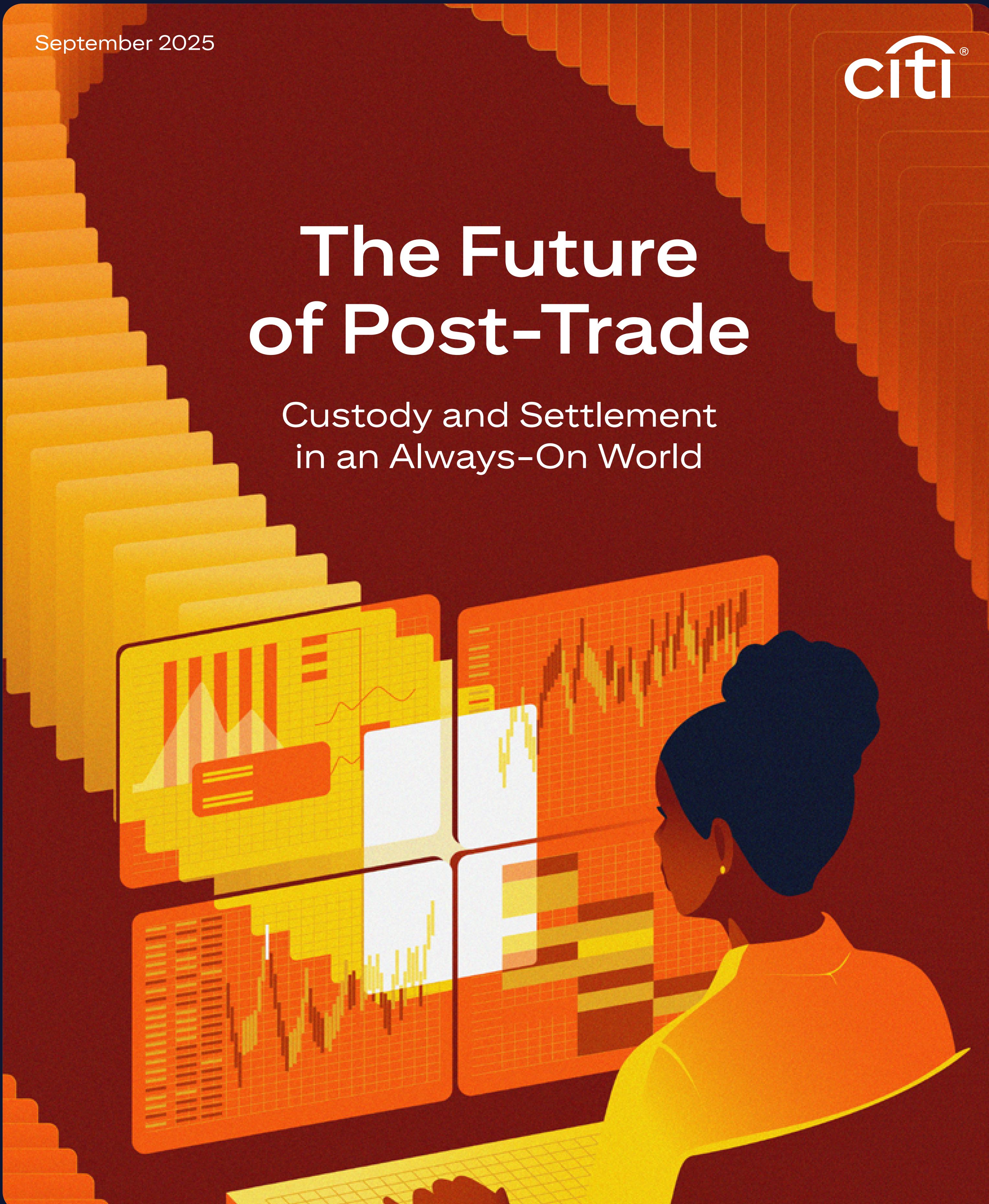
September 2025

The Future of Post-Trade

Custody and Settlement in an Always-On World



Citi Institute

Global Perspectives & Solutions

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The world of finance is moving at an unprecedented pace. The post-trade industry is no exception, with asset servicing moving towards real-time. As Citi's recently published 2025 Securities Services Evolution Whitepaper suggests, the industry is poised for broad transformation across settlement and transaction speed, automation and operational efficiency, the use of GenAI, and adoption of digital assets.

The question is not if custody and post-trade will transform, but how swiftly and by whom?

Payments and liquidity management have progressively adopted real-time and instant capabilities over the past decade, setting a precedent and an expectation for other financial services.

The securities services industry is now following suit, spurred by technology, and regulatory and market-driven changes. The move to T+1 settlement cycles in the U.S. (Q2 2024), the UK and Europe (2027)- coupled with rapid developments in digital assets including tokenization and artificial intelligence- is a critical turning point.

Clients are turning to their custodians for increasingly sophisticated and a wider breadth of services supported by global operating models and platforms. As investment and asset managers focus on their core and strategic functions, they are outsourcing more of their business to their service providers. Consequently, custodians are doing more than safekeeping assets. They are enablers to their clients' businesses as they take on functions such as valuation services, performance measure and risk, and more of the middle office.

The ability to seamlessly handle complex cross-border transactions and provide immediate insights into a consolidated global portfolio has become even more important on the back of evolving macro and geopolitical developments. Pandemics, supply chain shocks, and regional wars have all made large institutional investors value the availability of market intelligence and a "boots on the ground" approach by large global custodians.

To achieve this future state of always-on and always relevant, the custody and post-trade industry requires a strategic focus on a series of interconnected building blocks, which we explore in this report.

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The Future of Post-Trade

Custody and Settlement in an Always-On World

This Citi GPS report examines what a real-time and "always-on" post-trade world looks like, driven by accelerating technological advances, evolving customer expectations and geopolitics.

Shifting client needs, new business models, and technological advancements are collectively driving the post-trade and custody ecosystem to a 24 x7 future.

An increasing industry focus on client experience and efficiency is likely to drive generative AI use-cases in post-trade . Use cases could range from generating client insights and extending credit lines and predictive analysis to reducing settlement failures and associated costs.

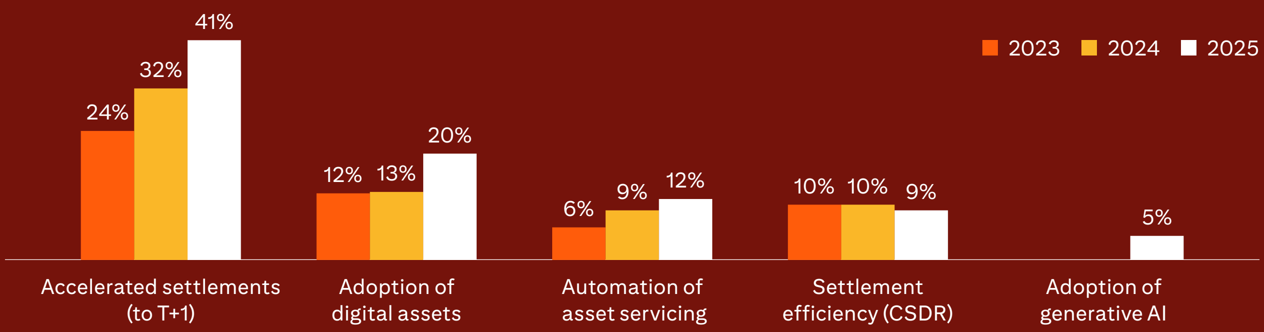
The transition to a 24x7 real-time post-trade operation presents challenges and opportunities, and it will be crucial to balance speed with asset safety, security and compliance.

Clients are consolidating custody providers with the aim of obtaining better pricing, enhanced operating models, minimized trade flow latency and stronger relationships. The new approach helps enable end-to-end custody solutions for clients.

With the tailwind of regulatory support and factors such as a heightened institutional appetite for digital assets and expected balance sheet benefits, we expect digital assets to be one of the biggest drivers of change in post-trade.

At the same time, geopolitics will continue to impact the global and cross-border nature of post-trade and custody operations. The volatility in the first half of this decade is likely to shape the way industry and clients pivot in the second half.

Post-trade industry focus concentrated around speed, technology and transformation (% of respondents)



Note: [1] Survey question – What do you consider to be the most significant changes in the post-trade space today – based on impact to your business? [2] Total 537 market participants across asset managers (23%), broker-dealers (22%), banks (20%), institutional investors (18%), custodians (14%) and others (3%). [3] Adoption of Generative AI is a new response category in the 2025 survey. [4] Others include (a) Increased shareholder participation and governance; (b) Resiliency (incl. DORA); (c) Replacement of FMI legacy technology platforms; (d) Mandatory fixed income clearing; (e) WHT refund automation; (f) Adoption of APIs and bespoke bilateral channels; (g) Adoption of new standards; (h) Real-time payments, 24x7; (i) Increasing retail participation in capital markets.
Source: Citi Securities Services Evolution 2025 Whitepaper

Key Takeaways

1	Post-trade industry changes are concentrated in major themes: accelerated settlements (T+1), adoption of digital assets, automation of asset servicing and settlement efficiency. There is much greater consensus around these topics today: 80% of our 2025 survey respondents versus only 53% in 2023.
2	Settlement cycles are compressing. 40% of global securities turnover is already on T+1 or shorter (e.g. U.S., China) with more markets transitioning towards shorter cycles in the next few years. Over 40% of survey respondents – the leading category by far – highlighted accelerated settlements as the single biggest driver of change in the post-trade space.
3	Adoption of digital assets is the second great change underway in the post-trade industry. 82% of our 2025 survey respondents note distributed ledger technology (DLT) and digital assets could change the market structure versus 72% in 2024. The likely benefits of digital assets: improved liquidity, collateral mobility and reduction in post-trade processing costs (cited by c 90% of the survey respondents in 2025 vs c 75% in 2024).
4	Generative AI adoption in post-trade lags wider enterprise adoption with only one-fourth of the respondents reporting live generative AI projects in the post-trade ecosystem. There is a material post-trade opportunity to convert information asymmetry into cross-asset, cross-market, and cross-jurisdiction insights for clients.
5	The next wave of post-trade transformation will be driven less by a single technology and more by new business models and market structures, especially digitally native platforms and fintech partnerships. The degree to which platformification will deliver success hinges on interoperability, greater legal and regulatory harmonization, and governance of these new rails.
6	Geopolitical uncertainty is a constant underlying factor in the internationalized nature of post-trade activities – but events of the post few years has increased the focus on the topic. Institutional clients need large global networks that have “boots on the ground”, with local market intelligence and legal structures to navigate the heightened uncertainty.

80%
Of the industry focus is on four core areas*

c.90%
DLT and digital assets to improve asset liquidity, collateral mobility and reduce post-trade **processing costs***

24%
Live generative AI projects in post-trade functions as opposed 53% enterprise wide*

* Percentage of respondents in the Citi Securities Services Evolution 2025 Whitepaper. Total 537 market participants across asset managers (23%), broker-dealers (22%), banks (20%), institutional investors (18%), custodians (14%) and others (3%).

Rebuilding the Pipes of Global Finance

The infrastructure rails for post-trade are being fundamentally rebuilt through converging technological drivers. 40% of global turnover is already on a T+1 settlement cycle and other key markets (e.g. EU, UK and Brazil) are transitioning in the next 2-3 years. This calls for a major system rebuild and integration. Digital assets are part of this shift towards an always-on financial market infrastructure. Adoption of AI is in its early stages – it will help reimagine the post-trade world's efficiency and experience over the coming few years.

24x7 and Real-Time – Building Blocks of the Future of Post-Trade

Delivery of 24x7 real time custody is not a monolithic endeavour; rather, it is a mosaic of interconnected building blocks, each advancing at its own pace towards a state of immediacy. The post-trade service offerings encompassing settlements, asset servicing, tax, corporate actions, cash, liquidity and FX are all undergoing individual transformations that collectively redefine the custodial function.

> As shortened settlement cycles and tokenization continue to reshape the global post-trade market, the industry needs to make investments that enable clients to consume custody capabilities as a service while maintaining full control, visibility, and flexibility.
>
> *Chris Cox, Head of Investor Services, Citi*

While the settlement of securities is rapidly moving towards T+1, the emergence of digital assets holds the promise of truly instant settlement, enabling continuous, real-time processing of securities and cash transactions. This eliminates traditional delays, risk, friction and provides clients with immediate access to their assets and liquidity, setting a new industry standard. This drive to shorten settlement cycles is universally supported by investors, asset managers, and broker-dealers, all eager to reduce operational complexity and increase capital mobilization.

> In today's fast-moving markets, speed and precision are essential for clients. Delivering insightful data in real time is crucial so that clients can make informed portfolio decisions related to corporate events and capital utilization in the shortest possible time.
>
> *Amit Agarwal, Global Head of Custody, Investor Services, Citi*

However, historically, longer settlement cycles provided opportunities for certain market participants, including some custodians, to generate revenue through arbitrage and opacity. As settlement cycles compress and transparency increases, these margins are shrinking. This pressure on profitability underscores the increasing importance of scale, explaining the observed consolidation among asset managers and the continuous growth of the largest global custodians. Those without sufficient scale or modular technology may find it challenging to compete in this new, more efficient environment.

Aligned with the broader real-time payments movement, cash and foreign exchange (FX) services are increasingly supporting immediate transactions, providing clients with the necessary liquidity and hedging capabilities in an always-on environment. The shortening of settlement cycles directly impacts the FX cycle, presenting unique challenges, especially when overlaying holidays.

Nadine Chakar
Global Head of Digital Assets, Depository Trust & Clearing Corporation (DTCC)

Transformation Journey and On-Chain Settlement Revolution

The securities market is at a pivotal inflection point, as blockchain technology enables a shift from batch-based, end-of-day settlement – where a small fraction of daily volumes are finalized – to digitally native, near-continuous processes.

Emerging models such as on-chain hourly netting offer the potential for 24x7 liquidity visibility, accelerated settlement, and enhanced transparency, while preserving essential risk safeguards.

Real-time asset movement, however, introduces new risk dynamics that demand real-time analysis, making AI increasingly critical for monitoring, regulatory reporting, and informed decision-making. The future of settlement lies in collaborative innovation that modernizes trillion-dollar workflows without compromising financial stability or regulatory compliance.

A critical aspect of supporting stakeholders in the post-trade ecosystem environment involves custodians' direct connectivity with asset managers' Order Management Systems (OMS platforms). Asset managers meticulously track their portfolios, and any lag between FX execution and security trade execution can lead to significant slippage or "tracking error." This is particularly impactful in markets with currency restrictions. Custodians can add significant value by integrating directly with asset managers' OMS platforms, enabling parallel FX execution at the point of trade execution.

While significant progress has been made in speeding up payments and settlements, corporate actions remain a critical juncture, often acting as the "Achilles heel" of this real-time ambition. However, we are slowly seeing a shift from sequential, message-based communications to simultaneous event driven processing because of technology enablers. One significant enabler is the adoption of Application Programming Interfaces (APIs) allowing for the real-time packaging and delivery of instructions across the custodian's global and domestic network.

Another critical development is data sharing platforms which allow clients to directly access and ingest the entirety of securities data, including corporate event information, in a more unified manner, circumventing the need for potentially inconsistent message-based data elements. As the building blocks get integrated by way of technology and partnerships, real-time corporate actions too are likely to be fully integrated into the 24x7 custody model.

The tax function within the post-trade world is on its own journey towards real-time capabilities. The availability of real-time data on tax implications is becoming critical for compliance, risk management, and client reporting, particularly with evolving global tax transparency initiatives. Custodians, traditionally vital for client tax support, face increasing demands for such real-time data due to enhanced fraud prevention and granular reporting requirements like Base Erosion and Profit Shifting (BEPS 2.0).

Legislative shifts, such as Europe's directive on faster and safer relief of excess withholding taxes, are driving this transformation by mandating digital, accelerated tax relief processes with higher level of transparency to the tax regulators through monthly reporting that extends beyond traditional tax data on corporate actions to include transaction settlement and financial arrangements.[1] This necessitates unprecedented data velocity and potential collaboration with fintechs to standardize data across custodians, ultimately paving the way for a more integrated and efficient post-trade ecosystem.

[1] European Union, Council Directive (EU) 2025/50 on faster and safer relief of excess withholding taxes, 10 December 2024.

Digital Assets – Reimagining Business Models

One of the biggest changes in the post-trade world is the institutional adoption of digital assets. In many parts of the world, digital assets are moving from institutional innovation theatre to a real business. This unfolding transformation is borne out in our proprietary survey data and our client conversations. As noted at the start of this report, when we asked post-trade market participants what they consider to the most significant change in the industry today based on impact to their business, they replied: digital assets.

Digital assets scored as the category having the highest positive delta year-on-year in answer to our survey question on business impact and the second most important category in absolute terms. Digital assets are both part of the overall shift to real time, 'always on' financial market infrastructure and they also represent a fundamental change in technology. Digital assets aren't just a new option on the product menu for institutions. They also have the potential to fundamentally reimagine many aspects of intermediation and the post-trade world.

Investor funds are already moving, and the mainstream post-trade world is now playing catch up. Regulatory change, especially in the U.S., is helping support this change. The large-cap crypto market now sits in the multi-trillion-dollar range, and institutional on-chain liquidity is projected to grow into the trillions by 2030[2], putting material pools of tradable value directly on blockchain rails. From tokenized treasuries to on-chain funds and digitally native issuance platforms, large investors plan to increase digital asset allocation as high as 5% in 2025 and beyond.[3]

Tokenization, or the process of converting ownership rights from diary entries in centralized ledgers to digital tokens that live on decentralized blockchains, is a core part of digital assets. To enable the growth of tokenization of securities we need tokenization of money.

[2] Citi Institute, Citi GPS: Digital Dollars: Banks and Public Sector Drive Blockchain Adoption, 23 April 2025.

[3] EY Parthenon & Coinbase, Increasing Allocations in a Maturing Market – 2025 Institutional Investor Digital Assets Survey, 18 March 2025

Anoosh Arevshatian
Chief Product Officer,
Zodia Custody

The Evolving Landscape of Digital Asset Custody

The digital asset industry is undergoing a rapid transformation, with traditional financial institutions and crypto-native providers converging to meet the growing demand for sophisticated custody solutions.

In the digital asset space, the primary drivers are the growing participation and institutionalization of the ecosystem. Over the past two years, the crypto capital markets have expanded significantly, with pension funds, asset managers, and corporations allocating capital to a wider range of digital assets.

This expansion has been facilitated by increased regulatory clarity. However, the industry still faces challenges, notably the lack of common standards for what constitutes a “good” custody. Currently, firms are relying on individual vendor assessment processes, leading to fragmentation.

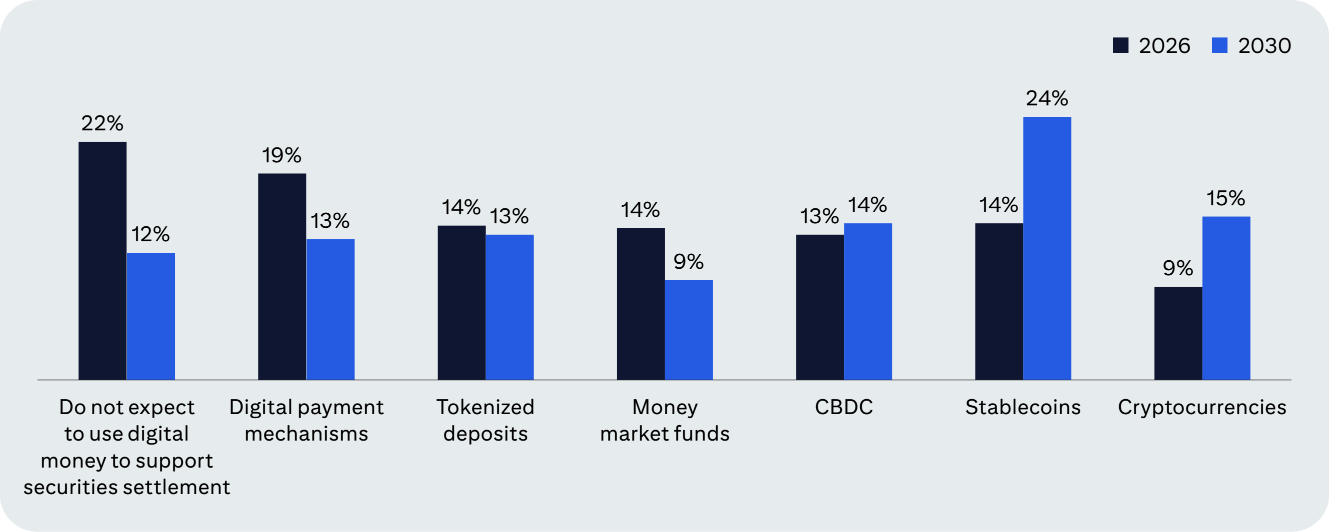
Addressing this through industry-wide standardization could be a game-changer, enabling greater interoperability between traditional and blockchain-based financial systems.

In the traditional finance space, the key priorities are improving collateral mobility and choice, as well as achieving frictionless, real-time settlement across global markets. Custodians are exploring ways to seamlessly integrate digital assets into their offerings, rather than treating them as a separate, siloed activity.

The ultimate goal is the unification of these two paradigms – the traditional and the digital – from operational, technical, and legal perspectives. This would allow end-users to view digital assets as just another form of collateral, rather than a separate asset class. Achieving this level of integration at scale is a long-term endeavour, estimated to take 8-10 years, but the industry is already making significant strides.

Citi Securities Services Evolution 2025 Whitepaper indicates market participants expect stablecoins to be the leading form of tokenized money, with almost a quarter expecting to use it by 2030. However, it is noticeable that there is a wide spread of opinion on the question of the nature of the payment leg for settling securities transactions (figure 1).

Figure 1. Stablecoin usage in securities trading and settlement expected to grow the most by 2030 (% of respondents)

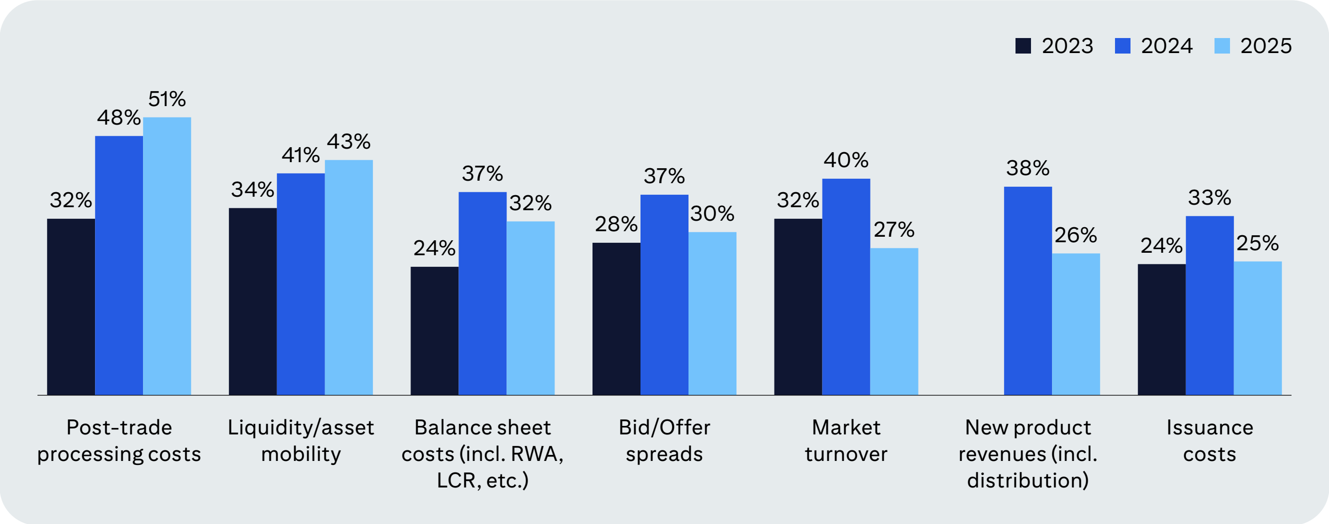


Note: [1] Survey question – Which of the following cash mechanisms do you expect to use for your exchange-traded activities by 2026 and in five years? [2] Stablecoins could be bank or non-bank issued. [3] Total 537 market participants across asset managers (23%), broker-dealers (22%), banks (20%), institutional investors (18%), custodians (14%) and others (3%).
Source: Citi Securities Services Evolution 2025 Whitepaper

> "As there are more on-chain places to post collateral, the value of 24x7/365 collateral mobility will become readily apparent... The posting of this collateral 24x7/365 requires certain key standards and technologies – both data going on-chain and interoperability across chains to move the collateral from one chain to another."
>
> *Sergey Nazarov, Co-founder, Chainlink*

Tokenization allows 24x7 mobilization of securities. Integration with round-the-clock cash systems will enable always-on capital markets and improve asset liquidity and collateral mobility (figure 2).

Figure 2. Distributed ledger technology (DLT) and digital assets could improve collateral mobility and help reduce operating costs (% of respondents)



Note: [1] Survey question – Please rate the extent to which you think a DLT-based market structure could impact the following variables in the next three years? [2] Total 537 market participants across asset managers (23%), broker-dealers (22%), banks (20%), institutional investors (18%), custodians (14%) and others (3%).
Source: Citi Securities Services Evolution 2025 Whitepaper

> "Collateral management is the killer app for stablecoins, enabling real-time, programmable settlement across asset classes. By unlocking capital efficiencies and freeing up balance sheet, it can drive greater liquidity in markets, and a potentially more resilient financial system."
>
> *Caroline Pham, Acting Chairman, CFTC*[4]

[4] Citi Institute Future of Finance Forum 2025, What's Next for Digital Assets, 26 June 2025.

Michael Roberts
Chief Commercial Officer, Copper

Efficiency and Risks in Digital Asset Custody

Tokenized digital assets could settle in minutes as opposed to days required for traditional settlement and could enable same day borrowing which is difficult to achieve in traditional assets due to collateral settlement delays. Stablecoins and similar tokenized assets including money market funds can significantly improve treasury operations and collateral mobility and efficiency.

However, the security of private keys is a critical concern in digital assets custody. The technology underneath brings unique risks such as poison addresses (front and back end of a wallet address is correct but the middle is changed by one or two codes) and dust attacks (sending tiny amounts of cryptocurrency known as "dust" to uncover the identity of the wallet's owner) that require specialized knowledge to mitigate.

Large bank custodians are well positioned to secure private keys, sign off on transactions and move assets due to their robust security infrastructure. Although digitally native custodians have technological know-how, institutional clients would prefer private keys being stored inside a large global custodian.

The ideal combination would be traditional banks' security infrastructure paired with the specialized expertise of digital assets firms.

Between 2016 and 2023, several notable crypto custodians faced significant operational and security failures. In 2016, BitGo's wallet technology was implicated in the Bitfinex hack, where Bitcoin worth $66 million were stolen after failure to deploy recommended controls.[5] In 2021, hackers exploited flaws in Coinbase's two factor authentication to compromise over 6,000 accounts.[6] In 2023, Prime Trust collapsed after losing access to private keys of cryptocurrency wallets, misusing client funds to cover the shortfall and ending up owing $82 million to clients while only holding $68 million of digital assets in custody.[7]

[5] Fireblocks, BitGo Wallet Zero Proof Vulnerability: Technical Report, 17 March 2023.
[6] Reuters, Coinbase Says Hackers Stole Cryptocurrency From At Least 6,000 Customers, 02 October 2021.
[7] Decrypt, Crypto Custodian Prime Trust Files for Bankruptcy, 15 August 2023.

Digital asset ecosystem also encompasses operating models where assets are held on exchanges directly or via custody services offered by affiliated entities of exchanges to facilitate faster trading. The flip side of this model was that during the collapse of the FTX exchange in late 2022, hedge funds were left with billions stuck on exchange.[8] As in the traditional world, segregation of roles between exchange and custodian is critical to safeguarding client assets. However, it is important to ensure that the infrastructure supporting off-exchange custody and settlement are fit-for-purpose for the demands of DLT and digital assets.

Traditional custodians perform the critical function of safeguarding assets/value and ensuring asset ownership, which makes them well positioned to lead the tokenization efforts. In traditional markets, custodians provide the trusted infrastructure for asset safekeeping, corporate actions, and settlement finality; roles that become even more essential when assets exist as programmable tokens on distributed ledgers.

Amor Sexton
Chief Operating Officer, Blockdaemon

Andrew Vranjes
Chief Revenue Officer, Blockdaemon

Katie DiMento
VP of Marketing, Blockdaemon

Financial Institutions Offering Digital Assets Custody – The Question is Not "If", But "How"

The 2026 digital assets custody market represents a strategic inflection point for traditional banking institutions where tier one banks are poised to enter the digital assets custody market with a strategic and measured approach. The competitive landscape will be characterized by a nuanced client segmentation strategy focusing primarily on large-cap crypto-assets.

Banks will target a substantial market segment seeking basic cryptocurrency exposure, trusted institutional partnership and lower-risk investment strategies.

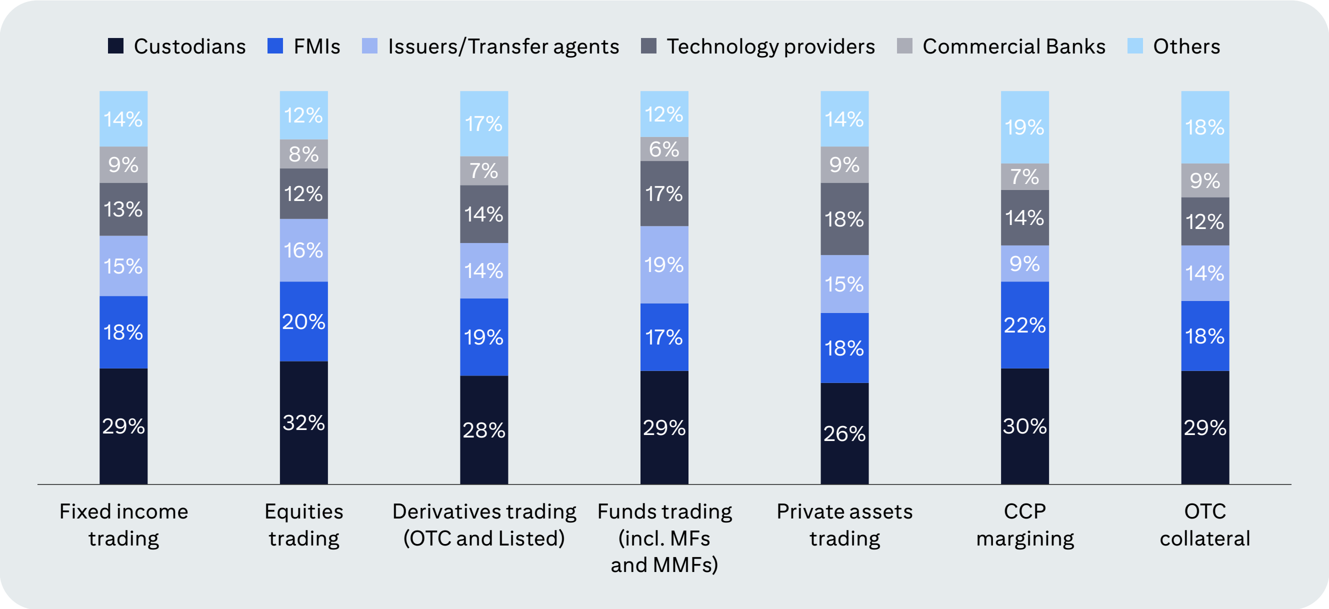
Key roadblocks remain around [1] Core systems integration: banks must seamlessly integrate digital asset offerings into existing technological infrastructures; [2] Internal control frameworks: ensuring compliance and risk management adaptations; [3] Product presentation: developing user-friendly interfaces that complement existing banking products; [4] Strategic prioritization: balancing internal digitization initiatives.

Risk-averse institutions will likely leverage traditional bank partnerships for standard crypto exposures. Digital asset treasuries will potentially diversify across multiple providers whereas some clients will maintain relationships with both traditional banks and crypto-native platforms.

[8] Financial Times, Hedge funds left with billions stranded on FTX, 22 November 2022.

Custodians are also embedded in the value chain involving issuers, investors, and market infrastructure, giving them the operational reach to standardize token formats, support interoperability across platforms, and scale services such as collateral mobility, atomic settlement, and regulatory reporting. This combination of regulatory standing, operational strength, and counterparty trust means custodians can move beyond being passive holders to becoming active enablers of the tokenized capital markets. About 30% of survey respondents think custodians are the preferred partners to tokenize securities (figure 3).

Figure 3. Custodians are the preferred managers of tokenization across securities (% of respondents)



Note: [1] Survey question – For the following activities, who do you expect to manage the tokenization of underlying securities on the network? [2] Total 537 market participants across asset managers (23%), broker-dealers (22%), banks (20%), institutional investors (18%), custodians (14%) and others (3%).
Source: Citi Securities Services Evolution 2025 Whitepaper

> Custody in digital assets is evolving from exchange-held models toward segregated custodians due to regulatory pressure and market risk. Institutions now expect unified experiences acrosstraditional and digital assets rather than siloed systems.
>
> *Dominic Longman, Global Head of Markets, Zodia Custody*

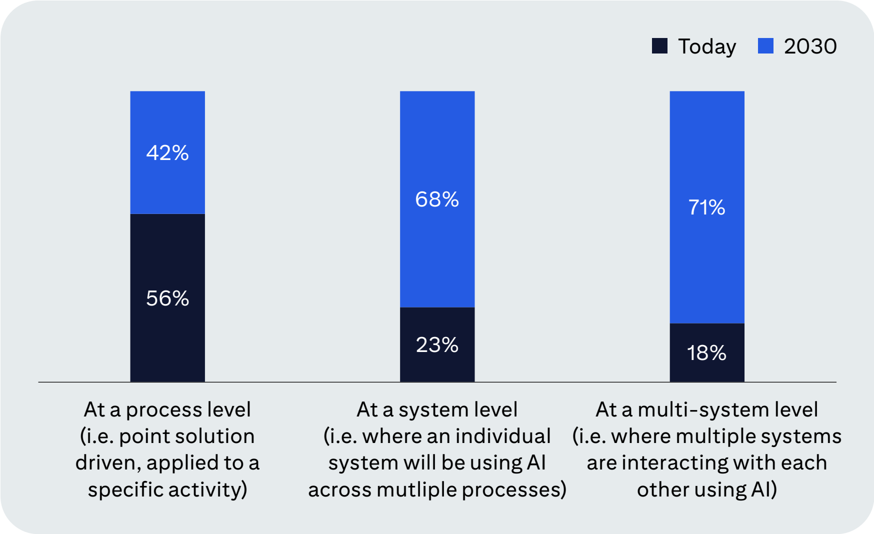
Tokenization does not remove the need for trust; it shifts it from digital safekeeping to private key management, smart contract oversight, and the integration of on-chain records with off-chain legal frameworks. The real disruption will be architectural, not merely technological. Custody will shift from "holding stuff in a vault" to being the market's interface for ensuring digital asset ownership and private key security and governance, services that cannot be commoditized by a simple technology plug and play.

Digital assets as new form of assets are more than just new revenue pools. It is a step towards rethinking and redesigning traditional post-trade, including custody architectures and operational ecosystems.

AI and Data – Rethinking Efficiency and Experience

Generative AI adoption in post-trade is in its infancy. Financial institutions have a greater penetration of AI projects across all functions than in the post-trade segment. Many post-trade players still approach AI through the lens of operational cost reduction (figure 4). However, the real value-add likely resides in integrating AI tools for new product and service innovation. Similar to the increased focus on digital assets in the post-trade world in 2025 compared to 2024, we expect a "tidal wave" of generative AI adoption in the coming years.

Figure 4. Scope of generative AI use-cases to evolve from point solutions to complex in the next five years (% of respondents)

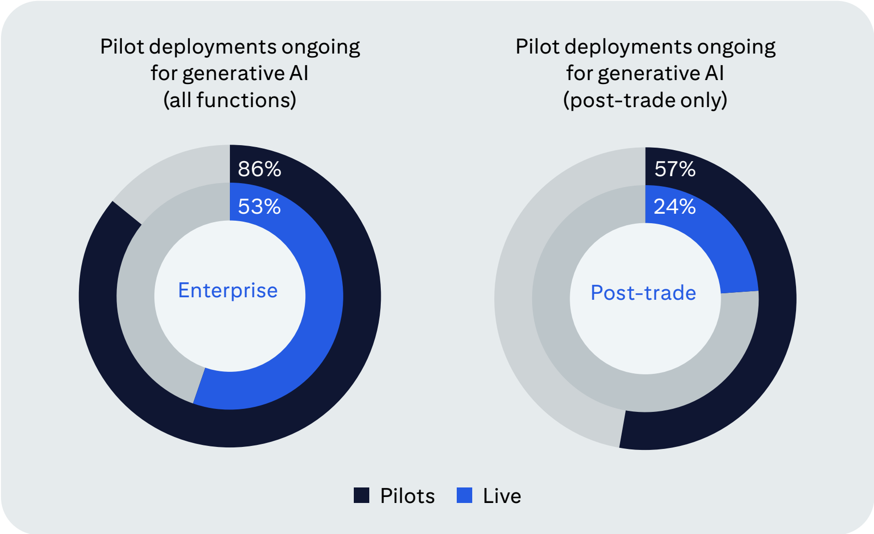


Note: [1] Survey question – How would you describe the way that you are using artificial intelligence solutions in your business today and compared with your ambition for five years from now? [2] Total 537 market participants across asset managers (23%), broker-dealers (22%), banks (20%), institutional investors (18%), custodians (14%) and others (3%).
Source: Citi Securities Services Evolution 2025 Whitepaper

> AI will help custody providers better understand client behaviour and preferences enabling them to provide tailored offerings to drive better outcomes.
>
> *John Olean, SVP, Clearing, Pricing, Settlement & Asset Servicing Operations, Raymond James*

According to the Citi Securities Services Evolution 2025 Whitepaper, generative AI adoption in post-trade lags wider enterprise adoption with only one-fourth of the respondents reporting live projects in post-trade ecosystem which is half the rate of live projects in enterprise-wide functions. The rate of pilots for GenAI is also lagging broader enterprise adoption by about one-third, albeit the relative gap is smaller compared to live projects. The lag is attributed to system fragmentation, regulation and policy, and lack of data connectivity and access across multiple systems, according to the respondents of the same survey (figure 5).

Figure 5. Generative AI adoption in post-trade business is lower than other functions (% of respondents)



Note: [1] Survey question – In which areas are you running AI projects today – and at what level? [2] Total 537 market participants across asset managers (23%), broker-dealers (22%), banks (20%), institutional investors (18%), custodians (14%) and others (3%).
Source: Citi Securities Services Evolution 2025 Whitepaper

The strategic imperative is to treat AI as a product innovation engine. In the future of post-trade and custody, AI and data could act as catalysts for redefining the product and service portfolio. The strategic risk of delaying AI integration into post-trade is high. As cloud-native fintech custodians emerge, they are building AI-ready architectures from the ground up. Traditional players risk being trapped in the automation debt, where legacy workflows limit the ability to deploy advanced AI without costly rewrites.

Technology enables unbundling of existing products and service offerings to meet changing client behaviours and expectations. Most industries go through cycles of bundling and unbundling and financial services especially post-trade activities have been in bundling phase of the cycle for an extended period driven by regulations. Deregulation combined with AI could accelerate unbundling of operations where atomic services being more susceptible to unbundling.

Historical precedent in financial services suggests that information asymmetry, not cost efficiency, creates durable competitive advantage. AI, coupled with custody's vast and under-leveraged datasets, offers a similar opportunity. Custodians are in a privileged position: they see cross-asset, cross-market, and cross-jurisdiction transaction flows at scale. AI can transform this raw visibility into predictive market intelligence, enable product innovation and provide differentiated services to clients.

> Real-time asset movement requires real-time risk analysis. AI becomes instrumental in facilitating instantaneous monitoring, fasten regulatory reporting and enable quicker decision making.
>
> *Nitin Gaur, Senior Industry Expert and Ex-State Street Global Head of Digital Assets*

The application of AI in the post-trade and custody business needs to be critically distinguished across three overlapping but fundamentally different capabilities: [1] digitization; [2] automation; and [3] AI and generative AI. Digitization is the conversion of physical artefacts into digital formats (e.g., paper instructions into PDFs or structured data). While essential, digitization is a solved problem; its returns are diminishing as most major custodians have completed core digitisation projects over the decades.

Automation pertaining to the application of rules-based systems to streamline existing processes is being implemented (e.g., auto-populating SWIFT messages from spreadsheets). While automation reduces operational costs, its impact is incremental and often capped by the limitations of the original process design. AI will further streamline post-trade operations and workflows. However, we believe that streamlining is a transitional phase and AI's true value is providing better client experience through custody operations.

The real inflection point lies in AI's ability to combine smart digitisation with smart automation and then extend further into generating new insights, products, and services. This is not simply about doing the same tasks faster, albeit that is important – it is about doing things differently: uncovering patterns, enabling predictive capabilities, and designing entirely new service lines that can alter the competitive landscape. More recently, Generative AI has turbocharged this landscape by enabling the analysis of unstructured data (text, images, audio, video) to gain insights that were just not possible until very recently. Below we list likely future AI use cases in post-trade and custody:

- **Predictive analysis and risk management:** Instead of post-event reconciliation, AI can forecast settlement fails using a combination of historical trade data, counterparty behaviour patterns, and market microstructure signals. Research estimates settlement failure has costed the industry almost $1 trillion over the last decade.[9] An AI-based predictive model that prevents even 20-25% of fails could materially boost trade efficiency and resultant reduction in costs and penalties.

- **Credit extension:** Clients often fall short of credit lines to execute trades. AI tools could help optimize utilisation of credit and then enable efficient allocation of credit lines with clients. This will enable clients to trade more efficiently and seamless with their banking and custody partners.

- **Client DNA:** Generative AI can build a customer profile for institutional clients with custom dashboards that not only present data but also explain client behaviour, anticipate client demands, and recommend services to be offered. This reduces the dependency on relationship managers for routine guidance, freeing human resources for higher-value advisory work.

- **Market intelligence:** Custody operates in an evolving and shifting regulatory environment. AI models trained on multi-jurisdictional regulatory text could dynamically map rule changes to internal operational processes, providing early-warning alerts and automating compliance documentation enabling custodians to move from reactive compliance to proactive regulatory strategy.

- **Regulatory reporting transformation:** Traditional custody reporting is static and backward looking. AI driven reporting can be dynamic, real-time, and adaptive; providing regulators with compliance dashboards that update as new transactions occur, and clients with real-time portfolio risk and exposure maps.

- **Service reinvention:** AI-powered, voice-enabled virtual assistants can go far beyond scripted FAQs. Using retrieval-augmented generation (RAG), they can dynamically pull transaction histories, reconcile positions, and explain corporate action timelines in real time, in natural language. This shifts client interactions from passive "query-and-wait" to interactive "co-analysis."

Not only will future AI use cases in post-trade custody change 'what' is being done, but also 'how' post-trade specialists and custodians will undertake their daily tasks. The use of natural language to interact with the underlying data will unlock the possibilities for operations and business leads to analyze and query data at pace and an unprecedented level of detail.

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9 Post-trade 360, Settlement failures a US$914.7 billion cost to the industry, 01 March 2024.

Navigating a Changing Industry and International Trends

The post-trade and custody ecosystem is embracing the evolving client expectations and industry trends including the fluid geopolitical environment. Clients are consolidating custody providers aiming for better commercial outcomes, enhanced operating models, minimizing trade flow latency and establishing stronger partnerships. Technological advancements and emerging market infrastructure is forging a “partner and win” strategy with technology-first providers where regulated post-trade participants continue to enforce trust and security, ensuring robust compliance measures and regulatory compliance.

Client Transformation – Meeting Evolving Expectations

As the industry transitions towards 24x7 finance, banks, broker-dealers, as well as asset managers and asset owners, are demanding more sophisticated, integrated, and efficient custody solutions. This evolution, significantly influenced by the emerging landscape of digital assets, necessitates a strategic re-evaluation by custodians of their service models, technological investments, and partnership approaches, fostering a narrative of continuous adaptation and collaboration to meet demands for everything from real-time insights and local market access to specialized digital asset capabilities.

A paramount and emerging expectation for banks and brokers dealers is for their post-trade service provider to offer direct and seamless access to local market infrastructure, enabling efficient liquidity management and foreign exchange (FX) capabilities. This proximity reduces latency and facilitates instant payments and settlements, crucial for a 24x7 operating model.

Ensuring the safety of assets and adhering to all local market regulatory requirements remains a non-negotiable priority, and custodians must continue to demonstrate robust compliance frameworks and deep local market expertise to help their clients navigate fragmented regulatory landscapes.

There is an also an expectation on custodians to take on a proactive "partner role" in helping clients adapt to significant market changes (such as the shift to T+1 settlement cycles), requiring collaborative efforts to implement necessary technological and procedural adjustments, which we elaborate in the next section.

The complexity and scale required for global 24x7 custody drives client preference for partnering with large, established custodians who possess extensive global networks and the financial capacity to invest in cutting-edge technology. Ultimately, clients require custodians who are continuously investing in their technology stack, who understand local market nuances (from regulatory to market driven change), who are integrating directly with central securities depositories (CSDs), and who are ultimately reducing latency in the trade lifecycle.

Asset management clients are undergoing consolidation and implementing multi-custody models. Their expectations are shaped by the need for seamless, round-the-clock operations. As asset managers increasingly trade across various time zones, custodians need to enhance their global branch networks and operational efficiency to ensure that post-trade activities, including clearing, settlement, and asset servicing, occur efficiently and on time, which requires close collaboration among all market participants. Given the global nature of asset management, robust and efficient foreign exchange capabilities are crucial for managing currency exposures and facilitating cross-border transactions seamlessly, to limit portfolio drag.

An emerging expectation across all client segments is the need for instant insights about portfolios driven by the desire for real-time visibility into asset holdings and performance, enabled by clean data that is interoperable across all players in the ecosystem (including accounting solutions, data platforms, transfer agents, etc.) and puts pressure on service providers to meet the expectations.

While significant strides have been made, the industry still has a considerable journey ahead in achieving true real-time, clean data integration. The transformative potential of AI is now recognized as a game-changer, capable of significantly accelerating this progress and bridging the gap towards comprehensive instant insights.

Furthermore, clients across all segments, are embracing the market's trajectory towards digital assets and tokenization, and they expect their custodians to be at the forefront of these developments, offering capabilities and expertise in new asset classes to support future investment strategies. The unique characteristics of digital assets and the nascent stage of the market infrastructure often amplify the demands placed on traditional custodians and their technology infrastructure.

> Clients are increasingly seeking wider product options, data-driven insights and digital-first experience from their post-trade and custody partners.
>
> *John Olean, SVP, Clearing, Pricing, Settlement & Asset Servicing Operations, Raymond James*

The evolution of client expectations for both traditional and digital asset custody underscores a fundamental shift from a service-centric model to a partnership-centric one, which we discuss in the next section. While traditional model demands for efficiency, integrated insights, and regulatory compliance persist and intensify, the digital asset landscape introduces a new layer of complexity, particularly around cryptographic security, on-chain data transparency, market access for digitally native asset functions (e.g. staking), and specialized regulatory navigation.

Custodians, whether traditional or digital, must demonstrate continuous investment in cutting-edge technology, unparalleled expertise, and a collaborative spirit to meet these diverse and rapidly evolving client needs.

Platforms and Partnerships – Delivering Post-trade and Custody 2.0

Industry-wide cost pressures, shorter settlement times and greater transparency challenge profitability. Institutional clients expect integrated services across settlement, safekeeping, FX, asset servicing and payments. Technology-based risk solutions and shift from transactional relationships to strategic partnerships could help remain competitive. EY reports growing institutional enthusiasm for digital assets as operational tooling matures, underscoring that partnerships and not unilateral disruption will define how post-trade modernizes.[10]

> “Traditional banks provide trust, regulation, and credibility needed by institutional investors, while crypto firms offer technical know-how. In the future we expect consolidation and partnerships growing, combining strengths from both sides.”
>
> *Michael Roberts, Chief Commercial Officer, Copper*

The next wave of post-trade transformation will be driven less by a single technology and more by new business structures especially digitally native platforms and fintech custodian partnerships. Why now? Custodians need to bridge access to different assets that may be issued on evolving infrastructures e.g. blockchain. Investors want a single point of control and reporting across multiple asset classes and networks, rather than have scores of profiles and data formats.

[10] EY Parthenon & Coinbase, Increasing Allocations in a Maturing Market – 2025 Institutional Investor Digital Assets Survey, 18 March 2025.

Fintechs and platforms will not merely cut costs but could likely rewire commercial relationships in post-trade moving custodians toward orchestration, elevating governance, trust and scale as competitive differentiators. Custody orchestration involves moving from being a single, vertically integrated provider of safekeeping and post-trade processes to acting as a platform that connects, manages and harmonizes multiple service providers, technologies (blockchain/DLT and AI) and even asset types.

> Traditional large custodians offer scale, capital and operational infrastructure, while digital natives bring emerging technology (blockchain) expertise. We see collaboration growing, with symbiotic relationships where success is mutual rather than competitive.
>
> *Anoosh Arevshatian, Chief Product Officer, Zodia Custody*

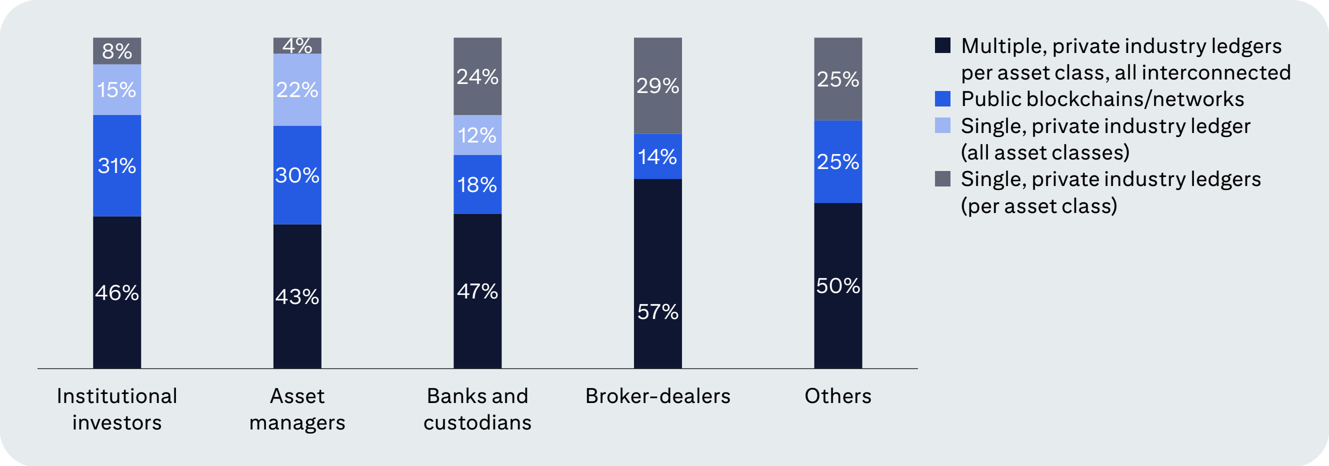
Depository Trust & Clearing Corporation's (DTCC) modernization work (including T+1) demonstrates the leverage incumbents retain. DTCC reports that settlement-cycle compression delivered an average $3 billion reduction in the clearing fund showing incumbents can mobilize industry-wide change when they act as platforms and coordinators.[11]

Newer market structure enables innovation and partnerships that could augment post-trade plumbing where network effects and legal recourse exist, but it doesn't automatically eliminate traditional custody. Greater automation and fewer intermediaries could increase systemic tail-risk unless governance, auditability and inter-platform interoperability are proactively engineered.[12]

The degree to which platformification will deliver success hinges on interoperability, harmonized legal and regulatory landscape, and who governs these new rails. According to the Citi Securities Services Evolution 2025 Whitepaper, the majority of the respondents expect multi-ledger connectivity to be essential by 2030 (figure 6).

[11] DTCC, Annual Report 2024 (Becoming A More Strategic Partner – Page 6).
[12] WEF, Asset Tokenization in Finance Markets: The Next Generation of Value Exchange, May 2025.

Figure 6. The future of post-trade and custody networks is interconnected platforms (% of respondents)



Note: [1] Survey question – How do you expect to settle, safekeep and service these institutional activities in five years? [2] Total 537 market participants across asset managers (23%), broker-dealers (22%), banks (20%), institutional investors (18%), custodians (14%) and others (3%).
Source: Citi Securities Services Evolution 2025 Whitepaper

Wholesale level disintermediation introduces systemic concentration. If a handful of cloud-native platforms and DLT networks become the rails for tokenized settlement, operational incidents or governance capture could cascade faster than under today's fragmented model. The operational risk framework must ensure that if key infrastructure is compromised, the institutions shall rapidly regenerate wallets, restore systems and maintain fiduciary responsibilities, with a recovery time that is measured in minutes, not days.

Geopolitics and Asset Safety – Managing the New Risk Playbook

For asset owners, the challenge of having a singular custodian model or multiple partnerships arrangements is becoming even more complex. With settlement times compressing, geopolitical complexity on the rise and real time access to market and regulatory insights being essential, asset owners will increasingly look more holistically at who can offer them the best operating model to access different markets. This could be in the form of a global custody infrastructure provider or one with a hybrid sub custody infrastructure model.

The decision of where to custody assets or settle trades is no longer based solely on traditional factors such as efficiency, liquidity or commercials. Legal entity structure, business continuity planning, 'what if scenario analysis' and the operating model now factor heavily into infrastructure decisions. In addition, and on the back of geopolitical tensions, we are also seeing a wave of data localisation laws as countries push for greater sovereignty, including data sovereignty. This is forcing custodians and asset owners to reassess where data is housed and processed.

These developments are increasing the cost and complexity of operating across border and are reshaping the competitive landscape for custodians and defining asset owner demands. Margins for single market and regional custodians are being squeezed. By contrast, global custodians are better positioned to absorb these pressures thanks to their greater scale, cross border infrastructure and regulatory reach (often with many legal entities serving different countries). Geopolitical fragmentation isn't dislodging global players but rather reinforcing their strength derived from scale and local presence.

> Platform modernization is much more than a systems upgrade. It is a strategic imperative that reimagines infrastructure to provide a unified platform for securities processing and asset servicing. One interface for all geographies, and all asset classes.
>
> *Chris Cox, Head of Investor Services, Citi*

Geopolitical considerations are not a new theme, previously influencing post-trade operations during events like the COVID-19 pandemic and associated supply chain shocks. However, recent events, including the fallout from Russia's invasion of Ukraine, have intensified the impact of geopolitical risks on the post-trade world. As of June 2025, Euroclear held €194 billion[13] in sanctioned Russian assets on its balance sheet transforming the infrastructure underpinning custody and settlement into an instrument of political and economic pressure.

In response to the geopolitical environment, we are seeing various developments to advance post-trade autonomy playing out in different markets. China has been building a parallel post-trade infrastructure through the Shanghai Clearing House and China Central Depository and Clearing. In March 2025, an agreement was reached between Hong Kong Exchanges and Clearing and CMU OmniClear to establish an international CSD.[14] These developments support the renminbi's internationalization while insulating domestic capital markets from foreign intervention.

In the same vein, India is also advancing post-trade autonomy through its National Securities Depository Ltd and the Central Depository Services Ltd.[15] While often framed as digitalization efforts, these moves underscore the desire to reduce reliance on infrastructure controlled by the West and to retain domestic control over the lifecycle of an asset from issuance to trade to custody. Even within the West, there is an increasing focus in Europe to create a single European financial market infrastructure.

[13] Euroclear, Euroclear reports robust H1 2025 results, 18 July 2025.
[14] HKMA, CMU OmniClear and HKEX sign MOU on enhancing post-trade securities infrastructure of Hong Kong's capital markets, 04 March 2025.
[15] Citigroup, Navigating India's T+0, 24 April 2025.

> The world order is radically different today, and the foundational principles guiding financial infrastructure decisions are no longer based solely on efficiency. The evolving landscape of custody and post-trade operations, as detailed in this report, stands as a clear testament to this fact. These shifting geopolitical dynamics, marked by rising data localization and the emergence of parallel financial infrastructures, require a nuanced understanding of local developments and a proactive approach to ensure the resilience and adaptability of global capital markets.
>
> *Candi Wolff, Head of Global Government Affairs, Citi*

The potential new trajectory towards a 'one European market' could be realized through the European Commission's Savings and Investments Union (SIU) fostering greater integration. A harmonized approach to post-trade processes is essential for an efficient capital market in Europe.[16]

A key component of the SIU is the EU's move to T+1 settlement, part of the European Commission's broader plan to liberalize securities listing and issuance across the region. Building upon existing infrastructures like T2S and other regional platforms, the SIU is poised to fuel and accelerate the development of a unified European capital marketplace. This push is complemented by commercial efforts from FMIs such as Euronext, which are driving an Investor CSD model across Europe through consolidation efforts.

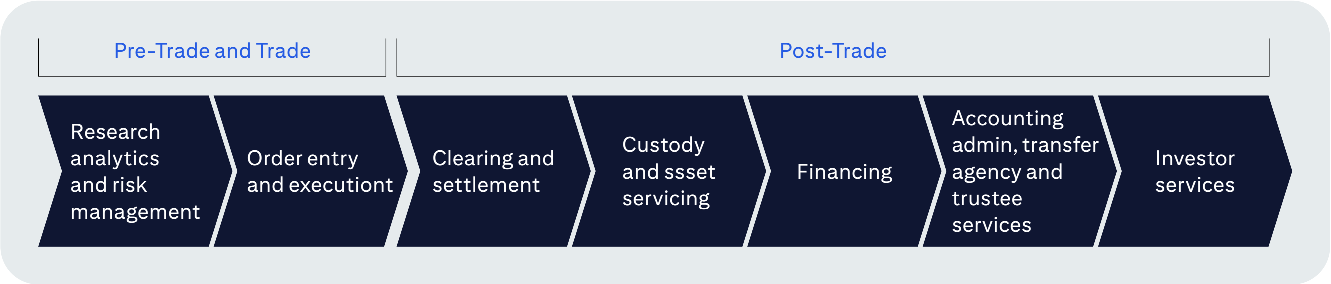
As markets mature, we also anticipate a change in capital flows. In APAC, we are likely going to see greater capital outflows from emerging and frontier economies into western or developed markets as and when FX and currency controls are lifted. This plays further to the strength of global custodians with established international networks and multi-market servicing capabilities.

[16] ECB, Advancing the capital markets union in Europe: a roadmap for harmonizing securities post-trading, 22 April 2025.

Appendix

Post-trade processes comprise the services that are performed subsequent to the execution of a trade, and include settlement, custody, asset servicing and other financial operations related to the trade and collateral. We break down the various functions in pre- and post-trade operations and briefly explain each step (figure 7).

Figure 7. Securities industry value chain



Source: Association for Financial Markets in Europe

Research, analytics and risk management: Involves analyzing market trends, financial instruments, and economic data to guide investment decisions. It also Includes credit risk, market risk, and operational risk assessment to ensure trades align with regulatory and investment guidelines.

Order entry and execution: The process of placing buy or sell orders for securities. This can be done via brokers, trading platforms, or electronic systems. Execution occurs when orders are matched and filled on exchanges or through over the counter (OTC) markets.

Clearing: Following the trade, clearing is the process of managing the actions between trade date and settlement date. Clearing can be done formally through a CCP clearing house, or informally directly between buyer and seller. CCP clearing is the process whereby the CCP becomes the buyer to any seller and the seller to any buyer, so the counterparty risk is transferred to the CCP from the actual parties to the trade.

Settlement: Settlement is the step in the post-trade process flow where the buyer receives the purchased securities, and the seller receives the corresponding cash for those securities. Banks and brokers, as investors' intermediaries, are involved in the process of settling trades of securities in book entry form, and in providing access to CSDs.

Custody and asset servicing: These services comprise the safekeeping of assets by intermediary banks, brokers and CSDs on behalf of investors, as well as carrying out asset servicing functions such as income collection, corporate action processing, tax reclamation and proxy voting services.

Financing: Provides liquidity for trading and investing activities, often through securities lending, margin financing, and repurchase agreements (repos). This step allows institutions to leverage positions or cover short-selling activities. The purpose of this function is to support efficient capital usage and enhances market liquidity.

Accounting, administration, transfer agency and trustee services: This function helps prepare financial statements, calculates NAV (Net Asset Value) for funds, and ensures compliance. Transfer Agency manages shareholder records, issues and redeems fund shares, and distributes dividends. Trustee services provide oversight to ensure assets are managed in accordance with regulatory and fiduciary requirements.

Investor Services: Includes client-facing services that provide transparency and reporting to investors. Includes performance reporting, portfolio analysis, statements, and customer support. Enhances trust and engagement by ensuring investors receive accurate and timely information.

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IMPORTANT DISCLOSURES

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