Firebrand research

Tackling Post-Trade Friction

Supporting a Global Shortened Settlement Cycle

June 2025

Produced in collaboration with

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Executive Summary

- **11 October 2027** is the date when Europe is moving to T+1 settlement.
- There are **9 key success factors** from the North American move that should be considered for Europe, including early preparation and testing.
- **€70.43 million a month** was paid on average in financial penalties in 2024 for settlement failures on the Target2-Securities platform.
- **71%** of interviewee **settlement failures** in 2024 were caused by **counterparty shorts** and **21%** caused by **data issues** including those relating to incorrect or stale standing settlement instructions (SSIs).
- An average of **83%** of interviewee firms' **equity** flow goes through **automated central matching** and an average of **71%** of **fixed income** flow, but more automation is needed.
- The European T+1 implementation budget for a small buy-side firm is likely to start at **$223,000** while the budget for the largest global custodian is likely to top out at **$36 million** (including both people and technology costs).
- **28%** of respondent firms have yet to begin planning for T+1, but it's not too late to start!

The Background to the Move to T+1

It's not the industry's first time at shortening settlement cycles, and many valuable lessons have been learned over the last few years about how to tackle post-trade operational inefficiency. The North American move to a trade date plus one day (T+1) settlement cycle from T+2 in May 2024 provides the most recent and concrete example of how to coordinate adjacent regional markets in preparing for the changes and, arguably, the much earlier move to T+2 in Europe in 2014 and in the US in 2017 also helped to provide a blueprint for firms to examine potential functional impacts and best practices. These are important examples to consider as many of the world's major markets prepare to move to T+1 over the next few years.

The recent industry focus on shortening the settlement cycle of major asset classes stems from the regulatory push to improve post-trade efficiency and reduce operational risk across the global capital markets. The US and Canadian market moves to T+1 became a significant industry focus area following the meme stock events of 2021, when counterparty risk and clearing margin obligations took centre stage. This later evolved into a wider industry discussion The US Securities and Exchange Commission (SEC) in the US and the Canadian Securities Administrators (CSA) were both supportive of the move and put in place the necessary legislative changes to make the moves happen from a regulatory standpoint, alongside industry stakeholders and financial market infrastructures (FMIs) who implemented the required changes.

Similarly, the regulatory community in the UK has committed to supporting the domestic market shortening the equities settlement cycle to T+1 and to making the necessary regulatory adjustments to enable the move. An Accelerated Settlement Taskforce was established by the UK government in December 2022 to examine the potential challenges and benefits of T+1, which resulted in the publication of an initial report in March 2024[1] that recommended the UK should make the move to T+1 before the end of

[1] Accelerated Settlement Taskforce Report, Accelerated Settlement Taskforce, March 2024.

2027. A final report was published by the taskforce in February 2025[2] to detail the steps that must be taken by the industry and regulators to move to T+1 by 11 October 2027. The report includes details of the necessary timeframes for certain work items to be completed as highlighted in the timeline below.

T+1 in UK Timeline

2025 · 2026 · 2027

1 February 2025

Start date for:
- HMT to begin preparations to amend CSDR
- Trading venues to amend their rulebooks
- FMIs to review their systems and processes
- Publication of the Crest modernisation plan
- Automation of stock lending recalls

1 April 2025

Start date for:
- Allocation and confirmation matching on T+0
- Adoption of industry standard and automated processes
- New post-trade policies and procedures
- Settlement instructions to be sent to the CSD as soon possible
- Adoption of FMSB SSI templates

30 June 2025

Target completion date for:
- Publication of the Crest modernisation project plan

31 December 2026

Target completion date for:
- Allocation and confirmation changes, including policy and procedural changes
- FMI system updates
- Adoption of FMSB SSI templates
- Automation of stock lending recalls

11 October 2027

End date for:
- UK CSDR amendments
- Trading venue changes
- Trading parties to comply with T+1
- Change market cut off for stock lending recalls

The Bank of England notes in its 2024 annual report[3] that its engagement with the Accelerated Settlement Taskforce technical group as an "observer" has highlighted the legislative and regulatory changes that it must make in cooperation with the Financial

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[2] UK Implementation Plan for first day of trading for T+1 settlement – 11th October 2027, Accelerated Settlement Taskforce Technical Group, February 2025.

[3] The Bank of England's supervision of financial market infrastructures Annual Report, Bank of England, December 2024.

Conduct Authority (FCA) and His Majesty's Treasury (HMT). To this end, the FCA set up a new section of its website[4] focused on supporting the move to T+1 and has indicated it will be regularly updating the site with new information. The UK Chancellor stated during an event in February 2025[5] that the move to T+1 is also a strategic priority as it is part of the government's Plan for Change, which aims to modernise UK capital markets.

In Europe, the European Securities and Markets Authority (ESMA), the European Central Bank (ECB) and the European Commission have endorsed a coordinated move for the region to T+1 on the 11 October 2027. The region's governments and regulators have identified the modernisation of the post-trade landscape as a key priority for the future growth of the European capital markets as part of its wider Savings and Investments Union (SIU) plan. The regulators have also worked with the industry to establish an independently-chaired committee to provide a workplan for the industry in transitioning to T+1. The group conducted its first meeting in February 2025[6], established dedicated workstreams and is communicating with the UK taskforce to share best practices.

The European Commission also published its legislative proposal in February 2025 to introduce a targeted amendment to the Central Securities Depository Regulation (CSDR) to facilitate T+1[7]. ESMA published proposals in a consultation paper within the same month[8] aimed at amending the regulatory technical standards (RTS) for the Settlement Discipline Regime (SDR) as part of CSDR to enable greater industry preparation for T+1. The RTS proposals include changes to timing of sending allocations and confirmations and the use of electronic formats, as well as the adoption of more industry standards for reference data such as improving the formatting and consistency of standing settlement

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[4] About T+1 settlement, FCA, accessed February 2025.

[5] Chancellor goes further and faster to drive growth by speeding up securities trades, UK government, February 2025.

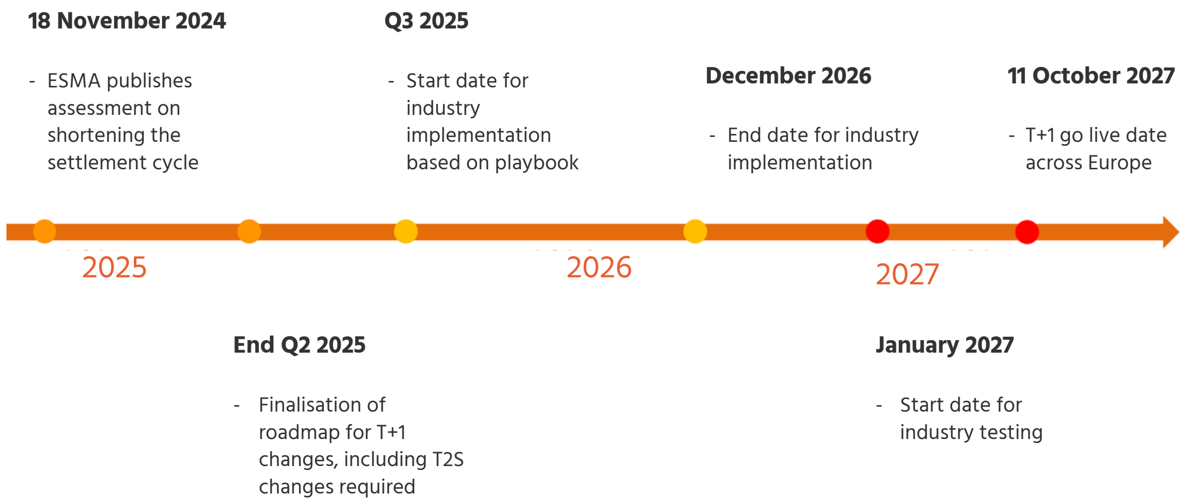
[6] EU T+1 Industry Committee Summary of Conclusions, EU T+1 Coordination Committee, February 2025.

[7] Commission proposes to shorten settlement cycle for EU securities from two days to one, European Commission, February 2025.

[8] Consultation Paper On the Amendments to the RTS on Settlement Discipline, ESMA, February 2025.

instructions (SSIs). The European regulators have also established a high-level timeline for the required changes ahead of T+1 go-live.

T+1 in Europe Timeline



In Switzerland and Liechtenstein, the Swiss Securities Post-trade Council established its own taskforce in November 2024 to examine the move to T+1 and announced in January 2025[9] that the market would shorten its settlement cycle on the same date as the EU and the UK. The taskforce includes Swiss government representatives, domestic regulatory bodies in both countries, who will be tasked with amending key pieces of legislation, and the Swiss National Bank.

Governments and regulators in these and numerous other countries across the globe have therefore committed to shortening the settlement cycles of their markets across various asset classes with a view to bringing the international capital markets into better alignment. The below graphic highlights the recent and planned moves by markets across

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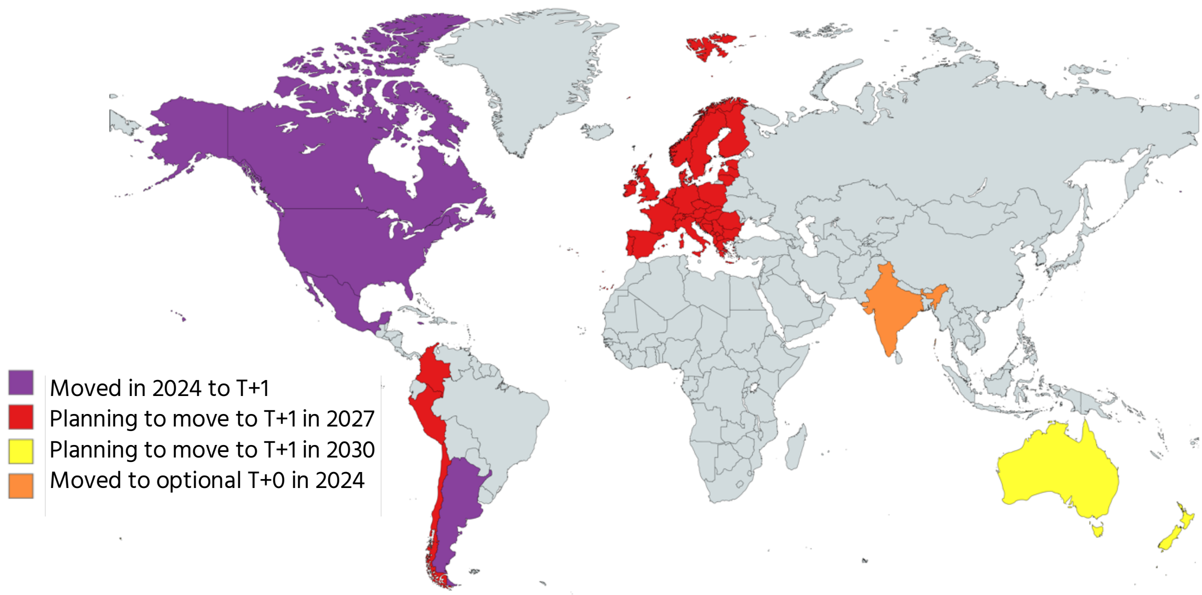
[9] The Swiss Securities Post-Trade Council (swissSPTC) recommends to move to T+1 in October 2027, Swiss Securities Post-trade Council, January 2025.

the globe to shorten their settlement cycles beyond T+2. While deadlines have been set for the move in numerous markets, others such as Japan and Singapore are also discussing the move with a view to making a decision in the near future.

Recent and Planned Moves to T+1 and Beyond



The reduction in settlement cycle misalignment between major markets is the stated goal behind many of these decisions because of its positive impact on globally operating firms and capital market liquidity. Other benefits, such as increased liquidity via increased trade volumes and reduced operational risk, are also at the heart of these initiatives. Regulators such as European Commission have noted[10] that benefits will be experienced by institutional and retail investors receiving their funds quicker, thus enabling them to invest in other assets. The move to T+1 is also expected to compel market participants to automate and improve their post-trade efficiency.

The Australian market has indicated that it will likely move to T+1 in 2030, following an industry consultation exercise conducted by the Australian Securities Exchange (ASX)

[10] T+1 settlement, European Commission, February 2025.

beginning with a paper published in April 2024[11]. The feedback to the first ASX consultation[12] highlighted that market participants believe the market infrastructure should prioritise its core system (CHESS) modernisation project over the move to T+1. The CHESS replacement project has been in progress for some time and has faced numerous implementation hurdles; hence its timely completion is a high priority for the ASX and its industry stakeholders.

The risks of transitioning to T+1 concurrently with testing for the CHESS replacement were noted in the consultation as a significant challenge due to resource and cost constraints. ASX has therefore added T+1 planning into its overall CHESS replacement programme of work and its related industry consultations[13]. The market infrastructure provider indicates that the work on T+1 is likely to begin once the second phase of the CHESS project is completed in 2030.

There has also been regional discussion about a coordinated move of the New Zealand and major Asian markets to T+1, potentially including Singapore and Japan. However, given the restrictions facing the Australian market due to its upgrade, the coordinated move is most likely to be between Australia and New Zealand, while Asian markets may choose to move earlier. Numerous factors make the transition more challenging for these markets, including significant time zone differences, along with divergent regulatory regimes and market practices. Hong Kong Exchanges and Clearing (HKEX) indicated in December 2024[14] that it will be upgrading its Orion Cash Platform in 2025 to be able to technically support T+1 settlement before the end of the year, but a market-wide move to T+1 will be dependent on market feedback.

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[11] Considerations for accelerating cash equities settlement in Australia to T+1, ASX, April 2024.
[12] Considerations for accelerating cash equities settlement in Australia to T+1 Whitepaper Feedback Summary, ASX, August 2024.
[13] CHESS replacement Consultation on the Scope and Implementation of CHESS replacement Release 2 (Settlement and Subregister), ASX, August 2024.
[14] HKEX to Introduce New Post-Trade Services on Orion Cash Platform, HKEX, December 2024.

Lessons Learned from North American T+1

The move of the North American markets to T+1 in May 2024 was perceived by the industry to be a relatively smooth process. It was described by one Firebrand bank interviewee as similar to the preparation for the Y2K switchover in January 2000, with a large amount of industry preparation and very little in the way of mishaps or negative events during the transition process. The post-implementation reviews have highlighted some areas in need of more focus such as FX, fund settlement cycles and further automation across the post-trade lifecycle.

From a resourcing standpoint, these projects often started within firms' government and regulatory affairs teams, where externally-focused individuals engaged with regulators, financial market infrastructures (FMIs) and industry associations to shape the T+1 agenda and provide feedback. As the details of the move became clearer, they expanded into involving operations, compliance, treasury and lending, risk, legal, technology, product, trading and portfolio management teams, with some individuals as part of a core team and others added for shorter periods focused on specific changes. Client-facing sales and relationship management teams were also significantly involved at larger banks, brokers and custodians as part of dedicated education programmes. However, the burden of most of the implementation and coordination work fell on operations and technology teams.

The success of the North American markets in transitioning highlights several key factors that could be applied to every market planning to shorten its cycle to T+1:

- **The importance of strong leadership and governance:** The US and Canadian markets both had key organisations and industry figureheads that championed the importance of preparedness for T+1. DTCC provided a centralised point for information sharing on T+1 changes and relevant market practices and also established a dedicated communication channel to facilitate problem resolution during the critical implementation period. A central point of contact enables better coordination and consistency of implementation across a market.

- **The requirement for industry testing to begin as early as possible:** The amount of time dedicated to testing matters because it provides the industry and market infrastructures with a valuable feedback loop to address any problems ahead of the 'go live' date.

- **The need to examine the wider impacts of the move:** One of the areas in which the North American transition could have been improved, according to industry participants, is the amount of time and focus given to the functions outside of the equities settlement process. Areas such as corporate actions, foreign exchange and mixed basket fund settlement also warranted attention. The impact of the move on the international investor community is also an important consideration, particularly from a funding and liquidity standpoint.

- **The understanding that education is a big part of it all:** Banks and custodians in particular spent a lot of time and effort educating their clients about the necessary preparations required for the move. A buy-side Firebrand interviewee notes that the requirements related to affirmation were a "learning curve" for a lot of asset managers around understanding the process itself and the necessary steps required.

- **The importance of confirming trades on trade date:** The quicker the trade is affirmed or confirmed, the faster any matching problems and exceptions can be resolved. Affirmation rates increased significantly in the US market ahead of T+1 go-live for many firms, from the low 60s and 70s to the high 90s in terms of percentages for some interviewee firms.

- **The need for greater post-trade automation:** Avoidable settlement failures can be reduced by automating as many processes as possible to enable straight-through processing (STP). The reduction in operational risk related to manual reentry of data is a key success factor for greater market efficiency. The relatively static failure rate within the US market both pre- and post-T+1 implementation indicates that there is still room for improvement in terms of automation within that market.

- **The benefits of root cause analysis for failures:** Firms need to better understand the underlying cause of their settlement failures and to work to address persistent avoidable causes such as standing settlement instruction (SSI) data errors. Addressing these problems can have a wider impact as chains of settlement failures resulting from one data error can be avoided.

- **The need for regulatory clarity and support:** The regulatory community's leadership in emphasising the importance of T+1 enables firms to garner the necessary budgets to deliver the changes on time. The SEC and Canadian regulators engaged in multiple industry education sessions before and after the T+1 implementation, which emphasised its importance to the industry as a whole.

- **FX process changes need to be made:** FX costs have increased for many firms as a result of the North American move and will likely increase further still as more markets move to T+1. Many firms are keen to see wider discussion about changes to the FX settlement cycle and cut-off times within CLS in particular.

One of the key considerations for all markets in their move to T+1 will be around maintaining the systemic resilience of their domestic financial infrastructure and reducing the risks involved in the transition. This is why adequate preparation and investment in post-trade technology is so important. The modernisation of legacy platforms, whether on the financial institution side or on the financial market infrastructure side, is imperative for the future scalability and resilience of the markets. To this end, the move to T+1 is anticipated by regulators to compel greater industry automation and lower operational risk, which is in keeping with the goals of regulations such as the Digital Operational Resilience Act (DORA) in Europe.

The global market volatility at the start of the second quarter of 2025 highlights another key reason why further automation is necessary to ensure capital markets remain resilient in the face of record volumes. Dramatic swings in the S&P 500, the Dow and other indices mean that FMIs must process a record number of transactions at high volume. Firms reliant on manual processes struggle to handle a significant uptick in volume, which results in increased failure rates and costs for the industry as a whole.

Digging into the Details of European T+1

The European move to T+1 is undoubtedly much more complex from a planning and implementation standpoint than the North American transition. Not only are there more currencies, market infrastructures, market participants and regulators involved, there are also significantly different market practices to accommodate. The region has agreed to shorten the settlement cycle on the same date but the process of transitioning will vary from country to country due to these local nuances. The scale of the challenge will also vary dependent on the size, type and focus of the firm, including whether they are more domestically focused or provide cross-border services in a wide number of countries.

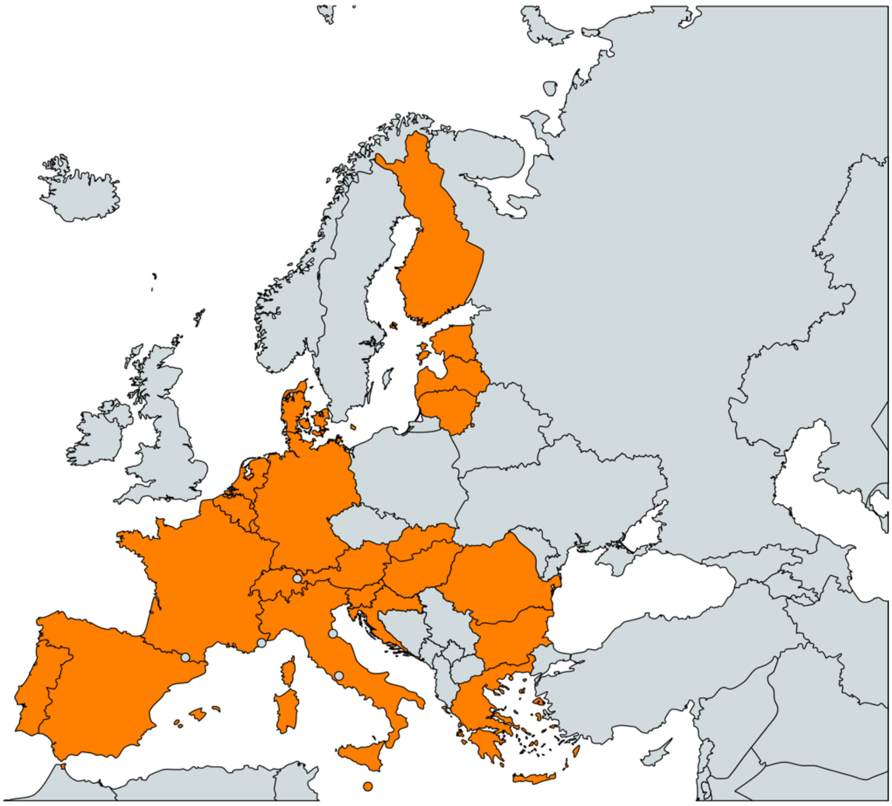
Europe has been discussing the greater integration of capital markets and the reduction of cross-border post-trade friction for many years and the EU's SIU plan includes many items that were first identified by the Giovannini Group in its 2001 report[15]. These outstanding areas of misalignment between markets are where some of the challenges for T+1 implementation will lie for the region. For example, differing beneficial ownership definitions, tax regimes, securities laws and market practices in areas such as asset servicing all contribute to implementation complexity.

From an infrastructure standpoint, although there is a pan-European settlement system operated by the ECB in the form of Target2-Securities (T2S), not every country is connected to the platform (as highlighted by the graphic below). Furthermore, as noted by the Association of Financial Markets in Europe (AFME) in its 2024 paper on the subject[16], there is more work to be done within the industry and by T2S to deliver on the full benefits of the platform.

[15] Cross-Border Clearing and Settlement Arrangements in the European Union, the Giovannini Group, November 2001.

[16] TARGET2-Securities: Review of current model and future prospects, AFME, June 2024.

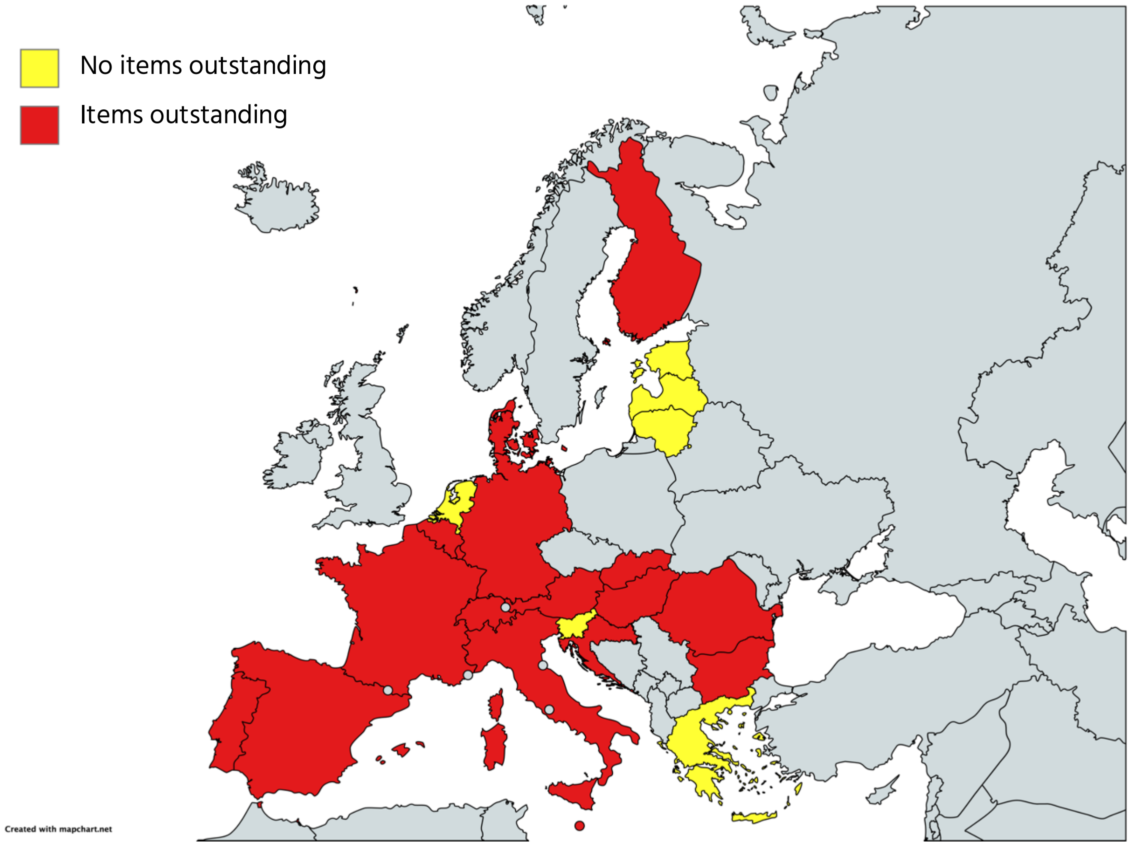
Member Countries of T2S



Even though 24 national and international FMIs have connected to T2S, not all of them have adopted the necessary standards to harmonise their individual markets with the requirements of the platform. The ECB monitors connected markets' adoption of various post-trade standards as part of its annual review process and according to its latest assessment in January 2025[17], there is still room for improvement in many markets (see the graphic below). The ECB notes in its report that corporate actions market practices are the most lacking in terms of required standards adoption, with 18 markets in need of further harmonisation. These market practice differences will further complicate the implementation of T+1.

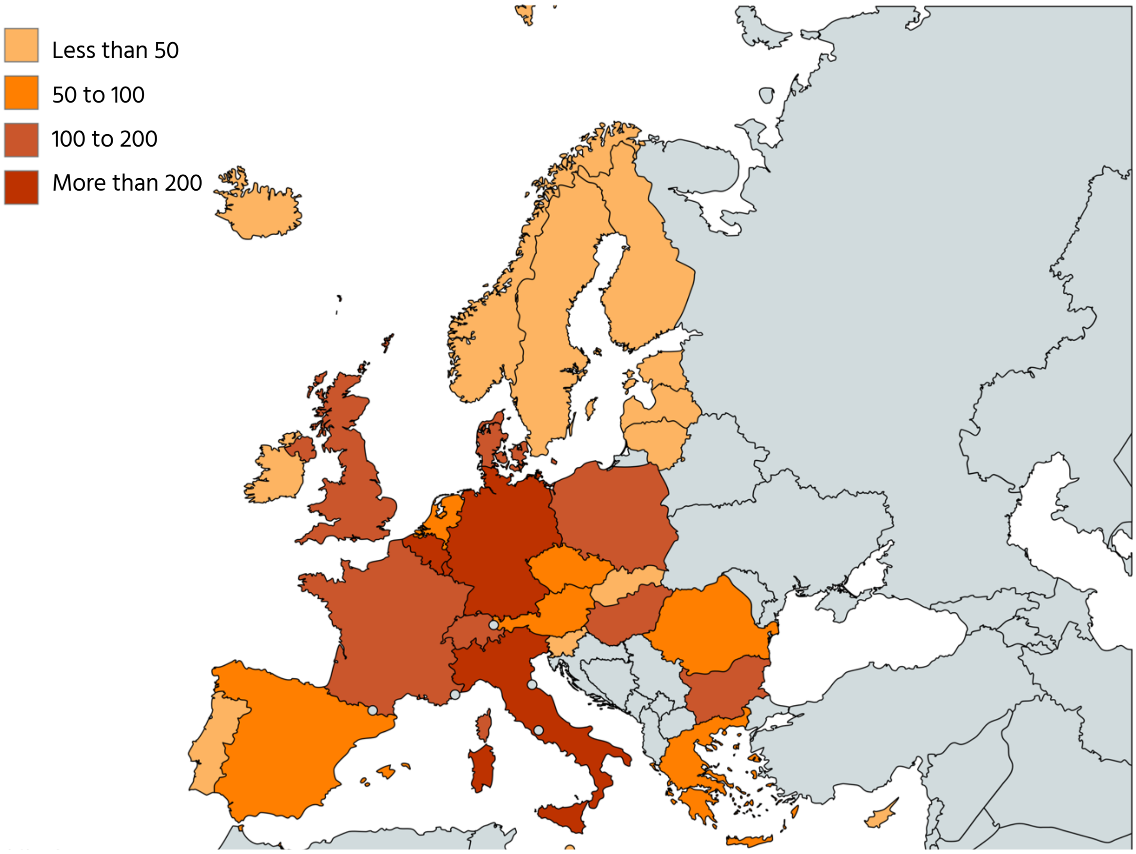
[17] 15th T2S Harmonisation Progress Report, ECB, January 2025.

T2S Status of Standards Adoption



Planning and resourcing for T+1 will also likely be impacted by the number of firms that will be required to test their systems with their local FMIs. To this end, the number of firms that are direct participants of their domestic CSD or ICSD and will need to engage in testing varies from country to country (as highlighted in the graphic below). The markets with a larger number of market infrastructures—for example, three markets in the region have three CSDs—may need to plan extra time for testing purposes if smaller market participants with fewer staffing resources are connected to multiple FMIs. There is no one-size-fits-all approach to implementation across the region.

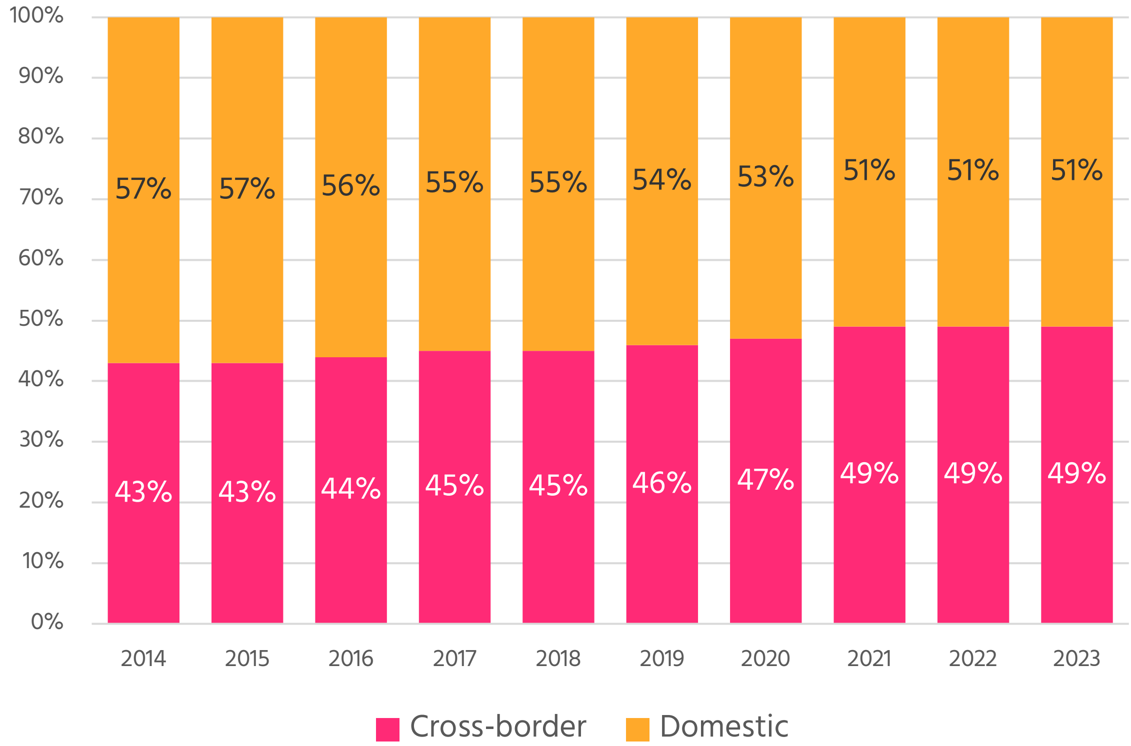
Heatmap by Number of Direct CSD Participants



The most frequently mentioned concern about European T+1 by Firebrand interviewees is that some markets will fall out of alignment in terms of the implementation, which could cause an operational headache until all markets realign. Diverging European markets will face similar issues experienced due to the misalignment of the North American and European markets, such as challenges related to mixed basket fund settlement and liquidity problems. There has been a gradual increase in cross-border funds flows in Europe over the last decade, as highlighted in the chart below, which displays 2025 statistics from the European Fund and Asset Management Association (EFAMA)[18].

[18] Our industry in numbers, EFAMA, accessed March 2025.

Breakdown of Cross-Border Versus
Domestic Fund Investment Flows in the EU



It should be noted that the majority of this cross-border activity is institutional in nature. Retail trading activity overall is lower in European countries than in markets such as the US, with an average of 7.4% of household assets invested in listed equities and debt securities in 2022, according to ECB statistics[19]. Retail cross-border investment is also relatively low across the region, according to ESMA estimates[20]. The average number of firms providing cross-border investment services to more than 50 retail clients in other European Economic Area (EEA) member states in 2023 was around 13 firms per country. The activity is also concentrated in three countries, as Cyprus, Luxembourg, and Germany accounted for about 50% of the 386 firms assessed by ESMA in its 2024 report.

[19] Household Participation in Capital Markets, EFAMA, January 2024.

[20] Report on the 2023 Cross-border Provision of Investment Services to Retail Clients in the EU and EEA, ESMA, July 2024.

The number of cross-border retail investors is increasing, however, and ESMA indicates that around 8 million retail clients invested in assets from other EEA markets in 2023, compared to 7.6 million in 2022. These dynamics at the domestic and international levels are important to bear in mind as firms prepare to educate their end investor clients about the impact of T+1. A higher proportion of retail investment tends to increase market volatility as there is a greater proportion of high volume, low value trading activity, which can often correlate with lower rates of settlement efficiency if manual processes are prevalent.

Settlement Failures and Their Causes

CSDR defines a settlement failure as the "non-occurrence of settlement, or partial settlement of a securities transaction on the intended settlement date, due to a lack of securities or cash and regardless of the underlying cause"[21]. The regulation requires the reporting of settlement failures to national competent authorities, which then send this data to the European regulator in order to allow ESMA to evaluate the settlement efficiency of the region and thus the effectiveness of the penalty regime. It has been a challenging exercise for the regulatory community across Europe to monitor regional-level data on settlement failures due to inconsistencies in reporting between markets.

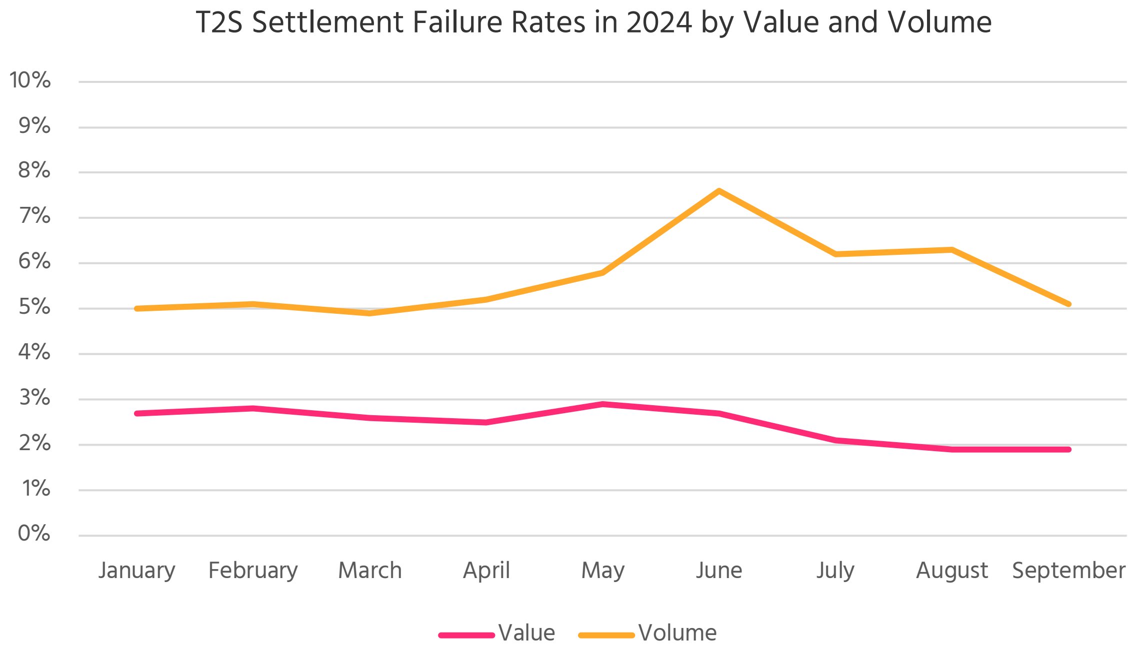
The lack of comparable data has been in part due to longstanding differences in the way various markets categorise and count failures, with some counting the same failed settlement on multiple days as multiple failures and others counting it as a single failure, for example. The reasons behind settlement failures have also been challenging to ascertain at an industry level and ESMA is revising the CSDR RTS[22] to take into account some of the difficulties it has experienced as a result of continuing data blind spots. One

[21] Guidelines on Settlement Fails Reporting under Article 7 of CSDR, ESMA, December 2021.

[22] Consultation Paper on the Amendments to the RTS on Settlement Discipline, ESMA, February 2025.

of ESMA's SDR proposals is to require market participants to provide information on settlement failures, when there is a lack of information available to the CSD.

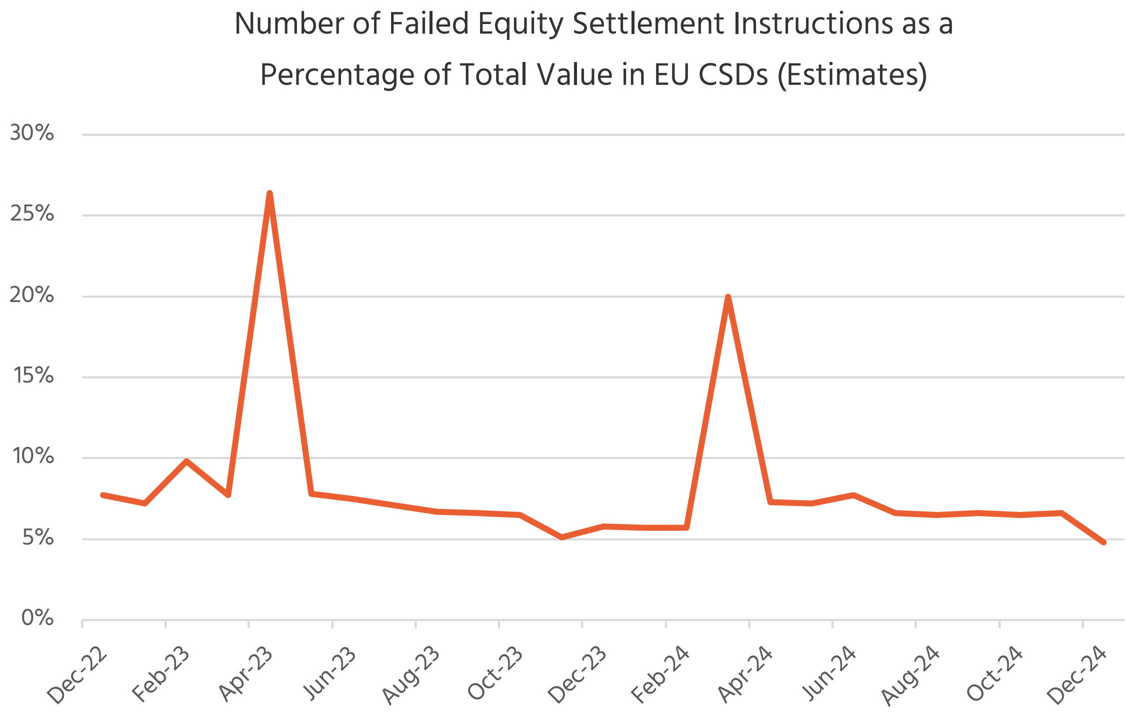
The T2S settlement failure rates from 2024[23] (as shown in the chart below) indicate that low value settlement failures can fluctuate throughout the year caused by market volatility and increased volumes, which means that while the total value of failures reduced by 1% in 2024, the volume of fails fluctuated between 5% and just under 8%. The lack of automation within the long tail of smaller firms engaging in lower value activities may be the underlying cause of these fluctuations as these firms struggle to handle volume increases with a low number of operational staff and manual errors result. This is of particular concern as the industry shifts to a shorter settlement cycle and manual processes will be compressed into a shorter timeframe.



The ESMA estimates[24] for the percentage of equity settlement failures across CSDs highlighted in the chart below have been revised several times over the last couple of years as data gaps have been filled and data normalisation has been applied. This data

[23] [Statistics of payment instructions processed by T2S – 2024], ECB, accessed March 2025.
[24] [Trends, Risks and Vulnerabilities (TRV) Report, No. 1], 2025, ESMA, February 2025.

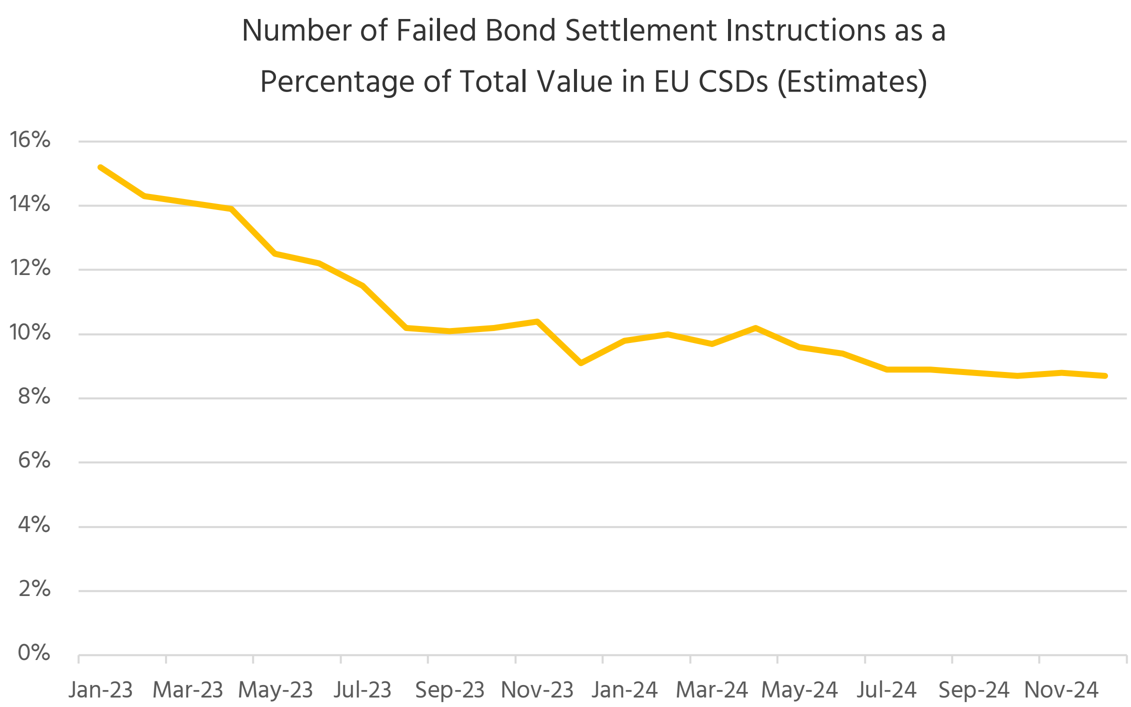
set is much wider than the T2S numbers and is more representative of the region overall. The sharp peaks in settlement failures during certain months reflect both market volatility and the impact of corporate actions peak months, where manual processes in asset servicing areas can impact settlement efficiency. There has been a gradual decline in equity settlement failures since the introduction of SDR, however, the European-level regulators have indicated that illiquid instruments in particular haven't improved enough from a settlement efficiency standpoint.



Illiquid assets, exchange traded funds (ETFs) and fixed income assets are therefore facing an increase in the settlement penalty rate due to ESMA's revisions to SDR[25]. The graph below highlights the ESMA estimates for failed bond settlement instructions across EU CSDs as a percentage of total instructions, which have fallen since SDR was introduced but have not yet reached levels deemed satisfactory by the regulator. The combination of increased settlement penalties and the shortened settlement cycle could result in

[25] Final Report Technical Advice on CSDR Penalty Mechanism, ESMA, November 2024.

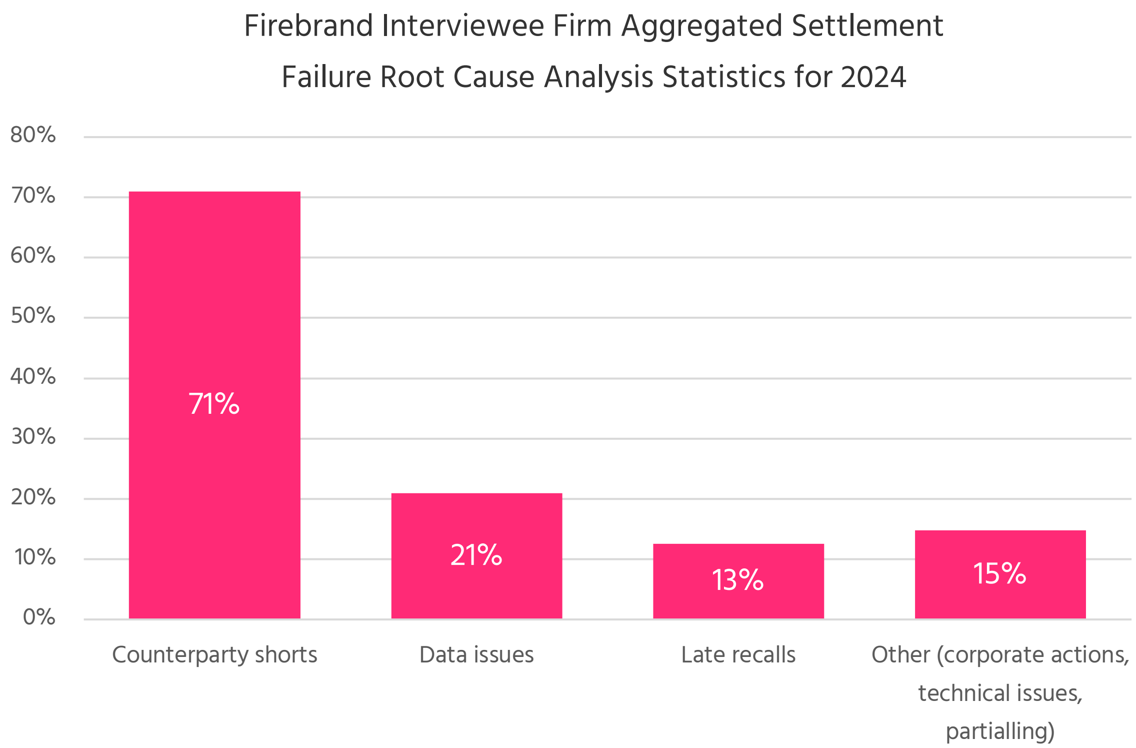
much higher costs for firms active in the European fixed income markets during the transition period to T+1.



CSDR financial penalties are one of the core, tangible costs of settlement inefficiency that differentiates the European markets from the North American markets, which don't currently directly levy penalties for equities settlement failures though the US does have a penalty regime for some fixed income assets. The T2S annual report for 2023[26] indicates that participants paid an average of 795,654 cash penalties for late matching and settlement fails related to their activity in euro per month that year, amounting to an average of €70.43 million per month. The monthly volume ranged between 668,655 (recorded in September) and 957,690 (in January), and the value ranged between €42.06 million (recorded in December) and €108.70 million (in September). These costs could potentially increase significantly if firms don't take action to reduce the avoidable underlying causes of their settlement failures such as manual process risk and data inaccuracies.

[26] TARGET2-Securities Annual Report 2023, ECB, May 2024.

Numerous firms engaged in root cause analysis as part of their CSDR implementation projects ahead of February 2022 in order to better identify, understand and tackle the underlying issues. Firebrand interviewees that have engaged in these activities were able to provide more detailed statistics on the underlying causes of their failed settlements throughout 2024 (see chart below). The firms that haven't yet engaged in these root cause assessments should do so ahead of T+1 go-live in order to identify and eradicate any avoidable failures.



[27]

Key Pre-Settlement Statistics

One of the key focus areas for the North American markets ahead of the T+1 transition was around making sure affirmation and allocation processes were completed on trade

[27] Note that the percentages do not add up to 100% because it is aggregate and averaged data across different firms.

date to ensure any issues could be resolved well ahead of the settlement deadline. The European markets have a different model for the agreement of settlement details and instead reach matching finality at the CSD rather than the US model, where affirmation happens before the settlement details reach the CSD. However, the same principle of early confirmation and allocation is also necessary to improve settlement efficiency ahead of the move. The post-execution trade match happens before the CSD matching process and can help to reduce settlement data errors further down the settlement lifecycle. This means making key post-execution workflow changes to enable trade support teams to more quickly resolve identified settlement issues between counterparties.

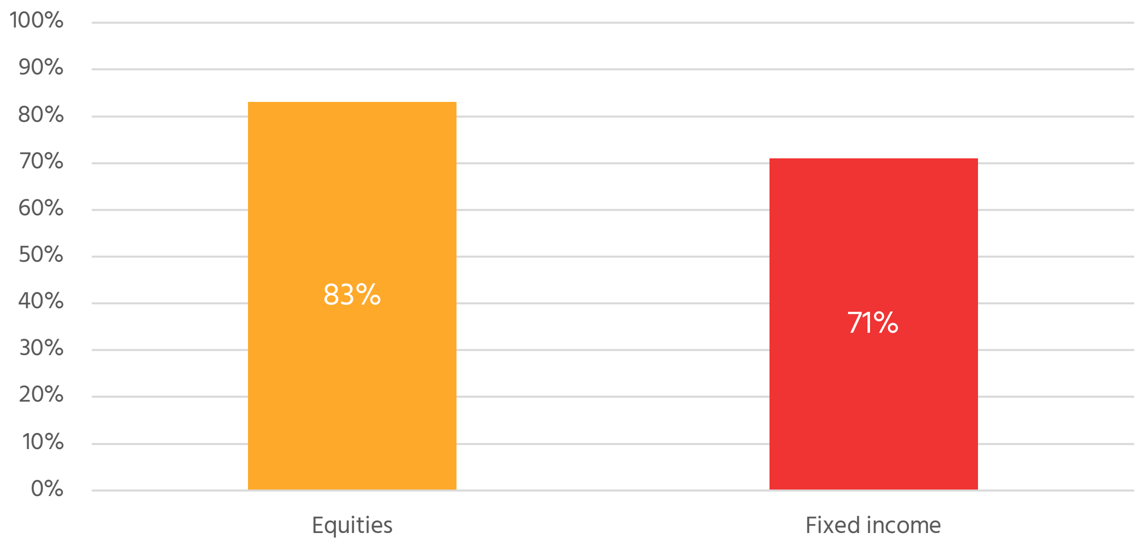
One area of difference between the US market and European markets in terms of trade affirmation/confirmation is the regulatory approach. The SEC mandated direct broker and client responsibility for the affirmation process during the T+1 implementation. ESMA's proposed RTS do indicate that confirmations and allocations should be sent in an "electronic, machine readable format," amending Article 2 of the regulation, but stop short of mandating direct liability or responsibility for either party.

Currently, the pressure is primarily on the broker to act as the responsible entity for overseeing this process, including the related costs. There have been numerous discussions within the industry over the last couple of decades about sell-side firms pricing in the cost of settlement inefficiency and manual processes into their client engagements, but this has yet to become a common market practice. The change would mean that buy-side firms that send spreadsheets via email for the confirmation process would have to pay a higher fee than those using electronic platforms, such DTCC's central trade matching (CTM®) platform or other matching platforms.

At an aggregate industry level, there is high usage of these electronic platforms for trade confirmation and allocation from a volume perspective, as you can see from the chart below based on average percentages aggregated across interviewee firms. Sell-side interviewees note that their high-volume, large and medium-sized clients are all using matching platforms. However, it is the long tail of smaller, low volume clients that are using manual processes to confirm their settlement data. Similarly, buy-side interviewees note that their smaller and regionally-focused broker counterparts are less likely to be using electronic platforms for confirmations.

There is also an average 12% difference in automated flows between the equities and fixed income markets for interviewee firms, with the latter asset class displaying less automation globally. Asset managers tend to use some specialist brokers that specifically target certain areas of fixed income and due to the size and lower budgets of these firms, they tend to have lower system capabilities than larger brokers. While government bonds tend to be relatively well-supported, some of the corporate bond sectors have a lower number of specialist providers.

Firebrand Interviewee Firm Aggregated Electronic Trade Confirmation Platform Usage in Percentage of Total Volume by Asset Class

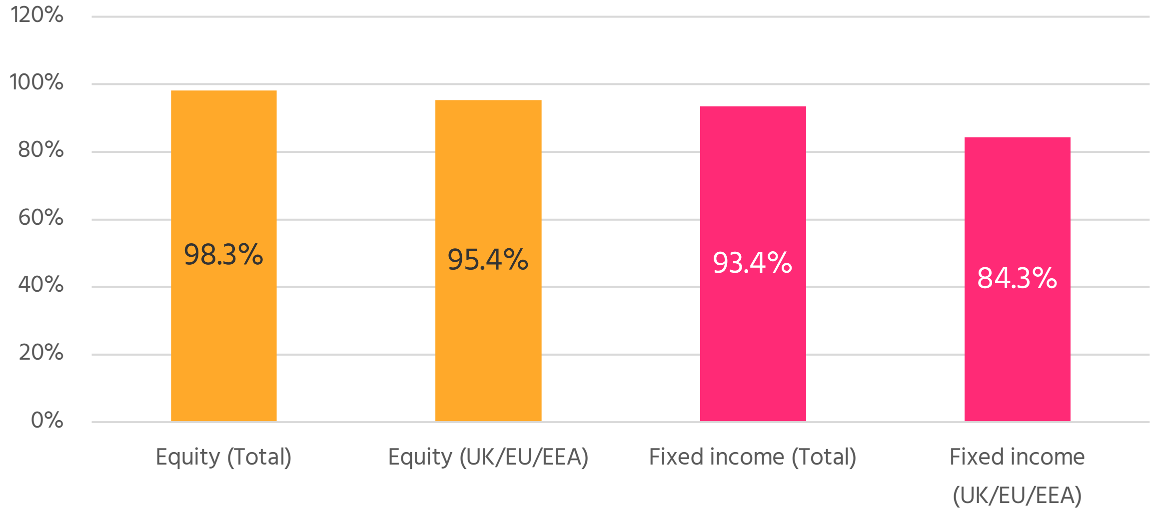


Some asset managers have adopted a policy of refusing to work with broker counterparts unless they connect to these platforms in order to ensure there is a high level of STP in post-trade communication. This is a much trickier proposition in smaller and less developed markets, where there is a much smaller pool of brokers and they are less likely to have invested in automation. Outside of Europe, frontier and emerging markets in

Latin America, Asia, the Middle East and Africa are particularly challenging from this standpoint.

Generally, firms look at these processes by counterpart rather than by region, which makes it challenging for them to compare Europe to other regions in terms of pre-trade process efficiency. However, platforms such as DTCC's CTM have a unique position of being able to highlight industry-level differences between regions and cash securities asset classes from an efficiency perspective, as highlighted in the chart based on DTCC data below. Similar to the aggregate interviewee firm data, equity markets display greater efficiency with a higher matching rate than fixed income markets globally and within Europe. While equity markets tend to have a more automated process due to the prevalence of clearing, fixed income trades have more post-trade routes and locations for settlement in Europe leading to lower European CTM matching rates than globally.

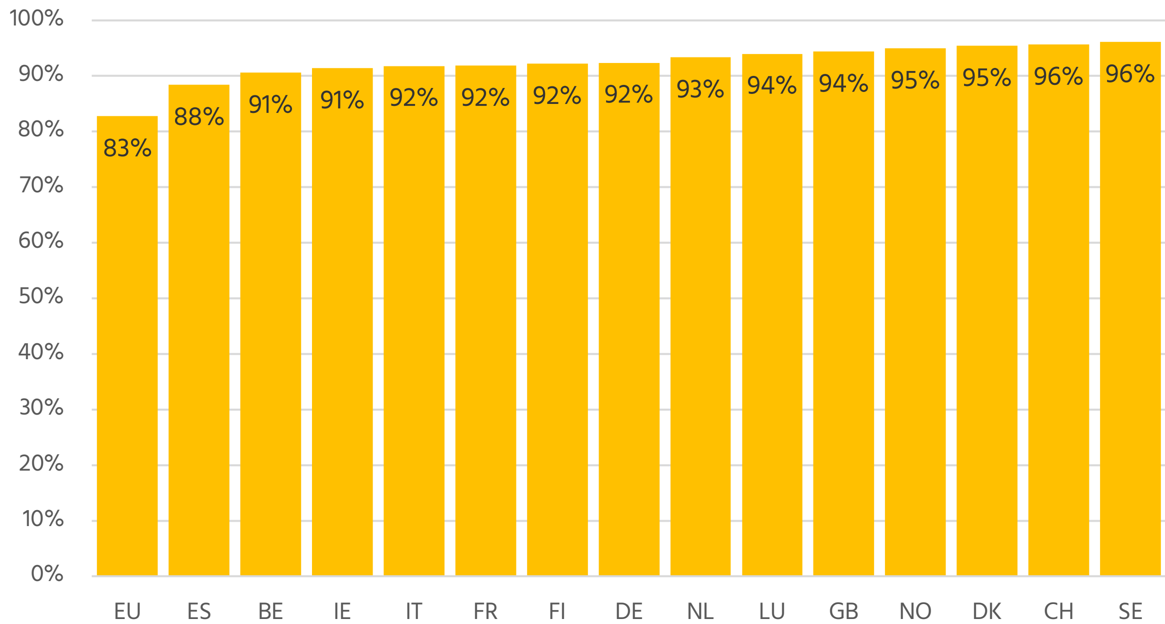
Comparative Same Day Pre-Settlement Matching Rates on CTM in Europe and Globally for Equity and Fixed Income in 2024



It should be noted that due to the use of post-trade market practices such as pairing, netting and internalised settlement, not all of the transactions that are matched in the pre-settlement phase will end up at the CSD. This means that there isn't a one-for-one relationship between pre-settlement trade matching and matching at the CSD for settlement finality. In terms of pre-settlement flows, 49% of CTM's Europe, Middle East and Africa (EMEA) flows originate from UK or EU-domiciled investment managers and 48% of its EMEA volume originates from US-domiciled investment managers active in the region. This reflects the global nature of the markets, with a high proportion of buy-side investment into the region from the US market. DTCC statistics show that just under a third of its broker-dealer CTM clients and around 23% of its investment manager CTM clients are based in the European region.

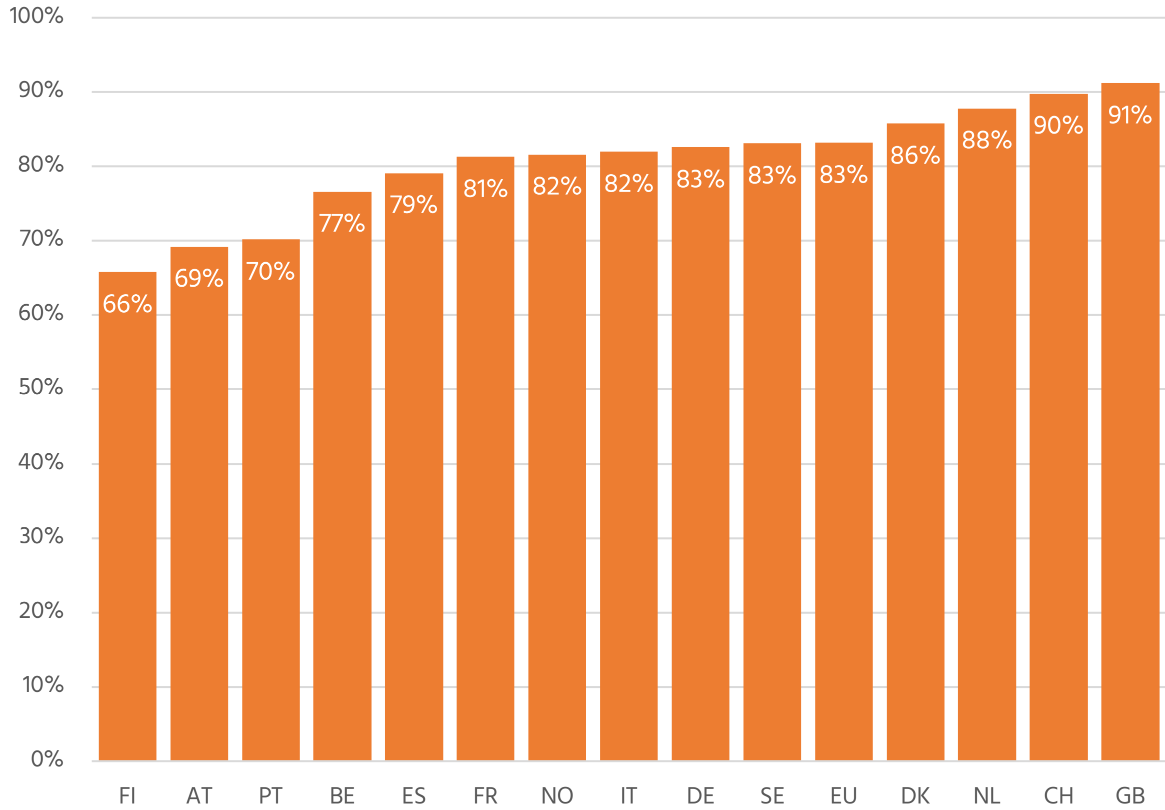
Examining and comparing individual European markets highlights a disparity in trade date pre-settlement matching efficiency between the top 15 European equities markets by volume on CTM, as highlighted in the chart below based on DTCC data. Countries such as Spain (88.4%) and Belgium (90.6%) have a lower rate of same day matching for equities than markets such as Switzerland (95.7%) and Sweden (96.1%). International securities cleared through pan-European systems, identified by the 'EU' designation also have relatively lower same day match rates (82.8%). These matching rates, of course, don't indicate the number of firms using manual processes in the matching process in these countries and are not representative of the whole market in each country.

Same Day Pre-Settlement Match Rates for the
Top 15 European Equities Markets on CTM in 2024



From a global perspective, 9% of CTM's equities volume and 7% of its fixed income volume is European. This again reflects the lower levels of electronic trade matching in the fixed income markets described by Firebrand interviewees. This is also highlighted on an individual country basis in the graph below based on DTCC statistics for the top 10 European countries in 2024, with lower levels of same day pre-settlement matching in countries such as Finland (65.8%) versus those in the UK (91.2%), though international fixed income pre-settlement match rates are a little higher than for international equities (83.2%).

Same Day Pre-Settlement Match Rates for the
Top 15 European Fixed Income Markets on CTM in 2024



CSD Settlement

Settlement finality happens at the CSD, so it is also important to examine the settlement statistics at the FMI level to assess market efficiency. CSD settlement matching is impacted by various market activities such as netting, pairing and settlement internalisation. Euroclear indicates that in the second half of 2023, its overall settlement matching on trade date benchmark was 60.87% and its intended settlement date matching rate was 98.41%[28]. The ICSD is working toward a 99% rate for intended settlement date matching before the move to T+1 in 2027 in close collaboration with its clients through bilateral settlement data diagnostics and its settlement efficiency working group aligning on ecosystem best practices. The percentage of incorrect instructions for the second half of 2023 was 6.17% and the average arrival time in days for late instructions was 4.03 days. With increasing client demand for more proactive data points and cross-firm visibility, Euroclear indicates that it continues to invest in products predicting settlement fails and facilitating faster issue resolution.

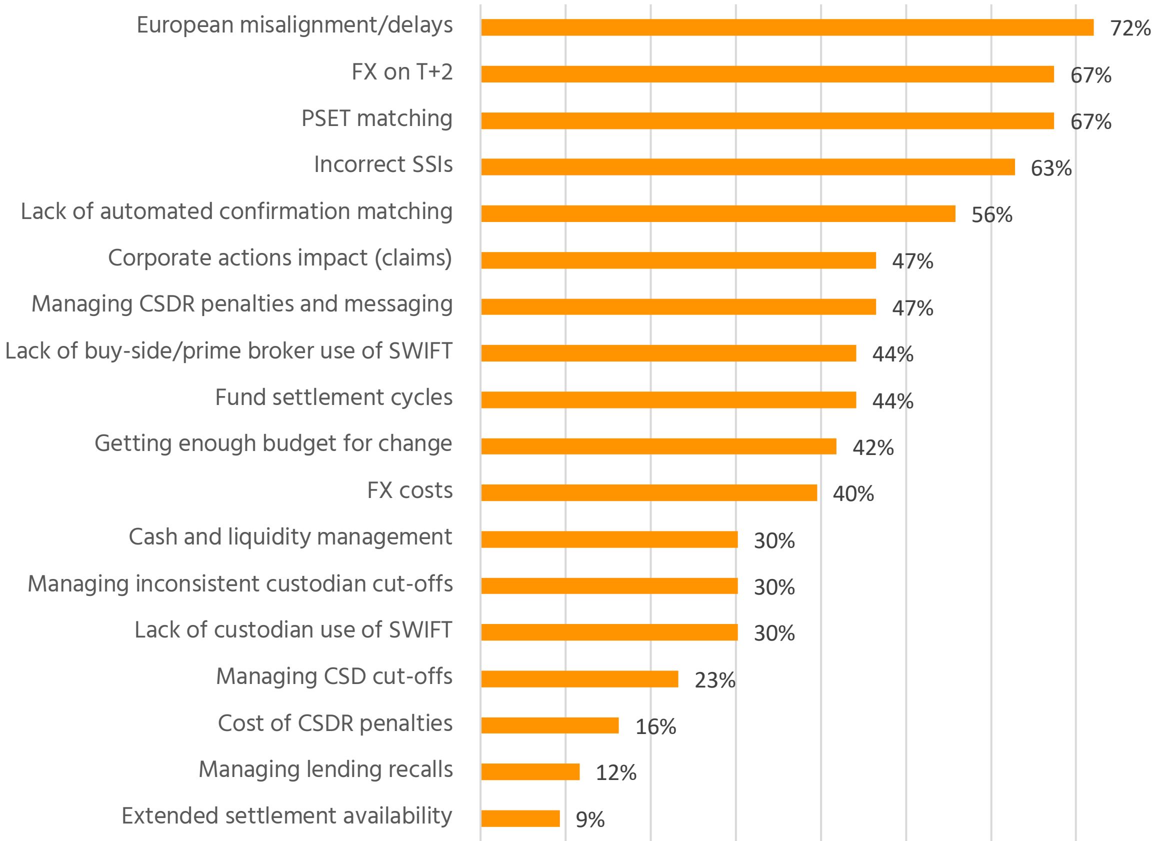
Clearstream is similarly embarking on a number of actions with its clients to improve the picture in advance of T+1. Notably these include educational sessions and the deployment of fail prediction tools to anticipate where late settlements might occur based upon historical data. Clearstream is also proactively engaging with the ECB to remediate some of the challenges associated with cross-CSD settlement, a consistent cause of settlement fails across the European landscape.

The need for greater levels of automation in confirmation and allocation matching is fifth on the list of concerns cited by Firebrand interviewees (56% of firms), shown in the chart below. As previously noted, the potential misalignment of European markets is number one on the list (76%), followed by concerns about the foreign exchange (FX) market being on T+2 (67%) while other asset classes have moved to T+1 and challenges related to place of settlement (PSET) matching (67%). Incorrect SSIs are fourth on the list (63%)

[28] Tackling matching issues together, Euroclear, April 2024.

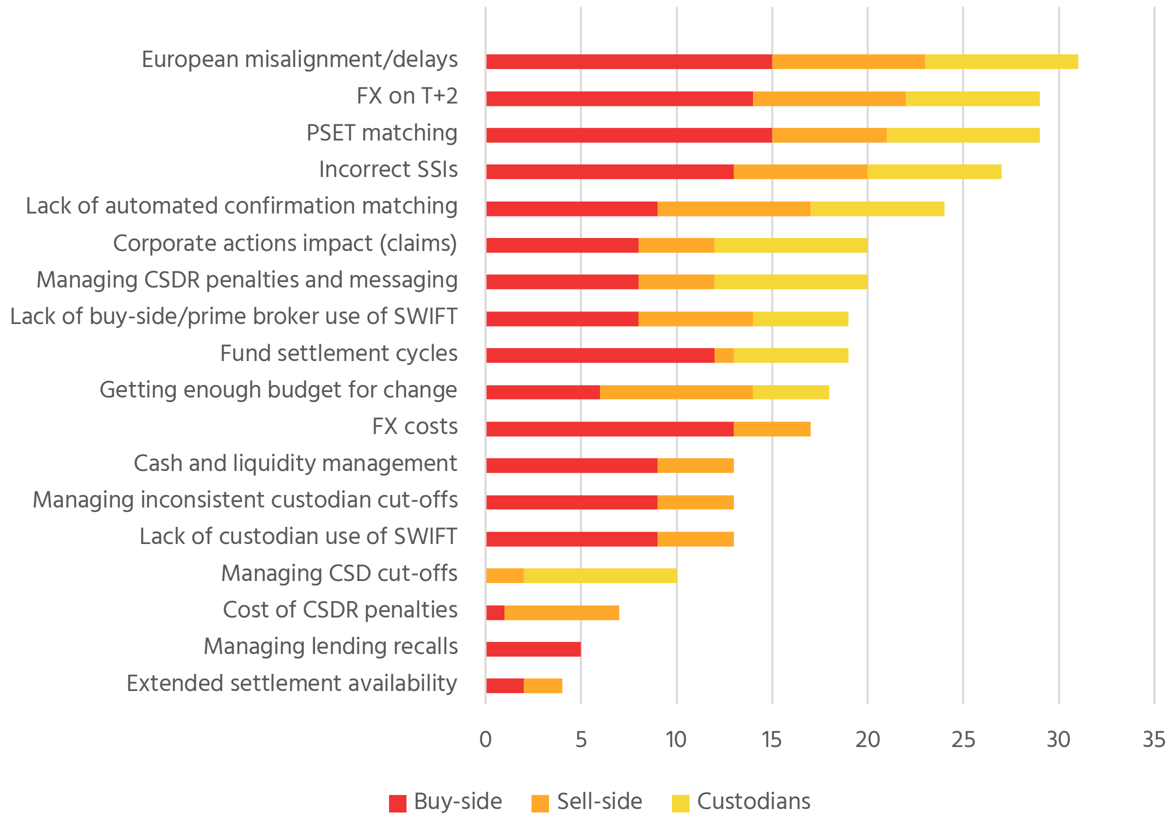
because these data problems are a common cause of settlement failure, which can be related to stale data or a lack of transparency around the selection of the right SSI or legal entity and account for the trade. There are numerous post-trade areas of concern for interviewee firms that don't directly relate to the equities and fixed income settlement process but will be impacted by T+1 such as corporate actions claims processing (47%) and cash and liquidity management (30%).

Firebrand Interviewee Greatest Concerns Around European T+1
(n=43)



The impact of these issues varies from firm to firm, as highlighted by the below chart, which is broken down by type of firm. While managing a potentially higher volume of CSDR penalties is of concern to the buy-side, sell-side and custodians, the cost of CSDR penalties is of more concern to sell-side firms. The impact on fund settlement cycles is of far more concern to buy-side firms and their custodian service providers than the sell-side. Numerous asset manager interviewees note that they have moved some of their funds to a T+2 settlement cycle as a result of North American T+1, but more will likely have to shorten from T+3 and T+4 due to the European move.

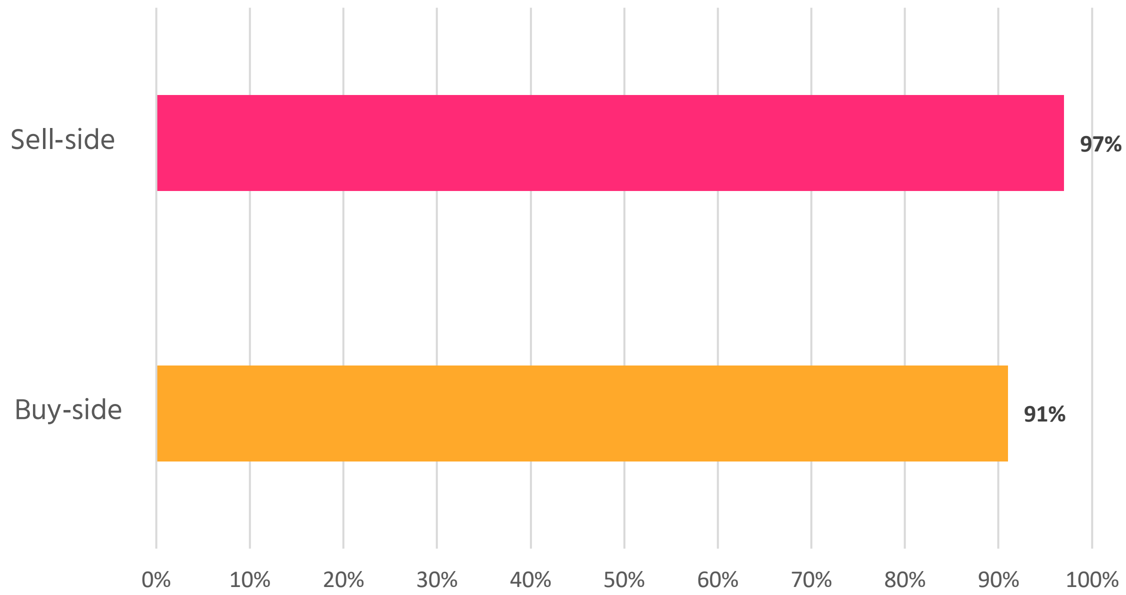
Firebrand Interviewee Greatest Concerns Around European T+1 by Firm Type (n=43)



Place of settlement (PSET) is considered problematic because an asset owner's preferred CSD or ICSD for settling specific trades may not always be automatically communicated to counterparts such as brokers and custodians, who may assume the trade is settling in another location. If conflicting settlement locations are selected by the client and the service provider, brokers and custodians must resolve these discrepancies. Although 97% of sell-side firms and 91% of buy-side firms using ALERT are adding PSET information and enriching their CTM trades with SSIs (as highlighted in the chart below), it is not currently a mandatory matching field and therefore PSET matching may not be taking place.

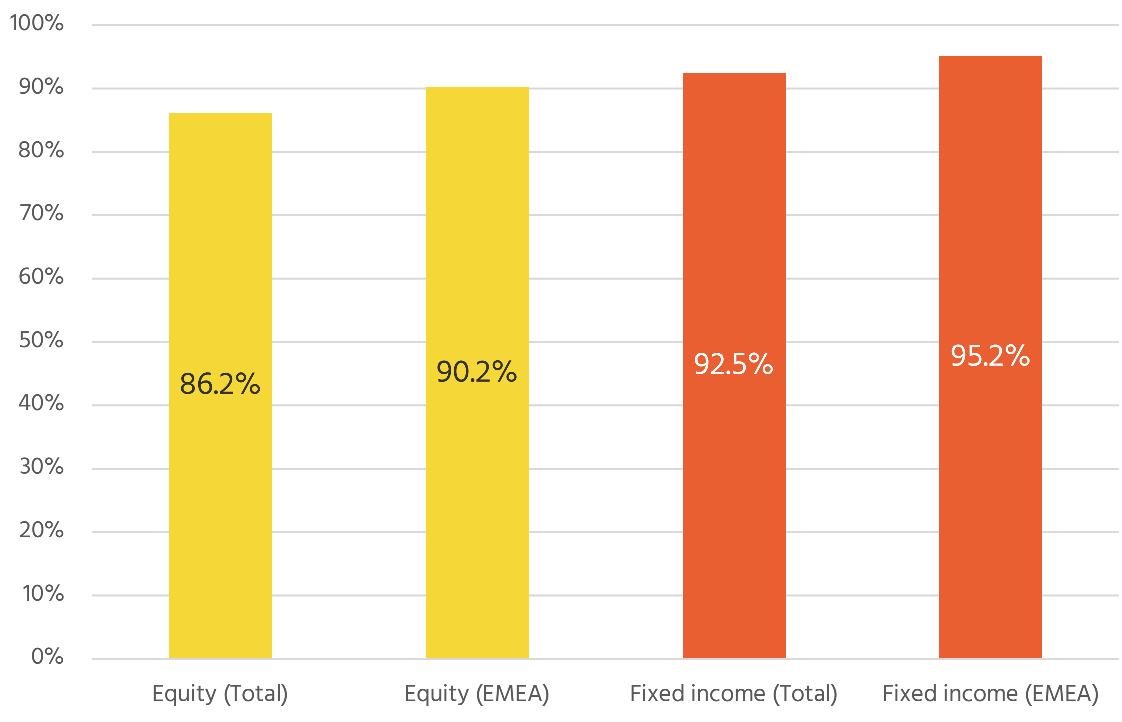
The field isn't used in matching unless the client opts in, however, PSET will become a mandatory field in DTCC's CTM platform in December 2025. Moreover, ESMA notes in its RTS proposals that usage of PSET and place of safekeeping (PSAFE) should become an industry best practice to reduce the number of settlement fails. Some market participants have also fed back to ESMA in their consultation responses that they would like to see both PSET and PSAFE introduced as mandatory fields. The topic of PSET matching is complicated because to get it right first time there are more data points to be considered than the PSET alone. To evaluate if the buy-side PSET is compatible with the sell side PSET, firms must check if the security is eligible for the CSD link, whether the derived settlement route (internal, ICSD bridge, cross-border or cross-T2S CSD) aligns with the firms' settlement preferences and constraints, and where the position is held (PSAFE). A pair of SSIs is only successful if and when they match in the CSD.

Percentage of Firms Engaging in PSET Enrichment in ALERT by Type of Firm in 2024



DTCC statistics indicate that there is some difference between equity and fixed income in EMEA versus the global PSET matching on CTM, as highlighted in the chart below. PSET matching rates are higher in Europe for both equity and fixed income trades, reflecting the greater challenges within Europe that relate to cross-border activities and a wider range of settlement locations across the region. The EMEA fixed income market has a higher rate of PSET matching (95.2%) versus the EMEA equities market (90.2%), which reflects the wider number of settlement location options for fixed income assets. However, it should be noted that though pre-settlement PSET matching could result in higher levels of settlement efficiency, it is not guaranteed in Europe because settlement finality isn't reached until the match at the CSD.

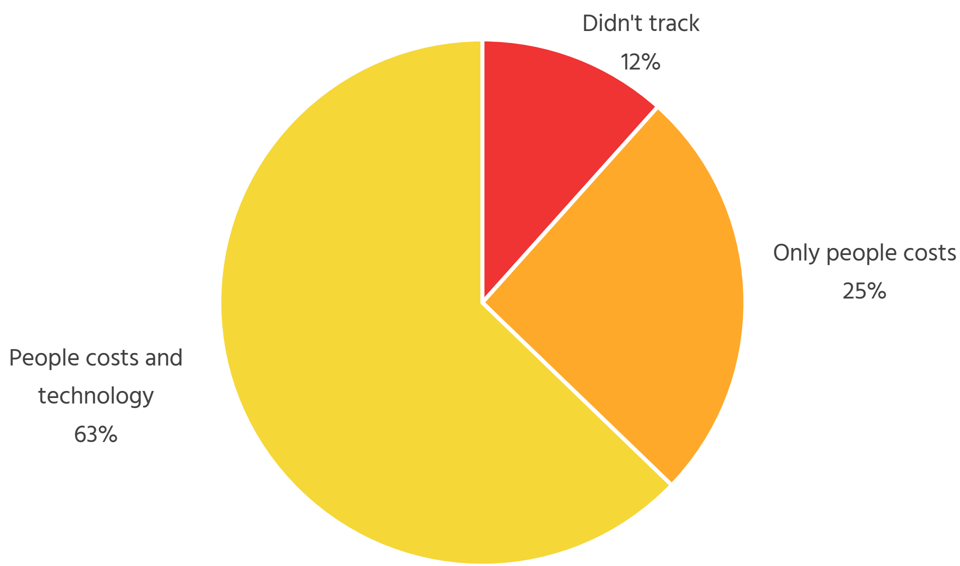
Comparative PSET Matching Rates on CTM in
EMEA and Globally for Equity and Fixed Income in 2024



Digging into the Costs

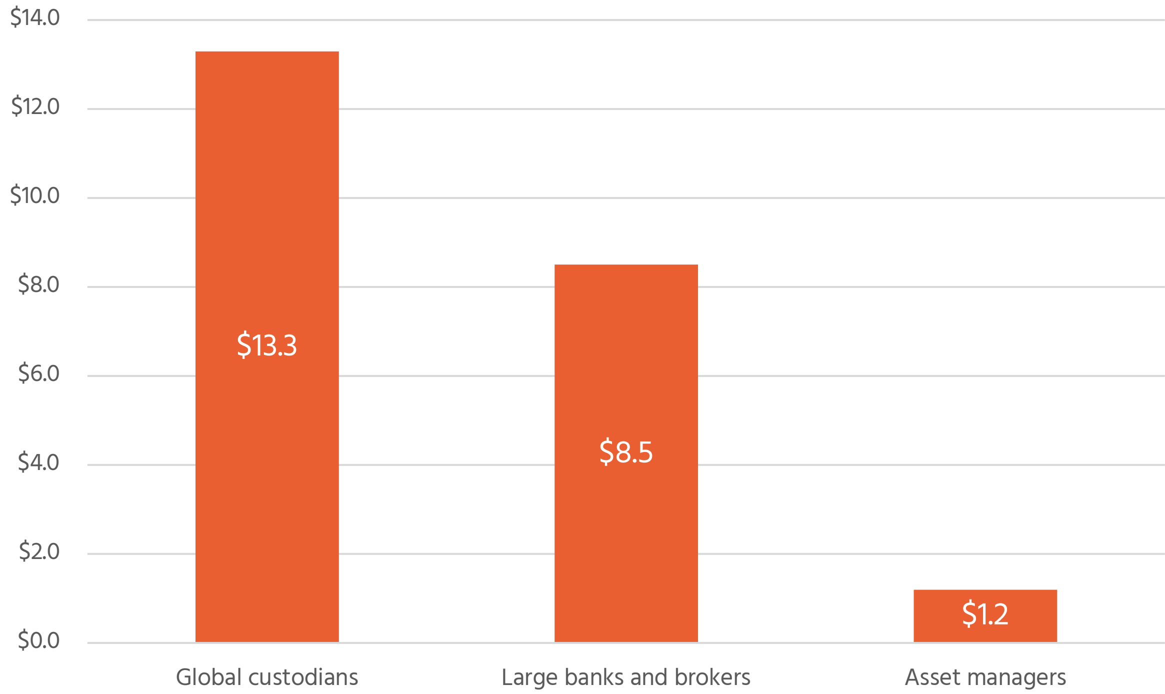
To assess the potential costs of the move, it is worthwhile examining the average costs firms experienced in supporting the North American move in the run-up to May 2024. Firebrand interviewees note that people costs were the highest allocation for every firm, including technology support costs from internal IT teams supporting testing, building out new connectivity and new functionality. A minority of firms (12%) failed to track the costs of supporting the transition entirely as these changes were treated as the cost of doing business, particularly by smaller firms that don't routinely track the human hours spent on operational support.

North American T+1 Cost Allocation and Tracking
(n=43)



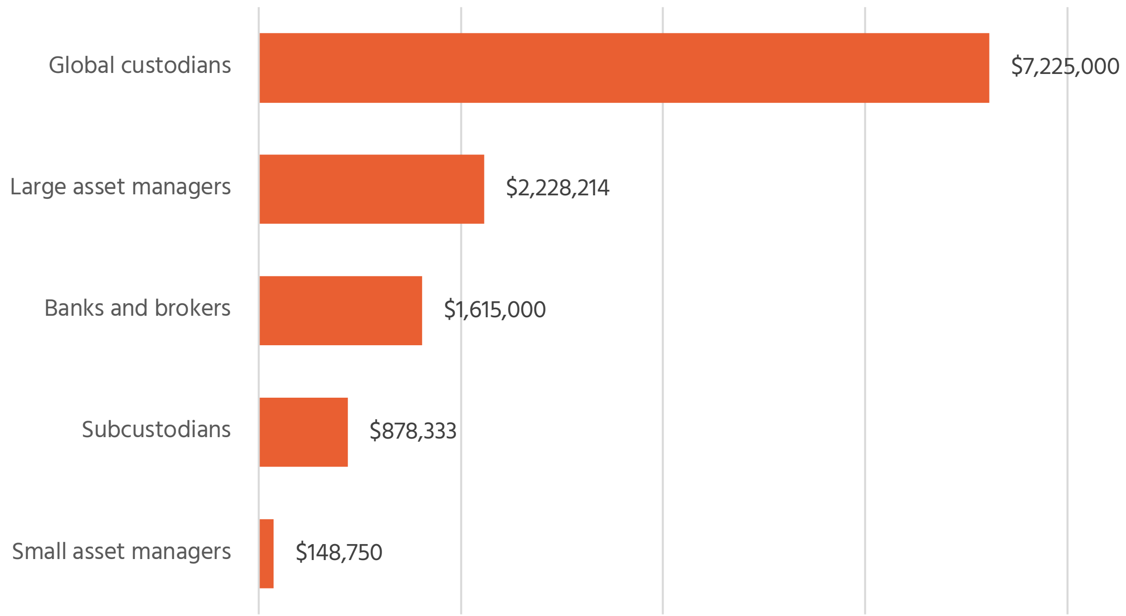
A minority of firms have fully costed the North American move in terms of the human hours and technology tweaks and changes, others have a vague ballpark notion of what was spent. Firebrand's estimates for the total cost of the move based on interviewee budgets and estimates is highlighted in the chart below. Global custodians spent by far the most on the move, including testing support, internal technology and process changes, and client education programmes, with an average firm spend of US$13.3 million. Large banks and brokers had a far wider spectrum of spending, with some large firms spending over US$30 million and other global firms spending less than US$1 million. Large asset managers had a similarly wide spectrum of spending for their projects, averaging at US$1.2 million for the total spend.

Firebrand Average Estimated Per Firm Cost of North American T+1 Projects (in US$ millions) by Type of Firm



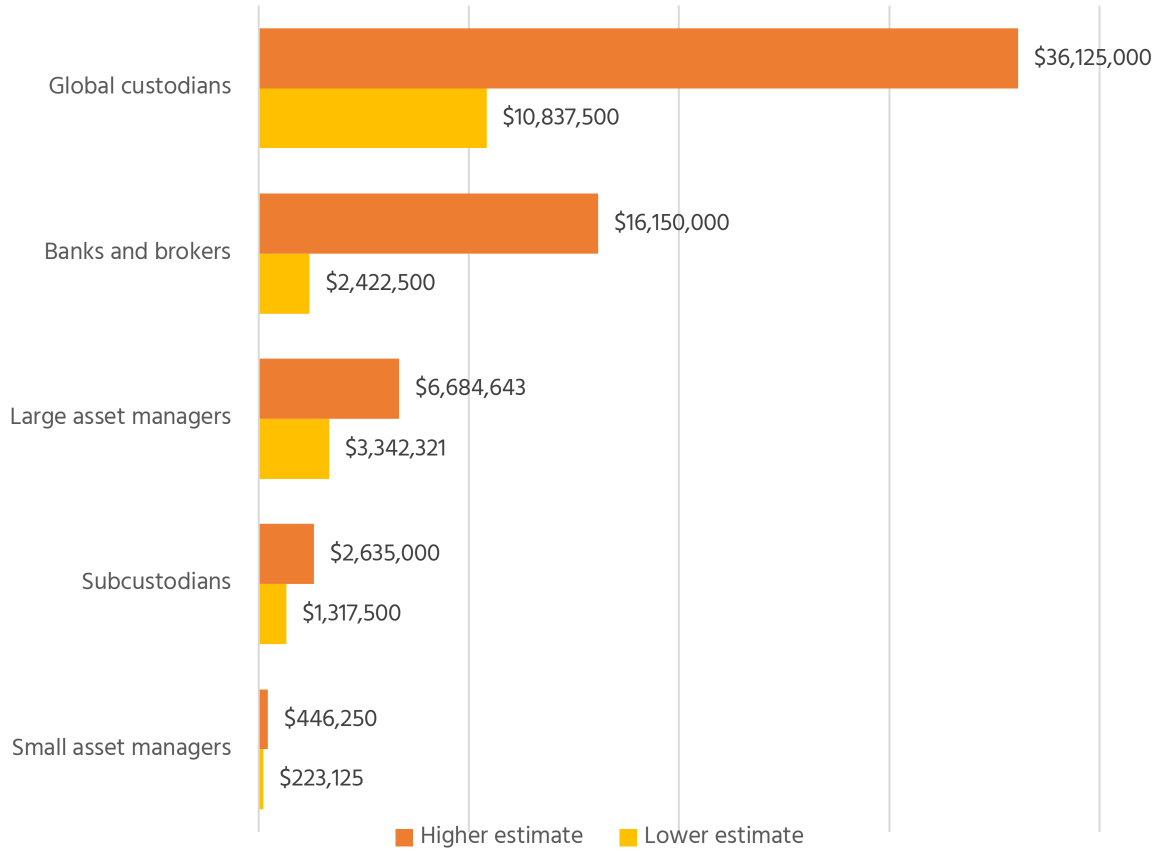
As previously noted, the costs of North American T+1 projects were dominated by full-time employee (FTE) hours, with global custodians spending the most due to much larger teams. The burden of client engagement and education sat heavily on the shoulders of custodians and asset servicers, with core teams at subcustodians and global custodians ranging from five people to more than 100 globally. Small asset managers were on the opposite end of the spectrum with much smaller teams of often less than five people engaged in preparation work. The Firebrand estimates below highlight the average people costs for firms of different types with global custodians averaging at US$7.2 million in people costs and small asset managers averaging at US$148,750.

Firebrand Average People Costs Per Firm of North American T+1 Projects by Type of Firm (in US$)



None of the firms interviewed by Firebrand have yet put together proper cost estimates for the European move to T+1 because most are at very early stages of planning. However, given the costs of North American T+1 and the potential increase in FTE hours due to a greater number of testing phases with various FMIs and the wider spectrum of asset classes and currencies involved in European T+1, Firebrand has estimated that the top end costs for global custodians could sit at around US$36 million for those that have a large client base and multiple post-trade systems to update (see chart below). The wide ranges reflect the spectrum of different levels of automation, systems and operating structures at different firms. While some have consolidated systems and centralised operations, others have very regional models.

Firebrand Estimated Total Costs of EU T+1 Projects by Type of Firm (in US$)

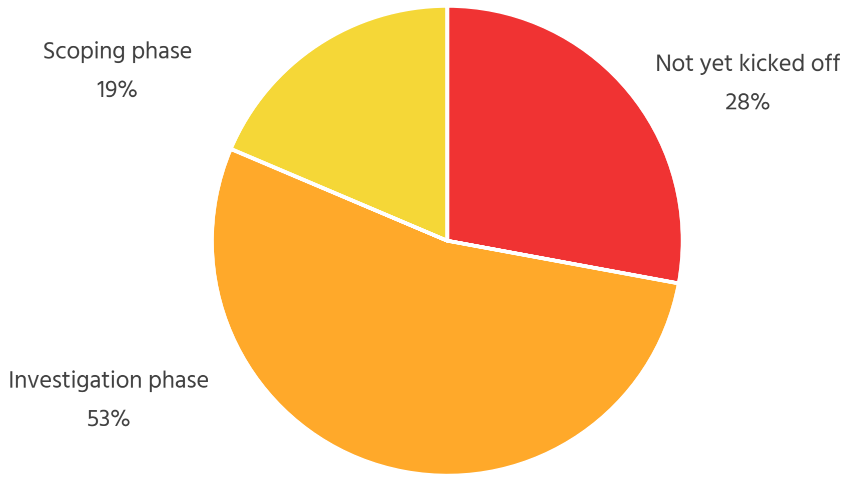


Outside of the direct project costs, the longer term costs of a T+1 cycle are top of mind for many interviewee firms as more markets shorten their settlement cycles. Asset managers are keen to reduce their reliance on custodian-provided overdrafts from a funding and liquidity perspective and they are examining how better to manage their FX. The tight turnaround and the slow start of many projects at many firms for North American T+1 meant core processes and platforms were not properly assessed. As European T+1 comes into focus, though small tweaks to systems will be made at highly automated firms, much wider transformation projects will be necessary as volume increases push legacy platforms to their scalability limits.

The European Action Plan

It is early days for most Firebrand interviewee firms in terms of European T+1 implementation planning, with 28% noting that they have not yet kicked off an official project and the rest scoping the work required (19%) or investigating the details of the move (53%). These firms' North American T+1 projects varied in length between two years and 12 months, with smaller buy-side firms waiting for more clarity from their service providers on required steps to be taken before kicking off their own projects in earnest. Larger, more globally-focused firms tend to get these projects rolling more quickly because of the necessity to educate clients in multiple regions on the impact of the changes.

Stage of European T+1 Project (n=43)



While official projects may not have kicked off at every firm, many individuals have been engaged in T+1 feedback and assessment on the policy and government affairs side of things. Industry working groups have also been particularly active in the UK market and now that the European and Swiss markets have clarified their plans, industry groups and associations in those markets are also ramping up their efforts. The UK Accelerated

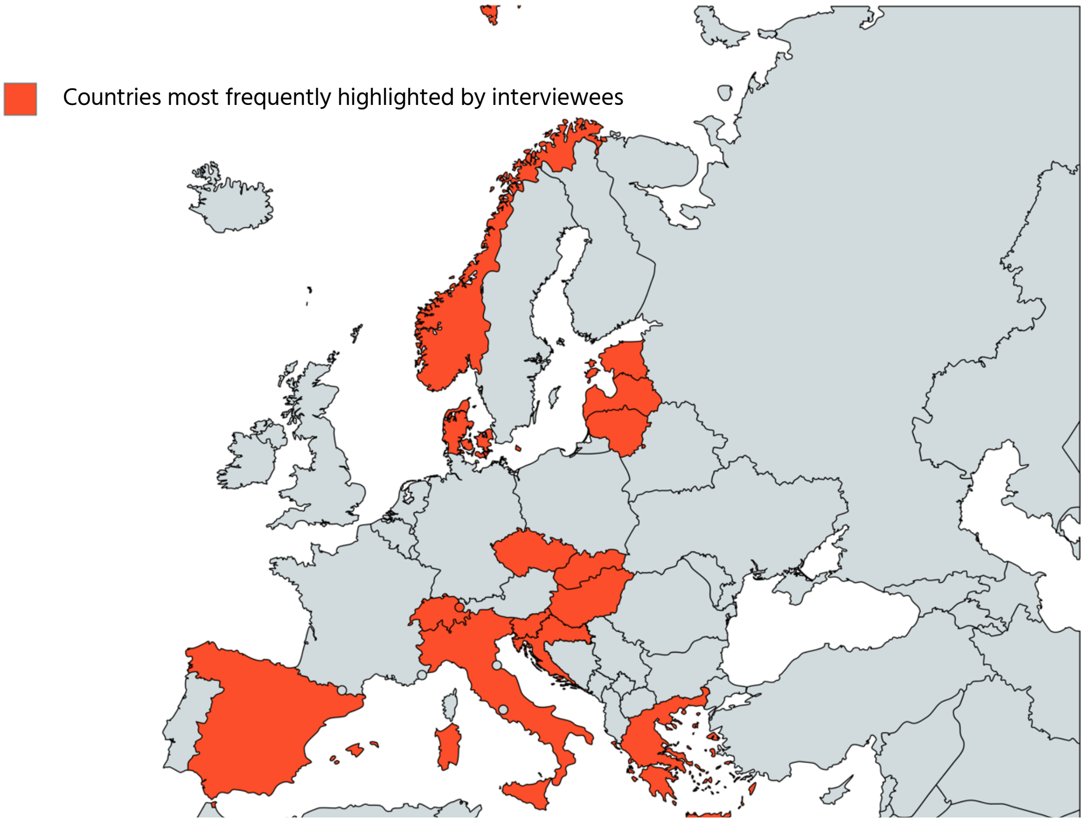
Settlement Taskforce has been urging firms to take a more proactive approach to the deadlines and not wait to begin planning for the move[29]. Early engagement in T+1 planning should mean a smoother transition period, allowing all industry participants with enough time to assess the required changes.

Industry associations such as AFME and T+1 working groups will play an important role in the next couple of years by acting as hubs for information for all market participants as they plan for T+1. These groups can also act as a conduit for feedback for firms of all sizes seeking to have their voices heard in the industry's transition planning. To this end, interviewees from smaller firms note that they have far fewer resources to dedicate to T+1 planning and therefore are reliant on their associations and service providers to guide their efforts.

T+1 planning also includes key steps that must be taken from a regulator and FMI perspective and Firebrand interviewees note some concerns about the preparedness of certain markets ahead of October 2027 (see the highlighted markets in the graphic below). These concerns relate to a host of issues such as significant ongoing market structure upgrades that may delay T+1 projects and the market's previous track record when it comes to compliance with European-level regulatory changes and other major market structure changes such as the move to T+2.

[29] UK Settlement Task Force sets out timeline for T+1 transition, Investment Week, February 2025.

Countries of Concern from a T+1 Preparedness Standpoint



These concerns indicate that market participants are keen for more communication and clarity from their national regulators and FMIs about their own plans around T+1. The European-level plans are important but they must also be translated into national action plans and it is here that more information is currently necessary. As with the North American transition, the success of the European T+1 will hang on an engaged and active set of regulators, FMIs and market participants across the region with strong governance and clear leadership. In this endeavour both FMIs and regulators play a key and necessary role.

The Importance of Standards

Standards are an area where greater harmonisation is necessary from both a T+1 implementation perspective and a European market competitiveness standpoint. Operational risk and inefficiency stems from the plethora of messaging formats, communication and data standards used across the whole lifecycle of a trade and the various technology platforms that this information must pass through within many different intermediaries. Standards harmonisation is therefore desirable to reduce this operational risk, improve industry resilience and bring down the inefficiencies and costs of post-trade operations ahead of T+1.

The adoption of PSET as a mandatory matching field has already been highlighted as an important step toward greater settlement efficiency in this report, but it isn't the only area where standards and market practice changes could help. The Bank of England has directly endorsed the adoption of the FMSB's SSI standards, with the executive director of FMI oversight noting that the standards could help reduce failures during an Accelerated Settlement Taskforce event in February 2025[30]. SSI formats and consistency are also in ESMA's list of proposed RTS changes for the EU markets in preparing for T+1. The FMSB standards[31] establish definitive market practices for the taxonomy of SSI data and the sharing of SSIs between market participants, which is especially important when firms have outsourced to third parties.

Currently, the volume of SSIs stored by DTCC's ALERT is over 16 million globally, 57% of which come direct from source providers such as custodians and prime brokers. Of this, around 4.9 million relate to equity markets globally and Europe represents 2.2 million of that number (see chart below). There are a higher number of fixed income SSIs globally in ALERT at 8.1 million, with Europe representing 3.5 million. FX and cash SSIs equate to 2.7 million SSIs globally, of which one quarter are European. SSI coverage on platforms

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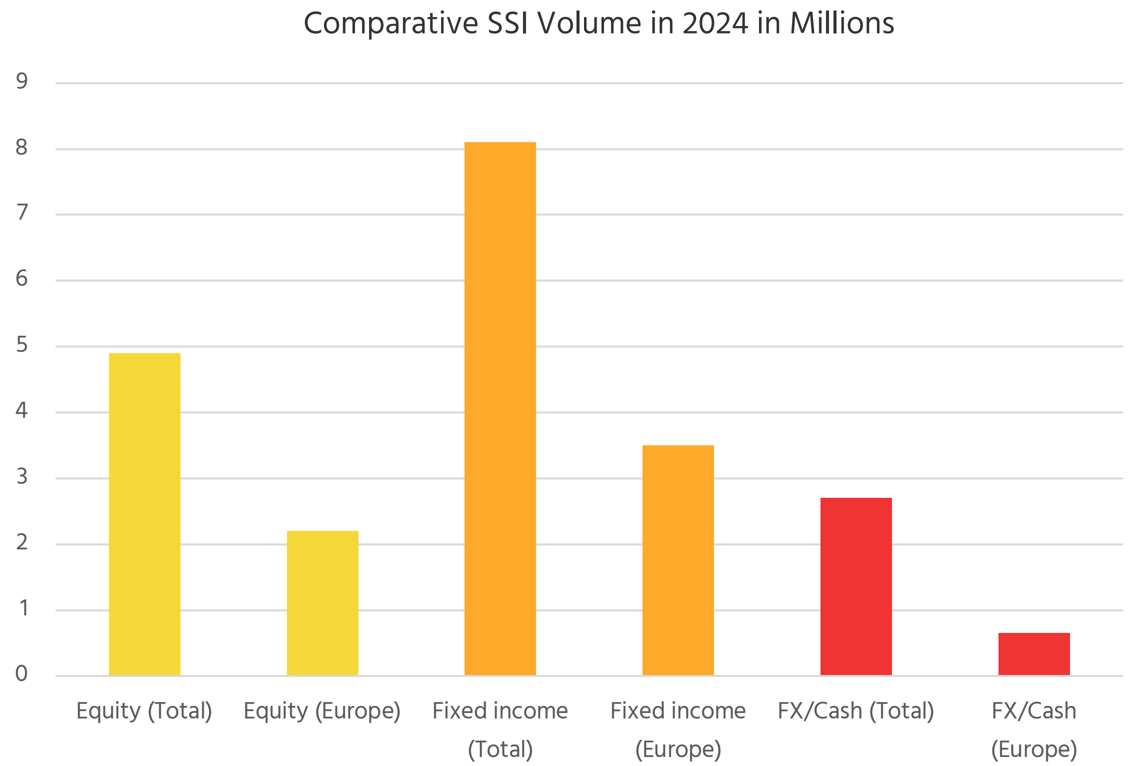
[30] Innovation in UK Financial Markets - shortening the settlement cycle – speech by Sasha Mills, Bank of England, February 2025.

[31] Standard for Sharing of Standard Settlement Instructions (SSIs), FMSB, January 2025.

such as ALERT needs to increase both regionally and globally to help to reduce avoidable data errors and increase automation. The quality and the accuracy of the stored SSI data is of paramount importance.



Another potentially important standard in the post-trade efficiency stakes is the Unique Transaction Identifier (UTI), which allows for the unique identification and tracking of a transaction across all the intermediaries in the securities lifecycle. Numerous interviewees note the potential of the UTI to assist in better settlement management by providing greater transaction visibility and therefore increased accuracy and timeliness in issue detection and resolution. There is room for improvement in the industry's adoption of the UTI, but it is gradually increasing over time as more and more FMIs and service providers support the standard. However, the real key to adoption will be the use of the UTI by broker-dealers, banks and the buy-side.

DTCC figures for its Settlement Instruction Manager (SIM) service indicate that the UTI is was added to around 750,000 of its settlement messages and its CTM platform created UTIs for around 160 Bank Identification Codes (BICs), which represent approximately 80 clients, during the period between May 2024 and February 2025. The UTI is therefore being generated early in the transaction chain and it is then assigned at a block and allocation level within CTM to allow the UTI to be passed through the transaction lifecycle. This means there is more transparency for full trade lifecycle management for clients to monitor settlement and actively manage exceptions. The UTI can then be used to manage post-trade settlement position reconciliation issues and trade settlement claims, should they arise.

Another important identification standard across the capital markets is the legal entity identifier (LEI), which allows the unique identification of entities within a financial transaction. Globally, there have been 2.9 million LEIs issued, of which 94% are currently determined to be active by the Global LEI Foundation (GLEIF)[32], and 1.8 million or 61% originate from Europe. The use of the LEI in the post-trade context has increased over time and DTCC statistics indicate that around 200,000 accounts in ALERT have an LEI, a small but growing proportion overall. The LEI enables counterparties within a transaction to identify the correct entity with which they are transacting, thus reducing operational risk.

As previously noted, there are other standards and market practices within the asset servicing arena in Europe and beyond that need to be addressed if true operational efficiency is to be achieved. As highlighted by the ECB in its T2S report[33] and shown in the chart below, corporate actions standards harmonisation is necessary in order for the full benefits of the pan-European platform to be delivered. It is not the sole area of the ECB's focus, however, as the means by which directly connected parties (DCPs) access the system is also in need of further harmonisation alongside a selection of other market practices.

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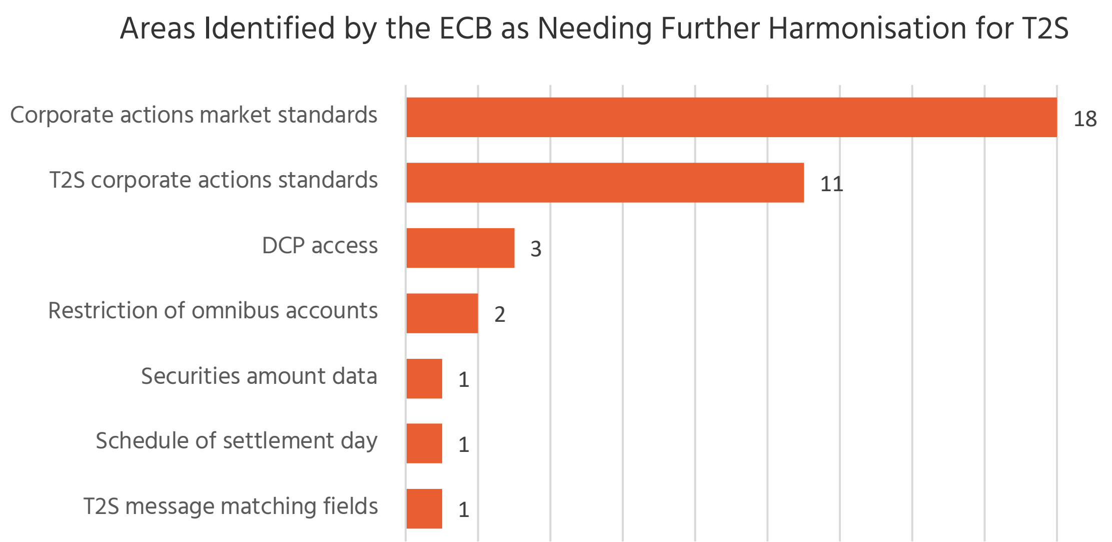
32 Global LEI Index, GLEIF, accessed March 2025.

33 15th T2S Harmonisation Progress Report, ECB, January 2025.



The Next Steps

There is much detail to come from the working groups in Europe and beyond when it comes to the implementation of T+1, but there are areas in which firms can already begin to take action. Not every firm will face the same challenges as each are starting from a different point in terms of post-trade operations and technology, but there are some common areas that each firm should assess:

- **Settlement failure root cause analysis:** Are there settlement failures that could be prevented by further automation or a change in market practice? Firms need to get to grips with the underlying causes of their failures and address any that are preventable due to data errors or manual processes.

- **A review of counterparties and clients:** Are there specific counterparties or clients that need to be treated differently because of their inefficient processes? Are there specific markets where these issues arise and could constructive dialogue around market practices and automation reduce these inefficiencies? Could a client education programme help to inform these firms of where changes need to happen ahead of T+1?

- **An examination of where manual effort is best deployed:** Offshore and nearshore labour has long dominated the post-trade space, but the rising cost of labour and the increasing complexity and volumes of the market are altering the cost/benefit balance. Are there areas where automation could reduce the manual workload and focus existing FTEs on more value-adding or complex, higher risk tasks?

- **Assessing communication gaps:** There could be many areas in which communication gaps between clients and counterparties could be adding extra time, effort and operational risk. The client onboarding process and ongoing client management is one area that communication of key data sets such as SSIs could be improved overall. It could also be improved in settlement failure resolution, claims management or in a host of other areas.

As well as these high-level recommendations, there are some more specific recommendations related to systems:

- **Trading systems review:** Where do you need to reconfigure these systems and more accurately capture post-trade data such as settlement preferences so that there is more efficiency at the start of the trade lifecycle?

- **Trade support and confirmations:** Where could connecting to a more centralised platform reduce operational risk and improve efficiency? Are there manual processes that could be automated?

- **Accounting and billing process changes:** What impact might the change have on the timing and management of these processes?

- **Trade funding and payment systems:** Can payments be delivered within the required timeframes?

- **ETFs and funds processes:** Where do these fund settlement cycles need to be reduced from existing cycles to better manage fund liquidity? Will you take a regional approach or should all funds be moved to the same cycle? Creation and redemption processes also need to be altered to take into account the shorter timeframe.

- **Securities lending and collateral management:** Buy-side firms need to review their lending activities to assess whether changes need to be made or the recall process needs to be altered. Are the current timeframes and processes robust enough to meet the changes due to T+1?

- **SSIs and data standards:** Are there specific problems related to SSI management that can be better addressed? Could data cleansing be improved or reduced in any way? Are there standards such as the UTI or LEI that could improve trade lifecycle management?

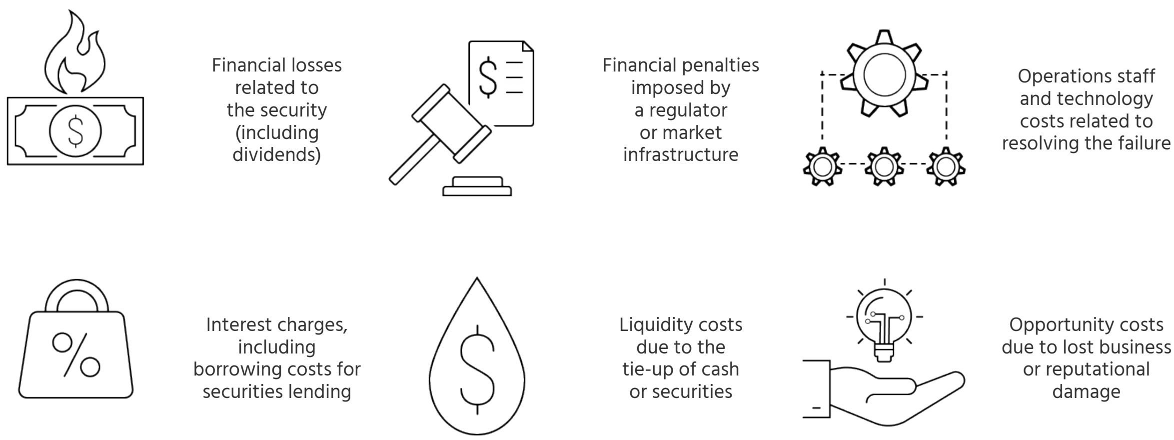
- **Asset servicing and corporate actions:** The changes in corporate actions dates need to be assessed and relevant processes altered. Where could greater automation reduce the burden on operational staff?

The Bigger Picture

It must be remembered that the move to T+1 in key markets across the globe isn't the end of the journey and further change is likely, with the SEC and Europe already committed to assessing T+0 in the future. Alongside the move to T+1, the potential move to 24/7 trading activities and the global focus on operational resilience all require market participants to focus on reducing their operational risks, improving their operating efficiency and ensuring that their full post-trade supply chain is secure and reliable. Automation and standards adoption are key steps, but firms must ensure they are selecting partners and providers that have invested in their own resilience with a view to supporting the future volume growth within the capital markets.

The most tangible costs of a failed settlement, as highlighted in the graphic below, relate to direct financial losses and penalties imposed by regulators and FMIs. However, there are a whole host of intangible costs that need to be taken into account and targeted such as FTE hours taken to resolve the failure, liquidity costs due to the tie-up of cash or securities and the opportunity costs of inefficiency. The move to T+1 isn't the sole reason why firms should be looking to modernise, consolidate, simplify and automate their post-trade environments, it's just one in a long list of reasons why operational efficiency is so important to future scalability and growth.

The Cost of a Failed Settlement



Key Takeaways

- **T+1 is only part of the journey** The global move to shorten the settlement cycle is part of a wider evaluation and transformation of the market infrastructure underlying the world's capital markets. Many markets have already committed to examining a future move to T+0 or instant settlement. The move toward 24/7 availability for trading and the push to improve operational resilience are also drivers for greater scalability and automation across the post-trade lifecycle.

- **The industry isn't starting from scratch** A lot of valuable lessons have been learned in previous moves to shorten the settlement cycle such as the benefits of early testing and strong governance. Most recently, the success of the North American markets in transitioning highlights several key factors that could be applied to every market planning to shorten its cycle to T+1. Automating as much as possible and focusing on same day confirmation so that settlement instructions can be sent to the CSD as soon as possible are two areas of immediate focus.

- **Resilience is an important factor in the transition** One of the key considerations for all markets in their move to T+1 will be around maintaining the systemic resilience of their domestic financial infrastructure and reducing the risks involved in the transition. This is why adequate preparation and investment in post-trade technology is so important.

- **Expect team sizes and budgets to be larger for European T+1** The costs of North American T+1 projects were dominated by FTE hours. The burden of client engagement and education sat heavily on the shoulders of custodians and asset servicers, with core teams at subcustodians and global custodians ranging from five people to more than 100 globally. The complexity of European T+1 and the need for testing with a greater number of FMIs means teams will likely be larger than for North American T+1.

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- The voice of the market
- Independent
- Built on decades of research
- Practical not posturing
- Diversity of approach
- Market research should be accessible

For more information visit fintechfirebrand.com or email contact@fintechfirebrand.com