money. However, there are several ways to operationalise this on a unified ledger. The Banque de France is experimenting with a wholesale CBDC as the settlement medium (as in Figure 1). Banca d'Italia and Deutsche Bundesbank have each put forward separate proposals for the settlement of tokenised assets in central bank money, although by different means than a CBDC. While there are clear benefits to a wholesale CBDC for trade settlement, there has been disagreement in the past over the use case for a retail CBDC. Banca d’Italia has thus been pursuing the idea of settlement through an infrastructure based on the TARGET Instant Payment System (TIPS), the Eurosystem’s fast payment system used for settling instant retail payments. The Bundesbank, meanwhile, is exploring the Trigger solution, which is based on a settlement in T2S.[5] Figure 2 provides a schematic illustration of how these solutions would work.

**Figure 2: DLT securities settlement using the TIPS or Trigger network**




Source: ESM

## The time to act is now

The need for closer integration of Europe’s financial markets has become more urgent given the current geopolitical situation and the prospect of further trade fragmentation due to policies pursued by the US administration. While different options for trade settlement on a unified ledger should be explored, it would be unfortunate if the development is held back by disagreement on a technical standard for the settlement medium. In this context, it is encouraging to note that support for the ECB's digital euro project has increased, as there is growing consensus that Europe needs a homegrown system for retail payments to strengthen its strategic autonomy. In addition, there is a growing understanding about the benefits of DLT technology for wholesale payments. Hopefully, this can also speed up convergence on a preferred technical standard for settlement of securities transactions in central bank money. Reducing post-trade settlement fragmentation could unleash cross-border investments and significantly boost EU capital markets, an opportunity not to be missed.

## Acknowledgements

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## Further Reading

Assou[illegible], E. (2024). Benefits of tokenisation could be remarkable but not easy to deliver. Speech presented at the launch of OMFIF's digital assets report. Bank for International Settlements (2025). Annual Economic Report.

Donnelly, S. and Howarth, D. (2025). Varieties of Going Broke and European financial market integration. Paper presented at the conference "EU Savings and Investments Union: Bringing Capital Markets to People and Firms", European Stability Mechanism, Luxembourg, 4-5 June 2025.

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Noyer, C. (2024). Developing European capital markets to finance the future,/a>.

# Footnotes

[1] After a securities trade is executed, the **post-trade settlement process** starts. This involves transferring legal ownership of the traded securities to the buyer and money to pay the seller for the purchase. **Fragmentation** happens when these processes are handled by **different institutions and according to different rules across countries or markets**, making it inefficient and costly to settle cross-border transactions.

[2] Faster and Safer Tax Relief of Excess Withholding Taxes (FASTER) Directive.

[3] See the Noyer report, as well as the final chapter in the recently published Bank for International Settlements Annual Economic Report 2025.

[4] However, a transition to a unified ledger is likely to be gradual, meaning that CSDs will probably continue to operate in parallel with a unified European securities ledger. They could also play a role in validating transactions on a distributed ledger.

[5] OMFIF, “Benefits of tokenisation could be remarkable but not easy to deliver”, September 2024.