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Real Time

24x7 Finance in an Always-On World

Citi Institute

Global Perspectives & Solutions

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Foreword

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The financial services landscape is rapidly transforming, driven by the convergence of real-time technologies, evolving customer expectations, and a dynamic global economy. The future of finance is undeniably real-time, demanding 24x7 availability and frictionless instant transactions. This shift is accelerating globally, with Asia and emerging markets leading the charge, while the U.S. and Europe are rapidly catching up.

Real-time payments are already facilitating global commerce. Over 80 markets have real-time payment systems, with nearly 266 billion real-time transactions processed globally in 2023, a 42% increase year-over-year, and with estimates showing continued high growth (by 2028, the volume of real-time payment transactions is projected to reach 575 billion).[1] Even traditional cross-border payments are rapidly accelerating, with 90% of SWIFT transactions now credited to the beneficiary bank within an hour.[2] This established foundation underscores the growing momentum and maturity of the real-time payments ecosystem.

This transformation requires a fundamental shift in existing business models and infrastructure, moving away from legacy systems and vertical silos towards more integrated, horizontal, real-time solutions. A Citi Treasury and Trade Services 2024 survey of banks indicates that fintechs stand to gain approximately 10% market share in cross-border payments from banks in the next 2-5 years,[3] underscoring the need for traditional institutions to adapt and innovate.

The rise of fintechs, stablecoins, and other emerging technologies has the potential to democratize financial services, drive financial inclusion, and spur economic growth. Real-time payments are projected to boost global GDP by $286 billion in 2028[4], with increased penetration potentially adding 1-2 percentage points of growth to key emerging markets. Initiatives like Brazil's Pix, India's UPI (powering 83% of India's digital payments[5]), and Kenya's M-Pesa (increasing financial inclusion from 26% in 2006 to 85% in 2024[6]) demonstrate the transformative power of real-time payments in driving broader economic participation.

While the interconnected, always-on environment can amplify the risks of fraud (in 2024 alone, consumers globally lost an estimated $1 trillion to scams[7] across all payment methods), demanding robust security measures, it also presents unparalleled opportunities. By embracing innovation, prioritizing cybersecurity, and fostering collaboration across the financial ecosystem, businesses and financial institutions can start to unlock the full potential of real-time payments and build a more inclusive, efficient, and dynamic financial future.

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[1] ACI Worldwide, 2024 Prime Time for Real-Time Global Payments Report.
[2] SWIFT, Swift Cross-Border Payment Processing Speed Stretches Further Ahead of G20 Target, 17 October 2024.
[3] Citi GPS, Cross-Border Payments 24x7 – Faster, Simpler, Smarter, 2024.
[4] Centre for Economic and Business Research (CEBR) for ACI Worldwide, Real-Time Payments Economic Impact and Financial Inclusion, October 2024.
[5] Reserve Bank of India, Payment System Report, December 2024.
[6] Central Bank of Kenya, 2024 FinAccess Household Survey.
[7] Global Anti-Scam Alliance and Feedzai, Global State of Scams Report 2024.

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Real Time

24x7 Finance in an Always-On World

We live in a real-time world. From ordering food to ride-hailing and how we work and socialize, we are increasingly expecting instant service. This Citi GPS report examines the accelerating shift towards real-time payments, driven by technological advances, evolving customer expectations and regulation and policy as an enabler.

With over 80 jurisdictions representing 95% of global GDP now offering instant payment schemes, the world is set to experience explosive growth in global real-time payments adoption.[1]

The transition to a 24x7 real-time economy presents both challenges and opportunities, and it will be crucial to balance speed of transactions with robust security.

Corporates will benefit from the efficient use of liquidity and capital, but will have to invest in infrastructure for always-on operations, including outside traditional business hours.

However, these challenges also create opportunities for innovation and the emergence of new business models.

Asia Pacific leads, with growth underpinned by strong government support and the need to integrate unbanked populations into the digital ecosystem.

Europe is also making strides. The Single Euro Payments Area (SEPA) Instant Credit Transfer scheme and the EU Instant Payments Regulation both mandate banks to support instant euro transfers.

In the U.S., momentum is picking up with the Federal Reserve's FedNow Service and The Clearing House's Real-Time Payments. We expect substantial growth in U.S. real-time payments adoption as a result.

The thirst for instant payments could boost commerce and economic activity – CEBR estimates point to a likely one to two percentage points uplift in GDP in some emerging markets.

How real-time payments can impact GDP by 2028

#	TOP 5 MARKETS (RANKED BY GDP % IMPACT)	GDP IMPACT ($ BILLION)	IMPACT AS PERCENT OF GDP
1	Nigeria	15	6.4%
2	Thailand	16	2.7%
3	Argentina	19	2.7%
4	Brazil	50	2.1%
5	India	77	1.4%
Aggregate of Top 5 Markets		**177**	**1.9%**

Source: CEBR, ACI Worldwide, International Monetary Fund, Citi Institute

[1] Volt, Real-Time Payments Map, Updated on January 2025.

Key Takeaways

1. Shifting consumer behavior, new business models, and technological advancements are collectively driving the need for finance to be 24x7.

2. Regulation and policy changes are pushing real-time payments into the mainstream. Asia and emerging markets have historically led the way. The mandatory adoption of SEPA Instant across Europe and the rapid expansion of the FedNow Service in the U.S. mark a fundamental shift. Real-time finance is no longer emerging, it is the default.

3. Strategic advantage increasingly depends on how effectively institutions incorporate real-time capabilities. Banks and corporates need to fundamentally rethink business models and infrastructure. A new wave of finance firms will emerge – new entrants, upgraded existing banks, fintechs and hybrids/partnerships.

4. Real-time systems like Pix (Brazil), UPI (India), and M-Pesa (Kenya) have demonstrated their ability to drive financial inclusion and support economic development. In some emerging markets, broader adoption could add 1-2ppts to GDP growth.

5. Speed brings risk. The finality of real-time payments, combined with increasingly sophisticated AI-driven fraud, presents a rapidly evolving threat. Without robust real-time fraud detection, liquidity controls, and AI-based safeguards, institutions risk falling behind in the fight against this trillion-dollar threat.

6. Real-time cross-border payments are unlocking new opportunities for businesses operating globally, enabling faster settlements, improved working capital management, and enhanced customer experiences. However, the complexities of cross-border interoperability and regulation remain a key challenge.

$286 billion

Additional GDP forecasted to be generated by instant payments by 2028

167 million

New accounts forecasted to be created from instant payments by 2028

$246 billion

Predicted growth of aggregate savings by businesses/consumers from instant payments by 2028

Source: CEBR, ACI Worldwide, Citi Institute

Now or Never: The Age of Instant

As you step out of a restaurant, still savoring a remarkable meal, you reach for your phone. Within moments, you are sharing your experience – the inventive cocktails, the ambiance, and the unforgettable spices. The responses from friends and food enthusiasts pour in. It is immediate, engaging, and seamless. Paying for the meal? That was just as seamless – a quick tap, and done. Payments are working as they should: invisibly and efficiently.

> The financial services industry is undergoing a profound transformation, driven by the convergence of real-time technologies, evolving client expectations, and a rapidly changing global landscape. Success in this new era requires a commitment to innovation, collaboration, and a client-centric approach.
>
> *Shahmir Khaliq, Global Head of Services, Citi*

You recall the exquisite, handcrafted bracelet you spotted on a trip to Bali. A search on your smartphone leads to the artisan's website. Within seconds, you have paid for it. A shipping notification lands in your inbox. From Bali to New York, the gift is on its way. All in a few clicks. Frictionless, with an embedded payment process working behind the scenes.

These examples reflect a defining change of the twenty-first century: a world shaped by instant information, instant action, and immediate interactions. This is the always-on world, and its rise has been fueled by the seamless integration of real-time payments. Consider how these instant platforms have transformed our lives.

- Instant messaging platforms and video conferencing tools have revolutionized communication. This has been accelerated by the COVID-19 pandemic.
- In the entertainment sector, we have seen a large shift in media consumption habits with on-demand streaming services.
- Ride-hailing services have redefined urban mobility, and also gave rise to a new food delivery business model.
- The internet of things (IoT) is enabling smart devices, such as fridges that re-order food or components when stocks are running low. And they have the capacity to pay for their purchases with token-enabled digital wallets.
- Telemedicine is increasingly providing patients with immediate access to healthcare professionals.

The Thirst for Instant Payment

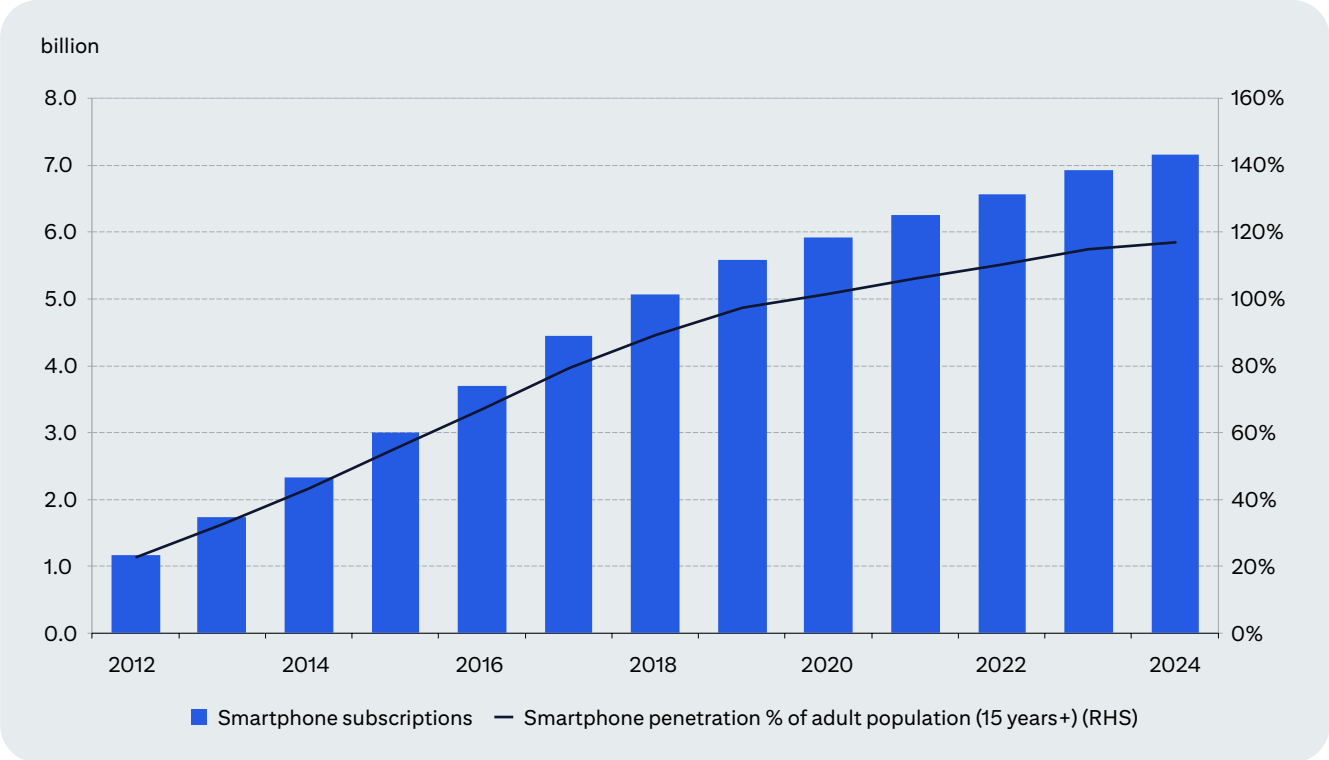
Real-time payments are transforming the gig economy, providing workers with instant access to their wages, supporting a more agile lifestyle, and fueling consumption. At scale, this can boost economic activity by increasing labor market participation and enabling micro-entrepreneurship.

Economies once primarily reliant on cash and checks are now shifting towards instant digital transactions. Gig employers can now manage payroll "just in time", eliminating concerns about settlement cycles and cut-off times. This could improve efficiency, increase competition and foster greater financial inclusion and innovation.

Patience is not always a virtue in today's hyper-connected world, where many individuals expect instant access to everything, everywhere, all the time. This has given rise to the mobile reflex, a shift driven by the ubiquity of smartphones, which now function as on-demand gateways to services, information, and transactions.

With smartphone penetration exceeding 100% (Figure 1), individuals are not just connected, but rather always connected, often across multiple devices. This constant connectivity reflects a broader cultural shift towards convenience, where consumers increasingly value hassle-free, time-saving experiences that align with a digital-first lifestyle.

Figure 1. The growth of smart phone subscriptions, 2012-2024



Source: Ericsson Mobility Report, World Bank, Citi Institute

These behavioral shifts did not happen overnight. They have been enabled by advances in technology and supportive regulatory developments that together have incentivized and accelerated the demand for real-time, seamless interactions, particularly in sectors like financial services, where immediacy is no longer a nice to have, but an expectation and a crucial enabler.

The world of payments – another form of digital interaction – is evolving alongside the broader shifts in our always-on digital world. To keep pace, it must operate at the speed of everything else, underpinned by real-time liquidity to enable seamless, continuous financial flows.

Unlocking the Always-On Future

Debopama Sen, Head of Payments, Citi Services

Realizing the full potential of the 24x7 economy requires collaboration across the financial and commercial ecosystem. Banks must invest in real-time infrastructure and selectively partner with fintechs, where their offerings complement and enhance the ability to provide 24x7 services. Corporates will need to adjust their business models and financial functions to compete in this 'always-on' world.

This transformation is not simply about faster payments, it is about gaining a strategic advantage through instant movement of money, empowering faster decision-making, enhanced customer and employee experiences, and more agile financial operations. In today's fast-paced digital world, real-time payments are no longer a luxury – they are the key to unlocking competitive advantage and thriving in the 24x7 world economy.

The transition to a 24x7 real-time economy presents both challenges and opportunities. Balancing speed with robust security is crucial. Firms need to adapt their liquidity management strategies for around the clock operations, including outside traditional business hours, demanding new approaches and capabilities. However, these challenges also create opportunities for innovation, as we see with the emergence of new business models using technology to thrive in this always-on environment.

Finance: Time To Catch Up

Changing consumer behaviour, new business models, technology upgrades enabling an always-on infrastructure and regulatory developments mandating instant action all require finance to work around the clock.

So far Asian and other emerging market countries have led the way in real-time payments, driven by factors such as mobile-first adoption, and government initiatives promoting digital financial inclusion. The U.S. has historically been a slow adopter – in 2023, instant payment made up only 1.5% of U.S. electronic payments.[1] But the country is starting to catch up, with the Federal Reserve launching its FedNow Service in 2023.

Europe, too, is progressing, with cross-border euro instant payments likely to become a reality in 2025 when real-time payments become mandatory in the Single Euro Payments Area (SEPA).

- **Building strategic advantage:** Forward-thinking firms can gain a strategic advantage through the instant movement of money, empowering faster decision making, enhanced customer, supplier, seller and employee experiences, and more agile financial operations. Many institutions still operate in vertical silos which are incompatible with the horizontal, real-time nature of modern payments, where all these pieces need to operate seamlessly and concurrently. Real-time payments alone are no longer a competitive advantage – it is what you build on top of it that matters. Enhancements could include leveraging real-time data and insights to offer innovative solutions, such as personalized customer experiences, dynamic pricing, or optimized working capital management. This is a strategic opportunity, not just a compliance cost.
- **Increasing share for fintechs, stablecoins, and Finance 3.0:** The shift to 24x7 is set to accelerate disintermediation. Digitally native platforms can continue capturing consumer-facing payment flows with superior UX and real-time capabilities. Overall, value will move closer to the customer experience and infrastructure layers, not just transaction clearing. Citi Treasury and Trade Service's 2024 survey of banks found that fintechs stand to gain about 10% market share in cross-border payments from banks in the next two to five years.[2] These shifts should be accelerated by the advent of stablecoins and other new developments. We anticipate the emergence of a new generation of Finance 3.0 firms, with new entrants, upgraded existing banks, fintechs and hybrids/partnerships.

[1] ACI Worldwide, 2024 Prime Time for Real-Time Global Payments Report.
[2] Citi GPS, Cross-Border Payments 24x7: Faster, Simpler, Smarter, October 2024.

- **Driving financial inclusion and growth:** Real-time payments such as Brazil's Pix, India's UPI, and Kenya's M-Pesa have significantly advanced financial inclusion by enabling low-cost, instant digital transactions. Pix now serves 75% of Brazil's population, while UPI has grown to power 83% of India's digital payments.[3, 4] M-Pesa helped raise financial inclusion in Kenya from 26% in 2006 to 85% in 2024, lifting 2% of Kenyan households out of poverty.[5, 6] Globally, third-party estimates suggest real-time payments are projected to boost GDP by $286 billion in 2028.[7]

- **Fighting fraud:** We are living in a world where risk of financial fraud is elevated due to technology. Fraud can be AI powered, including using deepfakes. Instant/real-time payments will amplify the risk and losses stemming from AI driven financial fraud due to the inherent speed and irrevocability. In 2024 alone, consumers globally lost an estimated $1 trillion to scams.[8] If you implement real-time payments alone and not real-time fraud and cyber detection (and real-time liquidity) then it does not deliver full value. AI and instant payments carry their own risks with regards to potential fraud and institutions will need to develop appropriate solutions if they hope to reduce this trillion-dollar figure.

Real-time payments, once primarily a consumer-facing innovation, are now becoming essential for corporates – driven in part by rising consumer expectations. The insurance sector is a good demonstration of this consumer-driven shift to always-on. We cover it in our case study with Chubb (page 25).

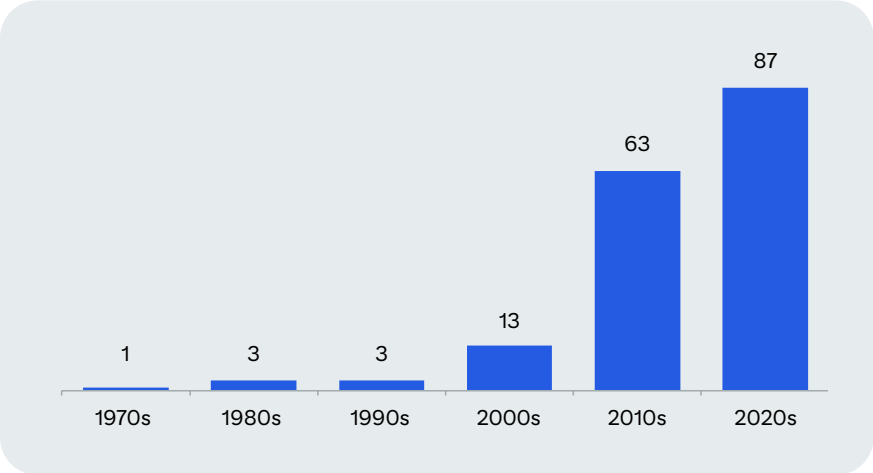
Real-time payments allow for immediate and continuous transfer of funds 24x7, irrespective of conventional banking hours. They are typically made via dedicated schemes, usually operated by established clearing systems. Their crucial feature, as the name suggests, is near real-time availability of funds to the beneficiary.

[3] Banco Central Do Brasil, Pix Statistics, Data as on 29 May 2025.
[4] Reserve Bank of India, Payment System Report, December 2024.
[5] Central Bank of Kenya, 2024 FinAccess Household Survey.
[6] MIT News, Study: Mobile-Money Services Lift Kenyans Out of Poverty, 08 December 2016.
[7] CEBR, Real-Time Payments Economic Impact and Financial Inclusion, October 2024.
[8] Global Anti-Scam Alliance (GASA) and Feedzai, Global State of Scams Report 2024.

The Proliferation of Real Time

Real-time payments offer enormous potential benefits to all. Today, over 80 markets globally offer real-time domestic payment systems, including major markets across Europe, the Americas and Asia Pacific (Figure 2), transforming the financial landscape. Globally, the proliferation of real-time payment systems is supported by a mix of policy mandates, regulatory frameworks, and public-private collaboration.

Figure 2. Cumulative number of live real-time payment schemes



Source: Global Data, ACI Worldwide, Citi Institute

In 2023, nearly 266 billion real-time payments transactions were processed globally, representing a 42% increase over the previous year. By 2028, the volume of real-time payment transactions is projected to reach 575 billion, reflecting a 16.7% compound annual growth rate (CAGR).[9] Markets with large populations, cash-heavy economies, limited credit penetration, and low levels of financial inclusion are likely to gain the most.

Asia Pacific is home to four of the top five real-time markets by volume – India, Thailand, China, and South Korea. In 2023, India alone processed 118 billion real-time transactions via its Unified Payments Interface (UPI), representing little under half of global real-time payment volumes. Regionally, growth in real-time payments has been spurred by strong government support and the need to integrate high numbers of unbanked individuals into the digital finance ecosystem.

In Europe, the implementation of the SEPA Instant Credit Transfer scheme has laid the groundwork for real-time payments. The EU Instant Payments Regulation, which mandates that euro-denominated credit transfers be processed instantly, is expected to significantly increase real-time payment usage.

[9] ACI Worldwide, 2024 Prime Time for Real-Time Global Payments Report.

As of the first quarter of 2025 over 2,700 payment service providers have already joined the scheme, representing 78% of European PSPs and over 89% of PSPs in the Euro Area.[10]

In the U.S., a slow adopter in real-time payments, momentum is building quickly following the Federal Reserve's launch of FedNow in July 2023. As of Q1 2025, FedNow has settled more than 1.3 million transactions, marking a 43% increase over the previous quarter. The total value of transactions reached $48.6 billion in Q1 2025, up 141% year-on-year, and notably higher than the $38.2 billion recorded in the whole of 2024.[11]

> The U.S. real-time payments landscape is on the cusp of a major transformation. The groundwork has been laid, and we expect rapid growth of real-time payments in the coming years. With FedNow gaining traction and The Clearing House's RTP network already processing significant volumes, the momentum is building rapidly.
>
> *Ashish Bajaj, Global Head of Financial Institutions & Correspondent Banking, Citi*

[10] European Payments Council, SEPA Instant Credit Transfer, Accessed on 31 May 2025.
[11] The Federal Reserve, FedNow Service – Quarterly Statistics, Last Updated on 16 April 2025.

Impact of the Real-Time Shift on Banks and Financial Institutions

The global shift towards 24x7 real-time payment ecosystems is reshaping how financial institutions operate, serve customers, and compete. Real-time payments present major opportunities (Figure 3) and substantial challenges for banks.

Figure 3. Key benefits of real-time payments[12]

FOR CUSTOMERS	FOR BUSINESS AND GOVERNMENTS (IN ADDITION TO ONES ON LEFT)
• 24x7 availability • Real-time funds availability to payee • Real-time information for payers on transaction status • Enhanced information provides better reconciliation • Real-time transaction funding • Provides an alternative to credit cards • Ease of digital execution, particularly with mobile phones	• Encourages financial system innovation and stability • Improves financial inclusion • More efficient taxation and control when digitizing more financial transactions (moving away from cash only) • Companies/individuals benefit from cheaper transaction costs, cascading to suppliers and consumers and generating economic growth • Modernization of the payments infrastructure

Source: Citi

On the one hand, they can dramatically enhance customer experience, unlock new revenue streams through increased transaction volumes, reduce costs, and deliver significant operational efficiencies. On the other, they demand a fundamental rethink of legacy infrastructure and business models. Failing to do so could result in lost revenues, diminished customer satisfaction, and erosion of market share.

According to a survey by Tink, nearly 9 in 10 consumers (88%) would abandon a transaction if faced with friction when making a payment online.[13] This data highlights the rising demand for speed and convenience and signals a pressing need for banks to upgrade their payment capabilities or risk losing customers to faster, more agile competitors.

The competitive pressure is intensifying. To seize the benefits of real-time payments, banks must invest in technology, ensure interoperability, and implement real-time fraud prevention strategies. Recent data suggests 93% of financial institutions that offer instant payments see at least some positive impact on customer retention.[14]

[12] Citi Treasury and Trade Solutions, Instant Payments: Driving Economic Progress and Digital Payments Access, 2023.
[13] Tink, UK Consumers Expect Fast and Frictionless Payment Journeys, 18 May 2022.
[14] PYMNTS Intelligence, Real-Time Readiness: Bridging Gaps in FIs' Instant Payments Adoption, January 2025.

Bank Transformation Projects

The adoption of real-time payments demands more than just updating payment rails – it calls for a full-scale transformation of banking infrastructure. Banks must re-engineer outdated systems and rethink legacy processes in the front-end and back-end to stay competitive and relevant.

- **Modernizing beyond the rails:** Implementing real-time payments requires everything from backend processing systems to customer-facing channels to support 24x7 availability. Real-time compliance checks, fraud detection, credit risk models, and dispute resolution must all evolve to match the speed of payment transactions.
- **Real-time liquidity management:** The shift to real-time payments places new demand on liquidity management. With transactions occurring continuously, banks must be able to monitor and optimize liquidity positions in real time. Traditional end-of-day or intraday options are no longer sufficient. Instead, banks require robust liquidity management strategies and tighter integration between treasury, risk, and operations teams to ensure uninterrupted funding availability.
- **Greater interoperability:** As real-time payment networks proliferate globally, banks need to ensure cross-border and cross-platform interoperability. Aligning with global standards such as ISO 20022 and integrating with central banks and third-party fintech infrastructure is essential for seamless data exchange and settlement.
- **Current limitations and need for reform:** The current limitations of real-time gross settlement (RTGS) systems, which are not operational 24x7 and not real-time, pose challenges for settling real-time transactions outside of business hours. Extending RTGS operating hours or establishing alternative settlement mechanisms for weekends and holidays is crucial to mitigate settlement risk in a 24x7 payment environment.

There are encouraging developments globally. As per the Committee on Payments and Market Infrastructures, out of the 69 RTGS systems surveyed, seven already operate 24x7 and 18 plan on extending their operating hours within the next five years.[15]

[15] Bank for International Settlements, CPMI Brief No 6, Changing the Clock: Practical Approaches to Extend Payment System Operating Hours, January 2025.

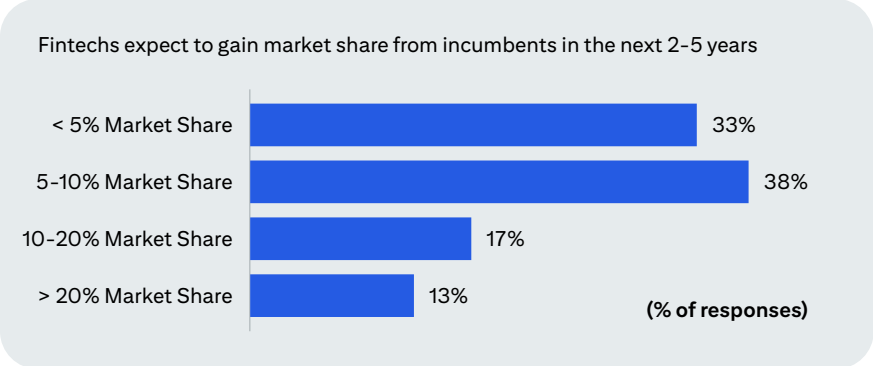
Growth of Fintechs and New Business Models

Real-time payments are a foundational enabler of fintech innovation, accelerating the rise of digital first financial services that are challenging traditional banking models. Fintechs, unburdened by legacy systems, have quickly adopted instant payment rails to deliver seamless, fast and personalized customer experiences.

- **Increased competition:** Fintechs are eating into banks' market share across services like payments, lending and personal finance management. Findings from the Citi TTS 2024 survey in Citi GPS: Cross-Border Payments 24x7 – Faster, Simpler, Smarter (2024) suggest fintechs expect to gain an average 10% market share from traditional financial institutions in the next two to five years.

  With lower-cost structures and more agile platforms, fintechs can launch new features at a pace that traditional banks often struggle to match. Neobanks and embedded finance platforms are winning over younger, mobile-first consumers who prioritize speed and user experience.

Figure 4. Market share shifts in cross-border payments



N = 24 fintech respondents
Source: Citi Treasury and Trade Solutions Survey 2024

- **Innovation and differentiation:** Leveraging real-time payments, fintechs are creating new products that offer speed, convenience, and enhanced financial inclusivity. These include features like automatic bill-splitting, instant merchant settlement, just-in-time payroll, gig economy payouts and personalized credit options triggered by real-time transaction data. Such innovations are difficult to replicate without a modern, real-time infrastructure.

- **Data-driven experiences:** With real-time payment data, fintechs can provide more contextual, proactive, and relevant financial experiences. For example, real-time transaction alerts, micro-lending or investing based on available account balance, and dynamic budgeting tools that react to actual inflows and outflows – all contribute to higher consumer engagement and retention.
- **Lower barriers to entry:** Real-time payment systems, especially when paired with open banking frameworks, can help reduce the infrastructure burden for new entrants. This can lead to a proliferation of niche players that serve specific customer segments with tailored financial products such as SME-focused cash flow tools. For traditional banks and financial institutions, this means not only competing on speed, but also rethinking their value proposition.
- **Emergence of new business models:** Fintechs are not just improving existing financial services, they are redefining how those services are delivered and monetized. From banking-as-a-service (BaaS) and embedded finance to subscription-based financial tools, fintechs are shifting the industry away from traditional fee structures and rigid product bundles. New API-driven models are allowing fintechs to plug financial services directly into non-financial platforms (e.g., e-commerce, ride hailing).

As Matt Cornwall from Chubb notes on page 25, the 24x7 economy is also catalyzing innovation in insurance, with models like parametric insurance offering automated, event-triggered payouts – an example of how financial products are being reimagined for real-time responsiveness.

> “Instant payments help us make the process paperless and easy. They also ensure that once the loan is approved/booked in our system, loan disbursement is settled instantly and around-the-clock.”
>
> *Home Credit*

Expert View

Impact of Real-Time Payments on Economy, Banks and Corporates

Ricardo Correia
Partner, Bain & Company

Q: Where is the financial world on its journey to adapting to the 24x7 world? Is finance leading or lagging?

The financial industry is in a transitional phase toward a truly 24x7 model. From a consumer-facing perspective, the shift appears largely complete, digital interfaces give the impression of real-time services. However, at the infrastructure and settlement layer, many core systems still operate on batch-based or intraday cycles, particularly for interbank and cross-border transactions.

The move to a fully real-time financial ecosystem requires the alignment of multiple layers: technology, legal frameworks, compliance protocols, regulatory standards, and operational governance. While technological readiness has progressed significantly, most institutions now have access to modern infrastructure capable of supporting real-time processing, interoperability and coordinated implementation remain fragmented across jurisdictions and participants.

Importantly, the next frontier is not just domestic real-time payments, but the enablement of cross-border real-time settlement and true delivery-versus-payment (DvP) across asset classes. That will require harmonization of standards, trust models, and time-zone-agnostic systems.

On the regulatory front, we are seeing growing mandates and policy pressure toward 24x7 capabilities, which is accelerating compliance and investment. The priority now is to ensure industry-wide collaboration, with a shared focus on backend integration and global interoperability, to deliver seamless real-time value exchange, not just at the user interface, but end-to-end.

Q: Do 24x7 payments boost economic growth or GDP?

In theory, 24x7 payments should enhance economic efficiency by removing friction, enabling continuous liquidity, and improving the flow of commerce. But the impact on GDP is likely to be incremental unless broader infrastructure evolves in parallel.

The transformational potential lies not merely in faster payments, but in the real-time settlement of both assets and cash, underpinned by aligned legal, regulatory, and operational frameworks. When digital assets and digital currencies, both tokenized and ledger-native, can settle seamlessly in a delivery-versus-payment (DvP) model, we unlock true velocity and resilience in financial markets.

While improvements in Payment-versus-Payment (PvP) systems help reduce risk and enable more timely exchanges, the macro-level gains to GDP will come from fully synchronized digital value chains, where assets and payments are tokenized, programmable, and settle in real time across borders.

There are also trade-offs to manage. For example, the shift to instant payments can reduce opportunities for netting, increasing liquidity demands. However, practical adjustments, such as introducing micro-latency buffers (e.g., 30–60 seconds) can help preserve some efficiencies without compromising speed.

Ultimately, 24x7 payments are a necessary foundation, but economic uplift will depend on how effectively we integrate regulated digital assets, programmable money, and global standards into that framework.

Q: What are the implications of instant payments for banks and corporates?

Instant payments fundamentally reshape liquidity management, capital efficiency, and operational design for both banks and corporates.

Traditionally, transaction settlement has involved capital being pre-funded or locked, either in escrow accounts or as collateral, to manage counterparty and settlement risk. This capital is immobilized until books are reconciled, sometimes hours, often days. Instant payments and real-time settlement reduce this latency, offering the potential to unlock trapped liquidity and improve working capital utilization.

For corporates, this translates into faster cash flow cycles and more responsive treasury operations. For banks, it introduces an opportunity to optimize intraday liquidity and reduce reserve burdens, though it also demands more sophisticated, real-time risk monitoring.

However, there are trade-offs. The shift away from batch processing reduces the netting benefits that payment systems have historically relied on. Each transaction must now be processed and settled individually, increasing the transactional granularity and requiring payment systems to handle peak concurrency without relying on volume smoothing.

Still, the long-term advantage lies in building scalable, tokenized infrastructure, where payments can be minted and burned dynamically, aligned with real-time demand. This architecture supports not just instant payments, but the eventual convergence of programmable money, digital assets, and automated settlement logic, laying the foundation for future financial innovation.

Implications for Corporates

Corporates need to be mindful of 24x7 for their business and treasury. They need to evaluate the challenges and opportunities presented by instant payments. Real-time payments can complicate liquidity management, receivables reconciliation, and payments release processes – particularly with transactions occurring outside traditional business hours – but they also offer significant advantages.

- **Capital efficiency:** Payments are settled instantly 24x7, giving corporates real-time access, visibility and control over their working capital. Estimates suggest about $1.5 trillion is trapped as excess working capital due to payment delays, inefficiencies, business hours cut-offs and cultural reasons.[16] Real-time payments could partly offset the need to have excess working capital making it available for capex, debt repayments, etc.

[16] PwC UK, Working Capital Study 24/25, 12 October 2023.

- **Debt reduction:** The outstanding global stock of corporate bond debt reached $35 trillion at the end of 2024.[17] If corporates keep three to five days of payables or 5% to 15% of operating cash to meet payment obligations due to batch processing and cut-off times, real-time payments could free up a lot of cash that could be used for investment or debt reduction.
- **Better liquidity management:** Faster changes in cash positions makes liquidity management more complex, as this requires dynamic cash flow forecasting and cash mobilization. However, corporate treasuries can invest in API-based bank connectivity, real-time liquidity management tools, and data to better estimate flow of funds and pay-ins/pay-outs. This will involve adopting solutions more suited for real-time treasury. We cover real time treasury in more detail on page 46.
- **Operational efficiency:** 24x7 instant payment eliminates batch processing delays and reduces reconciliation efforts as records are updated and maintained real-time to match payment speeds. However, additional overheads may occur for infrastructure maintenance, round the clock oversight and compliance.
- **Cybersecurity and fraud risk:** Real-time payments increase the risk of cyberattacks, frauds and scams, especially beyond normal business hours when the chances of intercepting bad actors may be lower. Again, there is opportunity to deploy new tools and technologies.
- **Technology integration:** Upgrading legacy systems to support real-time flows can be complex and costly. This is inevitable, and can be turned to opportunity, given the broad set of changes – beyond instant payments - driving the move toward a real-time world.

> The 24x7 economy, fueled by real-time payments, presents both opportunities and challenges for liquidity management. While instant payments offer significant advantages, such as enhanced efficiency and strategic agility, they also require a fundamental shift in how liquidity is managed.
>
> *Stephen Randall, Global Head Of Liquidity Management Services, Citi*

[17] OECD, Global Debt Report 2025, 20 March 2025.

- **Better strategic relationships:** Faster payment settlements with suppliers, vendors, and customers will help strengthen business relationships with various counterparties and stakeholders. Furthermore, it could also help create a competitive advantage as early adopters can differentiate their services and build market leadership.
- **New business models:** Insurers could enable real-time insurance claim settlements; digital firms could pay gig workers real-time; or corporates could introduce immediate dynamic discounting of invoices. This would increase commercial flexibility and may improve customer/vendor satisfaction. From a business perspective, instant payments can power experiences to benefit customers and strengthen supplier relationships.

Things get interesting for corporates when we add technology to the mix. Instant payments combined with real-time liquidity management and banking connectivity via APIs can lead to truly integrated experiences and the next level of automation. Corporates should capitalize on the benefits relevant for their industry and operations, while being cognizant of the risks that can arise in a real-time landscape.

Expert View

Future of Insurance In a 24x7 Economy

Matt Cornwall
EMEA Head of Treasury Operations, Chubb

Q: Where do real-time payments deliver the most value in insurance?

Real-time payments are especially valuable in urgent situations, like a lost mobile phone or cancelled flight covered by insurance. Funds can be instantly pushed to the customer's account with immediate confirmation.

In the corporate ecosystem, while many treasury teams consider near real-time (within 30 minutes) sufficient, the focus is shifting from liquidity management to service. The value lies in speed and enhanced customer experiences.

The insurance sector is also witnessing an increase in B2C activity. This requires a retail-oriented approach to payments, especially with younger customers, who expect instant payments and confirmation.

Q: What are the key challenges in meeting evolving customer expectations and delivering instant services in insurance?

Speed often comes at the cost of control. Most payments traditionally pass through a robust control framework, which are often manual, and may not be feasible for real-time transactions. One cannot wait for manual approvals for a real-time payment. Building strong system-based controls are critical.

Back-end processes such as accounting and reconciliation must keep pace. Real-time payments are typically lower in value, but higher in volume, requiring system architectures capable of handling increased transaction loads. There is little value in offering fast, front-end payments, if back-end infrastructure cannot support it.

Fraud is another risk. As real-time adoption grows, so does fraud sophistication. Regulators have flagged the rising fraud risk, making robust, automated system controls essential.

Domestic infrastructure also varies. Some markets lack tools like account validation. Limited local functionality, combined with the need for efficient deployment and finite resources, make scalable deployment challenging.

Q: Is instant cross-border payment a priority for insurance use cases today?

The relevance of instant cross-border payments largely depends on how a corporate has structured its banking operations. In cases with a centralized treasury and local accounts in place, the need for cross-border execution is often reduced, and as such, it has not been a top priority to date.

That said, certain scenarios, such as natural disasters, highlight the potential. For example, in the case of large-scale events with significant claims activity, the ability to move funds quickly across borders becomes critical as customers really need funds. In such instances, cross-border real-time payments could deliver real value.

However, there remains some skepticism within treasury functions around the practicality and risk of instant cross-border payments. Concerns include the involvement of intermediary banks, potential delays, and increased risk due to deviations from standard channels. While it is a growing trend and clearly on the industry's radar, there is still caution around its reliability and overall value.

Q: What are your predictions for the future of insurance in a 24x7 economy?

Real-time payments will increasingly intersect with emerging technologies like parametric insurance – policies triggered automatically by real-time data. For example, during extreme weather, pre-defined thresholds (e.g., rainfall levels) can activate immediate claims and payments via mobile apps, often within minutes.

The model removes the need for manual claim processing, using data and automation to deliver instant resolution. It holds strong potential in sectors like travel and agriculture, where speed/automation are critical. As the industry shifts towards B2C models, combining parametric with real-time payments will be key.

Unlocking Economic Efficiencies and Financial Inclusion

For consumers, instant payments mean benefiting from immediate access to wages, government disbursements, and peer-to-peer transfers, reducing reliance on costly credit, payday loans or informal lending.

For governments, instant payments, specifically in the context of collections, can help reduce cash-handling inefficiencies, improving tax compliance and increasing overall economic transparency. With the introduction of overlay services such as QR codes, as seen in markets like Brazil and India, payment friction is reduced, making it easier for individuals and businesses to adopt the payment method.

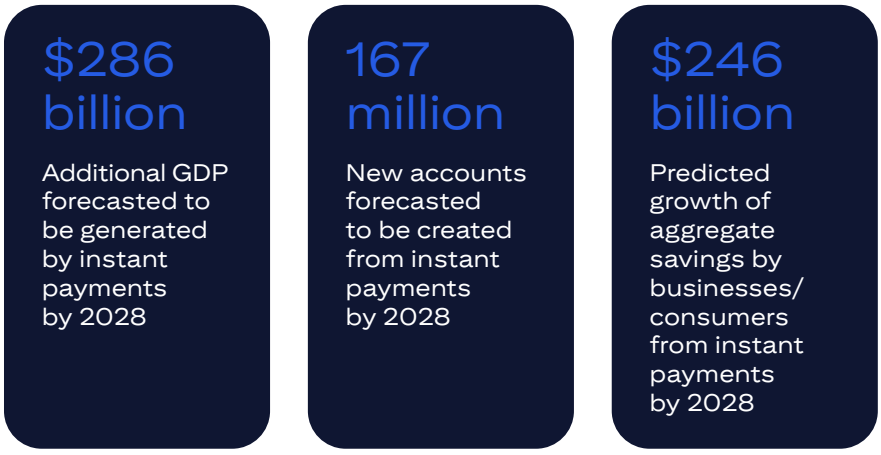
In a paper published by the European Central Bank aimed at relaying the benefits of SEPA Instant to public administrators, the listed benefits included lower transaction fees for receipts related to public services as well as improved public services through the instant payment of benefits such as social welfare allowances.[18]

This range of benefits of instant payments can help explain why regulators and governments around the world have been introducing instant payment schemes and continuing to invest in the infrastructure. Better infrastructure to support more payment options can help drive greater adoption in the market and benefit the economy.

Real-time payment systems are expected to be a catalyst in driving economic growth and financial inclusion by enabling access to affordable financial services. Data from third-party payment experts suggest that by 2028, real-time payments could enable 167 million previously unbanked individuals, especially women, the young and low-income people, to open bank accounts.[19]

From an economic perspective, real-time payments enhance productivity by improving transaction efficiency, unlocking working capital and reducing float time (the delay between when a payment is initiated and when the funds are actually available to the recipient). They also support the formalization of informal economic activities by decreasing reliance on cash.

Figure 5. Impact of real-time payments on the economy[20]



Source: CEBR, ACI Worldwide, Citi Institute

[18] European Central Bank, Benefits of SEPA Instant Credit Transfer (SCT Inst), 2023.
[19] ACI Worldwide and CEBR, Real-Time Payments: Economic Impact and Financial Inclusion, 2024.
[20] ACI Worldwide and CEBR, Real-Time Payments: Economic Impact and Financial Inclusion, 2024.

According to estimates by the Centre for Economic and Business Research (CEBR), real-time payments could contribute up to $286 billion in global GDP in 2028.[21] Five key markets (ranked by the value of GDP impact) – India, Brazil, China, Thailand, and Mexico – are expected to account for $188 billion of this total. Excluding China, the largest markets are expected to have a 1.5% GDP boost from real-time payments (Figure 6).

Figure 6. How real-time payments can impact GDP by 2028

#	TOP 5 MARKETS (RANKED BY IMPACT VALUE)	GDP IMPACT ($ BILLION)	IMPACT AS PERCENT OF GDP	#	TOP 5 MARKETS (RANKED BY GDP % IMPACT)	GDP IMPACT ($ BILLION)	IMPACT AS PERCENT OF GDP
1	India	77	1.4%	1	Nigeria	15	6.4%
2	Brazil	50	2.1%	2	Thailand	16	2.7%
3	China	33	0.1%	3	Argentina	19	2.7%
4	Thailand	16	2.7%	4	Brazil	50	2.1%
5	Mexico	13	0.7%	5	India	77	1.4%
Aggregate of Top 5 Markets		**188**	**0.6%**	**Aggregate of Top 5 Markets**		**177**	**1.9%**
Aggregate of Top 5 Markets (ex-China)		**156**	**1.5%**				

Source: CEBR, ACI Worldwide, International Monetary Fund, Citi Institute

[21] Centre for Economic and Business Research (CEBR) for ACI Worldwide, Real-Time Payments Economic Impact and Financial Inclusion, October 2024.

In many emerging markets, low-to moderate-income consumers rely heavily on cash as their primary payment method, often due to the lack of access to traditional bank accounts. One of the ways central banks can harness the digital revolution to extend the benefits of financial inclusion, is by developing robust digital payment infrastructure, particularly real-time payment systems.

A notable example is the Central Bank of Brazil's real-time payment scheme, Pix, which launched in November 2020. Pix was designed to enhance efficiency, increase competition, and promote financial inclusion. Unlike conventional payment systems, Pix enables participation without the need for credit cards or extensive financial infrastructure. It offers free peer-to-peer transactions and low-cost merchant payments.

As a result, over 67% of Brazil's adult population either made or received a Pix transaction in its first year.[22] Today, Pix is the most widely used payment method in Brazil, with 159 million registered individuals,[23] equivalent to 75% of the total population or nearly all adults.

Pix's success can be attributed to several structural factors, including mandatory participation by larger banks and payment institutions, which helped create a critical mass of users to kick-start the network efforts. Additionally, the central bank's dual role as both infrastructure provider and rule setter, combined with the use of open APIs, was instrumental in fostering adoption.

Similarly, India's Unified Payment Interface (UPI), introduced in 2016, was among the first real-time payment schemes to allow customers to choose between phone numbers, account numbers, and domain-based aliases as a form of identification for receiving payments. Even fintechs that do not directly participate in UPI (e.g., Google Pay) can access the system indirectly through a participant.

UPI enables immediate money transfers through pull and push payments, merchant and utility payments, and QR code-based transactions. Its versatility has significantly increased adoption, with the contribution of UPI to the cumulative digital payments ecosystem more than doubling in five years, from 34% in 2019 to 83% in 2024.[24] Much of this growth stems from greater participation by previously unbanked and underbanked populations.

Kenya's M-Pesa, a mobile money service launched in 2007, has also been a major driver of financial inclusion, particularly in rural and underserved communities. Financial inclusion in Kenya rose from 26% in 2006 to 85% in 2024. [25]

[22] BIS Bulletin No. 52, Central Banks, the Monetary System and Public Payment Infrastructures: Lessons from Brazil's Pix, 23 March 2022.
[23] Banco Central Do Brasil, Pix Statistics, Data as on 29 May 2025.
[24] Reserve Bank of India, Payment System Report, December 2024.
[25] Central Bank of Kenya, 2024 FinAccess Household Survey.

Across the Middle East, governments have recognized that improvements to payments infrastructure can translate into economic growth, such as Saudi Arabia's Vision 2030 and the UAE's digital strategy.[26]

In South Africa, the South African Reserve Bank launched PayShap, an instant payments scheme that is part of its wider effort to modernize its payments system under the National Payment System Framework and Strategy: Vision 2025.[27]

Other countries in Africa to recently introduce instant payment schemes include Egypt, Ghana, and Tanzania. These initiatives are broadly in line with other initiatives around the world to move into a cashless economy, where instant payment schemes play a prominent role.

[26] World Economic Forum, What's Behind the Middle East's Boom in Digital Payments? 03 March 2025.

[27] Kigali International Financial Centre, Unlocking the Potential of Digital Payments in Africa, September 2023.

Case Study

Tomás Azzali
Director, Mercado Pago
(part of Mercado Libre)

Powering Growth Through Real-Time Payments

Technology company Mercado Libre (Meli), founded in 1999, offers e-commerce and fintech solutions in Latin America. Citi Institute interviewed Tomás Azzali, Director of Mercado Pago, the part of Meli that provides financial solutions, including instant payments.

Q: How do instant payments interact with other financial services offered by Mercado Libre, such as digital wallets and payment processing solutions?

Instant payments complement our ecosystem of financial services by enhancing the efficiency of transactions within our digital wallet, QR payments, and payment processing solutions for merchants. They facilitate instant settlement for businesses, support peer-to-peer transfers, are critical in reducing cash circulation and expanding the benefits of our wallet beyond the marketplace to offline environments and everyday use cases.

Q: Can you discuss the strategic importance of instant payments to Mercado Libre's overall growth and expansion plans in the region?

Instant payments are strategically vital to our long-term vision. They underpin our efforts to deepen financial inclusion, especially in countries with emerging payment infrastructures. Today, instant payments are a key driver to reduce the use of cash. By enabling broader access to financial services, we can accelerate the growth of both our e-commerce and fintech businesses, while supporting regional digital transformation and economic development.

Q: How have instant payments and your broader offerings contributed to this mission, specifically regarding social and economic impact in Latin America?

Instant payments contribute to reducing barriers to participate in the formal economy. Our mission is to democratize access to financial services for individuals, small businesses, and companies that were previously excluded from the traditional system. Through technological development, we create digital services that have a positive impact on the lives of millions of people who can now invest, apply for credit, or get paid for their work in a simple and secure manner, integrating all solutions into a single ecosystem and promoting the region's economic development.

Q: What social shifts have you observed as a result of increased access to and adoption of instant payments in the region?

We are witnessing greater financial inclusion, with more individuals holding and using digital wallets as their primary financial tool. There's also a rise in micro-entrepreneurship, especially among younger users and women, who are leveraging these tools to start or grow businesses. In turn, this drives broader economic participation and community-level resilience.

Q: What are the most promising opportunities for further leveraging technology and innovation to drive social and economic progress in the region?

We see great promise in leveraging artificial intelligence and open finance, to expand access and personalization of financial services. Continued innovation in fraud prevention, credit underwriting, new accessible solutions and embedded finance can further boost economic development in the region.

The Fraud Facilitator

We are living in an increasingly digitized financial ecosystem, where the risk of fraud has grown dramatically due to both technological advancement and evolving scam techniques.

In 2024 alone, it is estimated that scammers siphoned off over $1 trillion globally[28], highlighting the sheer scale of the problem. Despite stepped-up regulatory and industry efforts to detect and disrupt fraudulent activity, scams are a persistent threat. Nearly half of global consumers now report experiencing a scam attempt at least once a week.

Emerging technologies such as artificial intelligence have amplified these risks. Fraudsters are now leveraging sophisticated technologies, including deepfakes – manipulated audio or video that impersonates individuals convincingly enough to trick victims into initiating unauthorized money transfers. The use of generative AI has added a new layer of realism and scalability to social engineering attacks, making them harder to detect and easier to execute.

Real-time payments, while offering immense convenience and efficiency, have inadvertently intensified the fraud landscape. The instantaneous and often irreversible nature of these transactions gives criminals a significant advantage. Funds can move across accounts or jurisdictions in seconds, leaving almost no window for traditional fraud prevention mechanisms or human intervention to detect and stop suspicious activity before the transaction is completed.

One particularly concerning category is Authorized Push Payment (APP) fraud, in which victims are deceived into authorizing payments, believing they are legitimate. These scams range from purchase frauds and romance scams to fake invoices and fraudulent investment opportunities. In the UK, APP fraud accounts for nearly 40% of all payment-related fraud, underlying the magnitude of this issue in mature real-time payment markets.[29]

Moreover, as transaction limits for real-time payments rise and these systems become more integrated into the global banking infrastructure, the stakes grow higher. The smallest mistake or lapse in verification can result in a significant financial loss. This shift underscores the urgent need for advanced validation services, which can help mitigate risk by verifying payee details, analyzing behavioural patterns, and flagging anomalies in real-time.

AI and agentic AI amplifies technology risks for banks and financial services, especially in the real-time world. Bad actors may adopt technology faster than banks. We will need AI to fight AI.

New AI enabled tools can be harnessed to detect and prevent fraud more effectively, by recognizing patterns across millions of transactions and adapting to new fraud typologies. We discuss how AI can help combat fraud in our two previous reports, Citi GPS: Agentic AI: Finance & The Do It For Me Economy (2025) and Citi GPS: AI in Finance: Bot, Bank & Beyond (2024).

[28]Global Anti-Scam Alliance and Feedzai, Global State of Scams Report 2024.
[29]LSEG Insights, APP Fraud: A Growing Global Crisis in Payments, 18 December 2024.

Building the Future

A broader societal shift towards instant services is underway, propelled by rapid technological advancements and evolving consumer expectations. As immediacy becomes the norm, industries will need to innovate continually to meet the demand for rapid access and delivery of services. The world of payments has had to innovate to support the needs of a 24x7 world.

Governments, too, are recognizing the economic and financial inclusion benefits of real-time payments, viewing them as essential infrastructure for a more resilient and inclusive digital economy.

The groundwork for real-time payment infrastructure has been laid. The UK has had quasi-instant wholesale payments since 1984, when real-time gross settlement (RTGS) systems were initiated. But these systems are not instant. They settle payments on average within approximately an hour and do not operate 24x7. They were created at a time when the notion of 'real time' had a different meaning.

Faster retail payments followed RTGS systems. The UK was among the early adopters in 2008, and many countries have since launched or upgraded their systems to support real-time payment, including, the U.S. with The Clearing House's RTP network and, more recently, FedNow Service (2023). These advancements have been accompanied by supportive regulatory and policy developments such as the EU's Instant Payments Regulation.

Taken together, these macro-level trends and foundational enablers are cultivating an environment where speed, simplicity, and uninterrupted service are not just desirable, they are expected. This creates fertile ground for transformative change across industries, with payments at the forefront.

The Tech Behind Real Time

The real-time world did not happen overnight. It has been enabled by advances in foundational technology and supportive regulations that together have enabled the demand for real-time, seamless interactions, particularly in commerce and finance.

- **Foundational tech upgrades:** Examples include stronger processing power, internet availability, digital connectivity of people, cloud computing, AI, and 5G. Cloud computing has reduced capex costs for new digital competitors and increased cost variability for incumbents. Faster data processing power and seamless connectivity is enabling real-time digital interactions, powering day-to-day from streaming, to work emails to payments processing. Global computing capacity has increased from 4,900 gigaFLOPS[30] in 2000 to 1.7 billion gigaFLOPS today.[31] Likewise, global median broadband download speeds have increased dramatically, from 127 kilobits per second in 2000,[32] to nearly 95Mbps in 2024.[33]
- **5G (and beyond):** Robust networks with ultra-low latency and embedded security and encryption (even at a hardware level such as a mobile phone's SIM card), enable the secure, instant processing of payments. By powering connected devices, ranging from wearables to cars, they expand the reach of instant payments beyond traditional banking channels.

[30] A measure for calculating the speed of a computer equal to one billion floating-point operations per second.
[31] Our World in Data, Computational Capacity of the Fastest Supercomputers, 18 November 2024.
[32] Cisco, Global Internet Traffic to Quadruple by 2014, 06 June 2010.
[33] The World Ranking, Global Fixed Broadband Internet Speed, November 2024.

- **APIs:** Essential for enabling instantaneity across industries, APIs facilitate real-time data exchange by providing access to information from multiple sources. They also automate complex workflows by reducing manual intervention and latency, and promote interoperability between disparate systems.

  The increasing standardization of APIs fosters a network effect, connecting platforms and services to create a more integrated and efficient digital ecosystem. For example, in healthcare, APIs enable real-time sharing of patient records, accelerating diagnoses and treatments. In finance, APIs power real-time payments, fraud detection, and personalized financial services.

- **The internet of things (IoT):** IoT is a catalyst for the real-time economy by allowing smart devices such as cars and home appliances to automatically initiate and complete transactions when they are needed, such as the fridge ordering milk before it runs out.

  A future world of AI agents, combined with IoT, may seamlessly make autonomous micropayments based on pre-determined rules and conditions. The AI agents could be the consumer's all-encompassing personal assistants or payment agents enabled by payment firms or smart device companies.

- **Digital identity:** Digital identity plays a crucial role in enabling seamless, secure and scalable real-time payments. It enhances the customer experience by reducing friction during transactions through quick and consistent identity verification, while also simplifying authentication processes that increase both security and privacy. A robust digital identity framework allows financial institutions and payment providers to confirm user identities in milliseconds, facilitating instant, low-risk fund transfers.

  For example, India's Aadhaar system provides a unique biometric-based digital ID that allows users to verify and authorize real-time payments securely, through services like Aadhaar-enabled Payment Systems (AePS) and Unified Payments Interface (UPI). Similarly, in the European Union, the eIDAS (electronic identification, authentication and trust services) regulation creates a framework for secure digital identities and electronic transactions across EU member states.

- **Blockchain and digital assets:** As businesses and financial institutions explore tokenized assets such as stablecoins and central bank digital currencies (CBDCs), the potential for instant, cross-border transactions is expanding. Initiatives like Project Agora, led by the BIS Innovation Hub, focuses on improving cross-border payments using central bank digital currencies (CBDCs) and tokenized bank deposits.

  Stablecoins, especially, have gained significant traction due to their utility and ease of access. This shift is reflected in the growing regulatory focus of some policymakers to ensure consumer protection and responsible growth, rather than prioritizing CBDC development (Citi GPS: Digital Dollars – Banks and Public Sector Drive Blockchain Adoption, 2025).

  Tokenized assets also offer new opportunities for enhanced liquidity and automated settlement.

Expert View

Connected Commerce: IoTs, EVs, and Real-Time Payments

Christopher Schmitz
EMEIA Open Finance & FinTech Leader, EY-Parthenon

Daniel Molis
Director Financial Services Strategy & Transactions, EY-Parthenon

Q: How are real time data/connectivity driving new internet of things (IoT) business models?

Christopher: Real-time data availability and connectivity are critical to most IoT use cases, enabling instant transactions and seamless integration with authorization systems and data sources. Two trends are shaping the evolving revenue landscape.

First, there is a clear shift in revenue pools from traditional models, such as point-of-sale interaction, to IoT-enabled business models. While there is a variety of real-world examples, a tangible illustration of this is printers. Traditionally, consumers bought toners manually. In an IoT model, this process could be entirely automated, with the device itself detecting the need, initiating the order and making payment.

Second, entirely new business models are emerging, driven by broader adoption, advancing technology, and entrepreneurial innovation. From smart speakers, sensors and connected vehicles to industry 4.0 machine-to-machine payments, there is significant potential for novel and scalable business models.

Q: What new opportunities are emerging with the rise of electric vehicles (EVs)? How is this shaping mobility and customer experience?

Daniel: We are seeing the emergence of integrated mobility platforms that combine different models of transport – from last-mile options to short-term mobility like car rentals, even including rail tickets and EV subscriptions. Some platforms in Europe are offering these services in a single package, creating a seamless experience.

Subscription models are also here to stay as alternative or additional distribution channel, offered by rental car companies, startups, and scale-ups, often focused on electric or hybrid vehicles. These models include services that bring added convenience, we would call a “peace of mind” package as it basically includes all cost such as maintenance, taxes and insurance coverage – except fuel/energy. From a consumer perspective it comes also without a residual value risk.

Christopher: That said, challenges remain. The experience is still often fragmented – customers need multiple charging cards/accounts. Charging infrastructure is a key concern, along with affordability compared to internal combustion or hybrid vehicles. Original Equipment Manufacturers (OEMs) and dealers need to offer a premium EV experience, but not at a premium price. This includes strong service contracts, extended warranties, and addressing battery performance. Yet, the shift to EVs is creating clear momentum for new customer-focused business models.

Q: How do you see IoT devices, electric vehicles, and real-time payments evolving and intersecting over the next five to ten years?

Daniel: Starting with IoT, the world will become more connected than ever. Depending on the source, estimates suggest up to 30 billion IoT devices by the end of 2030. While not every device will directly enable IoT-related payments, the scale illustrates how deeply embedded these technologies will be in our lives and business. The growth is unlikely to come as a big bang, but through steady, incremental steps – yet its relevance will undoubtedly increase.

Christopher: For electric vehicles, the outlook is more complex. Besides the opportunities of the evolving sensor – and IoT device led data economy in the automotive/electric vehicle space, much depends on external factors such as political support and subsidies, especially in markets like Germany. Discussions about tariffs also play a crucial role. On the other hand, the management of residual values and battery lifetime are essential factors as well. Overall, the future success of EVs hinges on whether OEMs can offer them at competitive price points and significantly improve charging infrastructure. If those conditions are met, and energy can be produced affordably, then EVs could see a real breakthrough.

Daniel: As for real-time payments, especially in Europe, a major shift is already underway. From October, most financial institutions will be required to offer instant payments. While adoption will grow over time, we already see strong momentum and interest across sectors. Merchants, especially in e-commerce, are exploring real-time payments as a lower-cost alternative to card-based payments. Combined with developments like central bank digital currencies (CBDCs) for retail customers and stablecoins for large corporates, we expect real-time payments to play an increased role in shaping the payment, FX and treasury landscape ahead.

Expert View

Designing Systems for Real-Time Payments

Toine van Beusekom
Strategy Director, Icon Solutions

Q: What are the implications of real-time payments for data integrity and fraud prevention from a technology perspective?

Real-time payments bring the risk of real-time fraud, increasing the need for instant verification, real-time data processing and intelligent automation, potentially with the help of AI. However, AI solutions can be costly – AI chips are not cheap, so for simple queries it is not cost effective.

Security measures like confirmation of payee are key. But it is not just about the technology stack meeting service level agreements (SLAs); it is about designing business processes to match real-time demands: Many institutions still operate in horizontal silos, with bespoke applications processing each payment type. This makes change very cumbersome and costly across payment types.

A vertical approach – separating order management, execution and clearing and settlement – allows for compatibility with the real-time nature of modern payments, where all these pieces need to operate seamlessly and concurrently. This cross payment type approach, leveraging a modern ISO 20022 data model, is also key to ensuring data integrity.

Critically, 24x7/real-time operation demands a mindset shift. It is not just about the tools but also readiness to respond at 2am on a Sunday, with new processes, staffing, or automated.

Q: How should systems be designed to handle the scalability demands of real-time, high-volume payments?

The real challenge is handling unpredictable peak transaction volumes such as those triggered by large scale events like millions of simultaneous transactions resulting from a QR code shown during the Super Bowl.

The key is to avoid building monolithic systems. Real-time infrastructure must be modular, cloud-native, and designed for horizontal and vertical scaling leveraging cloud technology. Whether it is automated clearing house (ACH), cross-border RTGS, or domestic retail payments, the default is shifting towards real-time. In a few years, everything will be real-time by default. Imagine your entire payments volume to be real-time, and double that. We need to architect systems with that future in mind now.

Q: What key challenges do banks face in implementing real-time payments?

The main challenge is organizational, not technical. Banks must shift from slow, waterfall-style development cycles to continuous, real-time operations. This means reducing reliance on vendor-led upgrades or siloed IT processes and instead, favoring in-house control, agile delivery, and alignment across cloud, data, and security strategies.

Banks must rethink how they structure services. Clients increasingly value real-time data access alongside real-time payments. Banks need to simplify and modularize service delivery – shifting from a 'Cheesecake Factory' model (offering everything) to a 'Chipotle' style approach (customized from standardized components).

Q: Looking ahead, what are your predictions for the future of payments?

All payments will become instant by default. Bulk or ACH-style processes will still exist, but they will be layered over a real-time core, differentiated only by service level agreements.

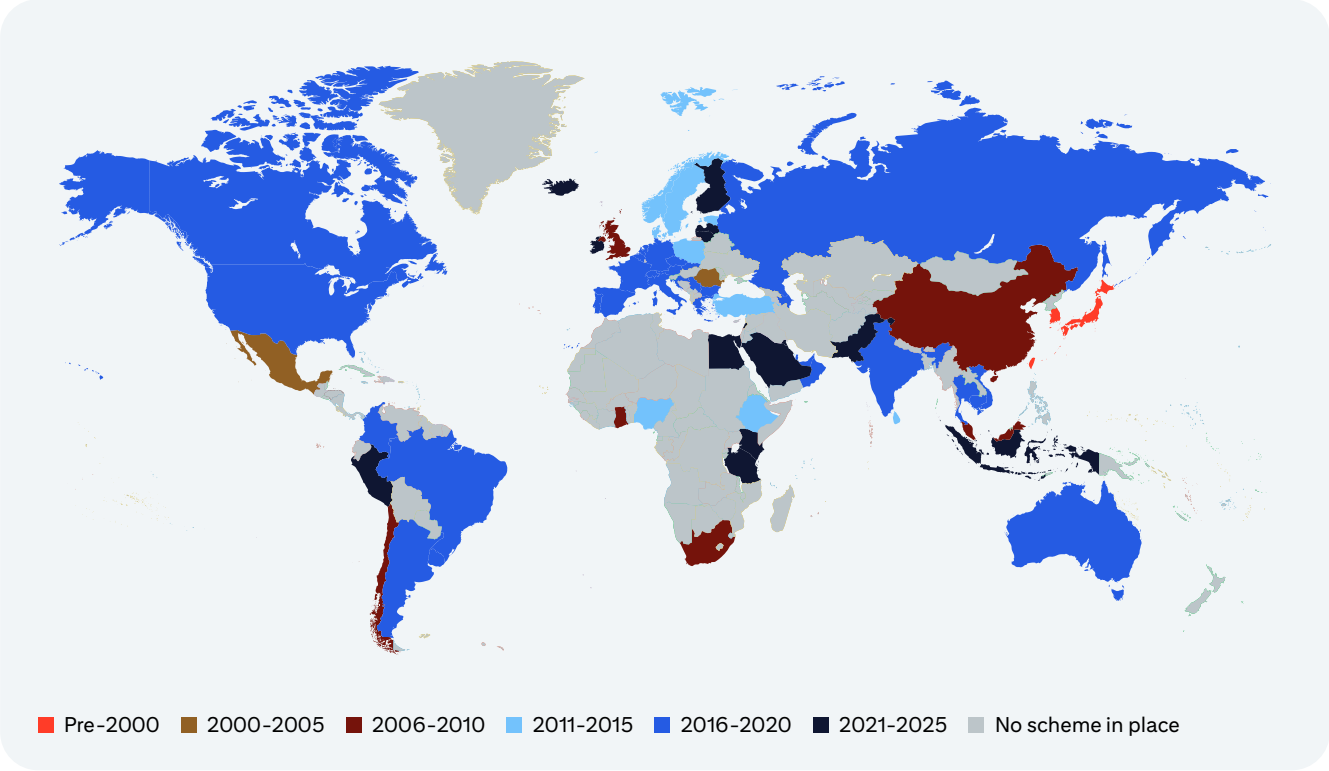
Instant cross-border transactions will also see a shift. In the next two years, mature real-time systems in markets like Singapore, Malaysia, India, and Indonesia are likely to continue their interoperability with more markets to follow, together with new methods for clearing and settlement, including stablecoins.

The main hurdle will not be technological, but rather political, organizational, and tied to legacy revenue streams. Banks must look beyond short-term compliance cycles and start planning for a full real-time future – a shift not only about modernization but also transformation.

Global Regulatory and Market Developments

More than 80 markets have implemented real-time payment systems, with at least 70 achieving settlement within seconds.[34, 35] While the US recently launched the central bank backed FedNow (2023), adoption remains market-driven, complementing the existing private-sector RTP network from The Clearing House (2017). In contrast, India's UPI scheme and Brazil's Pix system demonstrate successful mandate-backed approaches. Europe, offers a unique case study, evolving from an initially market-driven approach to a more regulatory-driven model.

Figure 7. Global real-time payments adoption



Source: ACI Worldwide, GlobalData, Citi Institute

Following the introduction of the euro, the approach to regulate rather than let the market develop on its own was a natural approach for Europe, given its complex and diverse market – every country had its own payment systems and a desire to retain them. Regulations 2560 and PSD1 ushered in the first wave of harmonization via law, followed by the Single Euro Payments Area (SEPA) regulation to mandate further harmonization. SEPA Instant is a natural evolution of this.

[34] Volt, Real-Time Payments Map, Updated on January 2025.
[35] Bank for International Settlement, Project Nexus: Enabling Instant Cross-Border Payments, 05 November 2024.

Europe: SEPA roll-out continues

The SEPA initiative began with the rollout of harmonized euro credit transfers in 2007. SEPA Instant was launched in 2017 to further modernize payment systems, with optional participation at the start and a recent mandate (2025) for all institutions offering SEPA credit transfers to also offer SEPA Instant, levelling the playing field.

This move aims to provide faster cash flow for businesses, promote innovation in areas like open banking, and reduce reliance on non-European payment infrastructures such as those operated by Visa and Mastercard, thereby increasing the EU's financial sovereignty, which has become very topical given the current geopolitical climate. Additionally, SEPA supports the EU's Capital Markets Union initiative by speeding up cross-border euro payments.

Another policy initiative impacting payments is the Markets in Crypto Assets Regulation (MiCA), effective since December 2024. It is the first regulation of its kind to establish clear requirements for issuing stablecoins and other crypto assets within the EU. MiCA establishes a legal framework for tokenization and sets requirements for issuers and service providers of e-money and asset-referenced tokens.

Key dates for SEPA Instant

- **January 2025:** Eurozone payment service providers (PSPs) offering standard SEPA credit transfers must be capable of receiving instant payments in euros (for non-eurozone PSPs the deadline in January 2027).
- **October 2025:** Eurozone payment service providers must be capable of sending instant payments (for non-eurozone PSPs the deadline is July 2027).

Expert View

EU Regulations for Instant Payments

Dr. Ruth Wandhöfer
Industry expert, author, NED, Professor

Q: How does the EU's real-time payments regulation compare globally?

The implementation approaches of the various payment systems differ significantly. In the U.S., real-time payment (RTP) network FedNow Service launched in 2023. However, The Clearing House's (TCH) RTP network was up and running in 2017, and is today responsible for the majority of instant payment flow.

The UK's Faster Payments Services was mandated from the outset to ensure that the benefits of speed and convenience would be available to everyone. Another great example is Brazil's Pix, launched in 2020. It was not mandatory either, but strong regulatory support and smart design led to rapid uptake.

Now, contrast that with the EU, which has gone down the regulatory route. It has mandated that banks that offer SEPA credit transfers must also offer SEPA Instant – initially receiving, then also sending. This ensures full reachability across the system, even among smaller players and guarantees consistent user experience across the eurozone.

Q: What are the implications of SEPA Instant for larger and smaller banks?

For large banks, SEPA Instant initially looked like a competitive edge. A few jumped in early, hoping to stand out, but without widespread adoption across the network, they could not realize the full benefit. One needs critical mass for real-time payment networks to work.

Smaller/mid-sized banks were more reluctant. For many, payments were not core to their business – think about mortgage banks or regionally focused institutions. They often relied on larger banks as SEPA entry points. But SEPA Instant's ten-second processing requirements makes that model operationally too challenging.

Now, with the EU mandating full reachability, even these banks have had to build or upgrade their payment capabilities. That has meant substantial investment and planning, especially for those who were not payment self-sufficient. In effect, regulation has pushed these institutions to modernize and become active players in the payment ecosystem.

Q: How does SEPA Instant affect the competitive landscape overall?

As SEPA Instant becomes universal – due to regulatory mandate – speed will no longer be a differentiator. Everyone will be offering real-time payments. That levels the playing field and shifts the competitive dynamic. Banks will need to look for new ways to stand out – through pricing strategies, customer experiences, service layers, or smart use of data.

From an economic angle, there is also potential for a shift in how payments are routed. SEPA Instant is cheaper and more efficient than legacy RTGS systems. Especially for high value domestic and as well as cross-border payments, banks may be driven by client demand to move volume over to SEPA Instant. This will hurt the bottom line.

U.S. Faster Payment Schemes

The Clearing House's RTP Network

Launched in 2017 by The Clearing House (TCH), the RTP© network was the first new core payments infrastructure in the U.S. in over 40 years. It enables instant, irrevocable payments that settle in real time, 24x7.

Designed for both consumers and businesses, the RTP network processes credit push transactions and supports rich data formats via ISO 20022. It allows request-for-payment (RfP) messages, facilitating bill payments and invoicing. The RTP network offers real-time confirmation and messaging, enabling integrated and dynamic cash management. Funds become immediately available to recipients, reducing float and improving liquidity.

The system caps individual payments at $10 million and connects participating financial institutions directly to the network. Unlike batch processing used by ACH, RTP transactions are cleared and settled simultaneously. Banks participating in the RTP network must be insured U.S. depository institutions.

The RTP network is privately owned but widely adopted by large U.S. banks and is growing rapidly among smaller institutions. It's particularly valuable for urgent disbursements, payroll advances, insurance payouts, and P2P transactions.

The RTP network is expanding, making it a cornerstone for modernizing U.S. payments infrastructure. The RTP network emphasizes speed, transparency, and finality, all critical in a fast-evolving financial services landscape where real-time capabilities are becoming the norm.

> "The RTP network is the most established and widely used instant payment system in the United States, measured by its reach to deposit accounts, payment volume, and transaction value. Nearly 1,000 financial institutions participate in the network, 93% of which are smaller community banks and credit unions."
>
> *David Watson, President and CEO, The Clearing House*

FedNow Service by the Federal Reserve

FedNow Service is the U.S. Federal Reserve's real-time payment service, launched in July 2023, designed to complement and compete with private networks like RTP. It provides 24x7 real-time settlement of instant transactions between financial institutions.

Unlike the RTP, which is privately operated by The Clearing House, FedNow Service is a public infrastructure intended to ensure broader and more equitable access to instant payments. FedNow Service offers an alternative solution for financial institutions of all sizes seeking to participate in the real-time payments ecosystem.

FedNow Service supports immediate fund availability, real-time confirmation, and ISO 20022 messaging standards, with a current transaction limit of $500,000, which it plans to increase to $1 million in the summer of 2025. The service is intended for a wide range of uses, including bill payments, B2B transactions, government disbursements, and P2P transfers.

> Demand for instant payments is growing rapidly, and we're excited to see our network steadily expanding as the FedNow® Service helps meet the needs of the evolving payments industry in a safe, efficient and accessible way. The FedNow Service positions financial institutions of all sizes to stay competitive and offer best-in-class solutions that propel businesses and ultimately make consumers' lives easier.
>
> *Mark Gould, Chief Payments Executive, Federal Reserve Financial Services*

Participation is voluntary but growing, and the Federal Reserve acts as a neutral operator.

FedNow's rollout marked a major evolution in U.S. payment systems, offering a critical public option for instant settlement and enhancing financial inclusion, competition, and resilience. As adoption increases, FedNow is poised to reshape how individuals and businesses manage liquidity and conduct time-sensitive transactions.

The Future of Treasury is Real Time

There are many inefficiencies in how cash is moved and managed today. Part of this is inherent in the payments and banking world. But macro and industry changes discussed earlier are transforming that.

As discussed in Citi GPS: Treasury 2030 – Modernize or Risk Irrelevance (2024), there are unacknowledged opportunity costs and risks in the batch-driven, information-lagged routines currently within treasuries. This affords little flexibility or agility when most needed by the firm.

> The transition to a real time world is creating new opportunities for corporate treasurers to drive value. An increase in the velocity of cash means that treasurers' deep insights into their firms' financial ecosystem is ever more important in driving business growth and contributing to CEO objectives. To be successful, treasurers will need to be bold and develop an ambitious roadmap towards 2030.
>
> *Stephen Randall, Global Head Of Liquidity Management Services, Citi*

Real-time treasury is the concept of adopting instant payments and real-time information delivered via APIs, as well as enabling real-time liquidity management that accelerates the velocity of treasury processes.

We think treasuries will need a real-time mindset as the velocity of cash accelerates. This is evident for marketplaces and companies active in B2C e-commerce that are adopting 24x7 payment capabilities for a competitive edge. Preparing for real-time treasury will be essential for all companies, irrespective of business model.

Facing heightened investor expectations and market uncertainty, CFOs expect that treasurers will deliver on optimized capital structure and liquidity as business models evolve faster. Meanwhile, the rise of instant payments, open banking, and digital assets is driving acceleration in the velocity of cash. In time, money markets and FX markets are likely to evolve to support the needs of an always-on business world. This could lead to the end of so-called value-dating and the start of value-timing.

In a 24x7 real-time world, corporate treasurers will have a unique opportunity to create value and help their firms compete. But it will require a fundamental re-engineering of treasury and how it consumes and harnesses data. Immediacy of information improves cash flow management, reduces settlement risks, and lowers transaction costs. For businesses, this means faster access to liquidity, quicker reinvestment, better working capital management, and improved supply chain efficiency.

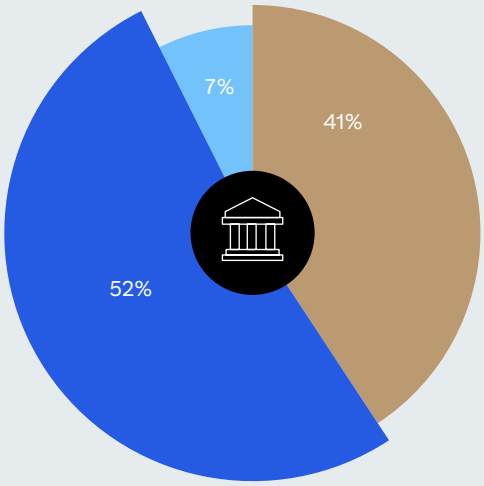
The outcome will be radically enhanced efficiency, which could significantly change the way corporations manage cash, offering a competitive advantage to those that do so.

A key issue is that corporate treasury is often underfunded in technology and resources. The need now is for treasurers to plan beyond incremental improvement, embracing modern technologies and adopting new ways of thinking to drive proactive strategies. This will enable treasury to shift from reactive processes to proactive, predictive strategies. Robust solutions should ensure that liquidity and working capital are optimized as cash cycles accelerate and the regulated financial system and market infrastructure evolve. More companies are recognizing the necessity for corporate treasury to advance.

Figure 8. Will corporate treasury be more advanced in the next 3-5 years?

For many companies, the Treasury 2030 ambition to provide attributable value add to the organization to support growth objectives will require changes to the infrastructure, organizational construct and positioning of treasury

93% of respondents to a 2024 Citi Client Advisory Group client survey expect treasury to become materially more advanced in the next three to five years. Yet over half indicated that there is uncertainty as to what shape this future will take and the path to get there.



- Yes, and I believe that how this will happen is becoming relatively clear
- Yes, although there is a lot of uncertainty as to what shape this will take and how progress happens
- No, it will mostly be incremental improvements rather than transformative advancements

% treasury function advancements.

Source: Citi Client Advisory Group, Client Survey, August 2024

Equipped with the right mindset, tools and talent, treasury will become involved earlier in strategic business decision-making, helping ensure better financial outcomes with the right balanced risk profile.

In the future, treasury will increasingly be able to make decisions based on real-time data and rely on high process automation. This can be accomplished first through utilizing data and policy-led deterministic logic, and then through AI to support faster and more informed choices.

Leading treasurers also recognize the need to have the right people and talent mix at all levels, and across all functions, to drive the transformation. For many, this will necessitate shifting from the role of being an executer to one of key enabler. In the future, communication skills and an embrace of change will be core to the DNA of the treasury workforce.

Treasury technology providers, banks and fintechs have a key role: to work together and collaborate in the services they provide to companies. These services will need to operate together in a choreographed way to enable real-time treasury operations and full automation, bringing solutions for corporate treasury to succeed.

As treasury takes on an expanded role within the organization, businesses will be better equipped to meet the goals and objectives they have set for themselves. The road to 2030 is filled with opportunity for those that boldly embrace treasury as a key partner in success.

Instant Cross Border Payments

Cross-border payments are a large and rapidly expanding market (Citi GPS: Future of Cross Border Payments – Who Will Be Moving $250 Trillion in the Next Five Years, 2023). By 2030 the number is estimated to go up to $300 trillion.[36] This potential has fueled various initiatives aimed at improving real-time cross border payments, including the G20. However, progress is uneven, and significant hurdles remain in achieving seamless global instant payments.

G20 Initiative: The G20 summit in 2020 endorsed the Roadmap for Enhancing Cross-border Payments, with the goal of reaching greater financial inclusion and cross-border payment efficiency by addressing four priority areas:

- Cost reduction across all payment chains.
- Speed increase, for a real-time or near-instant payment experience.
- Access simplification, for both financial institutions and end users.
- Transparency of information and increased payment visibility/tracking end-to-end.

In Citi GPS: 24x7 Cross-Border Payments: Faster, Simpler, Smarter (2024), we cover the G20 roadmap in detail. Progress against those goals is monitored by the Financial Stability Board (FSB), in coordination with the Bank for International Settlements' Committee on Payments and Market Infrastructures (CPMI), and in constant dialogue and engagement with other international bodies, regulators, and industry operators.

Despite complexities, the landscape is transforming, and initiatives facilitating these goals offer promise. For example, regulators in Thailand have mandated the adoption of the ISO 20022 format for processing cross-border payments. Further, interlinking arrangements among instant payment systems could potentially bring benefits in terms of scalability of cross-border instant payments processing.

Some initiatives are being explored and carried out. For example, Project Nexus, a project from five Asian countries – India, Malaysia, the Philippines, Singapore and Thailand, aims to standardize the way the domestic instant payment systems connect to each other.

All these initiatives have ambitious goals, but challenges persist. Initiatives like Immediate Cross-Border (a joint project of The Clearing House, EBA Clearing and Swift) and the Nordic P27 project, despite initial promise, encountered setbacks, highlighting the complexities of interoperability and harmonization.

The P27 Nordic Payments initiative, launched in 2018, aimed to create a unified, real-time, multi-currency payment infrastructure across Denmark, Sweden, Finland, and Norway. However, its discontinuation in 2023 underscores the complexities of harmonizing domestic payment systems, even in regions with close ties and shared regulations. Diverging national priorities, legacy infrastructure, and compliance challenges proved insurmountable.

[36] Trulioo, Trulioo Transactions Surge 34% for Global Marketplaces, 21% for Payments Enterprises in 2024, 19 December 2024.

The merger of Denmark's MobilePay and Norway's Vipps into Vipps MobilePay created a competing platform, further complicating integration. P27's withdrawal of its clearing license application from the Swedish Financial Supervisory Authority highlighted the regulatory hurdles.

Similarly, the Immediate Cross-Border Payments (IXB) initiative, a collaboration between The Clearing House (TCH), EBA Clearing and Swift, aimed to connect the U.S.'s RTP and Europe's RT1 systems for real-time USD-EUR payments.

Its discontinuation further illustrates these complexities: despite initial progress and a successful pilot, regulatory alignment, technical interoperability, and differing stakeholder priorities presented challenges. Consequently, TCH shifted towards exploring a "one-leg out" solution, leveraging existing infrastructure while mitigating integration complexities.

Both P27 and IXB demonstrate that even in closely aligned economies, achieving seamless cross-border instant payments requires navigating significant technical, regulatory, and organizational hurdles.

These experiences underscore the need for a balanced approach that recognizes both the potential and the practical challenges of real-time cross-border solutions. Instant cross-border payments are transforming the way businesses operate globally, creating new opportunities across various sectors. Let us look at some specific examples:

- **Empowering the global gig economy:** With the rise of remote work and the gig economy, companies are managing an increasingly global workforce. Real-time cross-border payments simplify payroll and ensure that gig workers receive their earnings instantly, directly into their preferred bank accounts or digital wallets.

  This is particularly beneficial for workers with limited access to traditional banking services, providing greater financial inclusion and economic empowerment . It can also enhance platform loyalty and engagement, giving companies a competitive edge in attracting top talent.

- **Driving innovation in e-commerce and marketplaces:** Real-time cross-border payments are changing the game for online merchants and marketplaces serving international customers. Instant settlements enhance working capital management and boost customer satisfaction by eliminating multi-day waiting periods associated with traditional payment methods.

- **Streamlining passenger compensation:** In the travel industry, real-time payments expedite compensation for flight delays, lost baggage, and cancellations. This not only improves customer experience, but also increases satisfaction and operational efficiency for the airline.

- **Insurance claims and payouts:** The insurance industry benefits from real-time cross border payments (see page 25) by enabling faster claims disbursement. This significantly improves liquidity management for insurers and provides timely financial support to policyholders, especially in case of international claims.

- **Unlocking liquidity in global trade:** Liquidity constraints have long posed a challenge for businesses engaged in international trade, particularly small and medium enterprises (SMEs) that often rely on expensive credit mechanisms to manage cash flow.

  Instant cross border payments are enabling real-time settlements between buyers and suppliers. This optimizes working capital management, strengthens commercial relationships and reduces reliance on costly trade finance solutions.

- **Revolutionizing corporate treasury operations:** For multinational corporations, instant cross border payments are transforming treasury functions by enabling real-time movement of funds between global subsidiaries. The ability to instantly reposition liquidity across geographies helps companies reduce reliance on short-term borrowing, minimize foreign exchange exposure, and enhance operational efficiency.

- **Transforming cross-border remittances:** Real-time, low-cost cross-border remittances are now a reality, benefiting millions of households worldwide. This shift is particularly impactful in emerging markets where timely access to funds can impact economic well-being.

Stablecoins: The Future of Tokenized Money

Stablecoins are rapidly emerging as an alternative real-time settlement layer, delivering instant, borderless and programable payment capabilities outside of traditional banking systems.

While originally developed for crypto trading to ease trades across different cryptocurrencies, stablecoins' utility is gradually expanding to potentially solve a range of consumer and corporate payment use cases.

- **Real-time, borderless payments:** Unlike conventional real-time payment systems that are often domestic, stablecoins promise to offer near-instant, low-cost, 24x7 availability with programmable payment capabilities that can operate across borders. These attributes are particularly valuable when transacting across low- and middle-income countries, where banking infrastructure may be fragmented or unreliable. Stablecoins can bridge gaps in cross-border payment, providing faster, more predictable alternatives to traditional rails.

- **Regulatory shifts creating momentum:** The regulatory landscape is evolving in ways that support greater mainstream adoption of stablecoins. In the U.S., a more constructive regulatory stance on blockchain-based assets is expected to make 2025 a pivotal year. Meanwhile the European Union's Markets in Crypto Asset Regulation (MiCA) has already laid the groundwork for greater legal clarity across Europe. These developments are encouraging banks and institutional players to consider stablecoin use cases beyond just speculative trading. However, often-fluctuating exchange and FX controls in many markets pose a challenge for broader stablecoin adoption.

- **Programable money as a differentiator:** A key advantage of stablecoins lies in their programmability. By integrating with smart contracts, stablecoins can enable new financial logic – such as conditional payments, streamlining payroll or automated tax and compliance triggers. These capabilities go beyond the transactional scope of traditional real-time payment systems and offer new opportunities for automation, transparency and innovation.
- **Rapid growth potential:** In Citi GPS: Digital Dollars – Banks and Public Sector Drive Blockchain Adoption (2025) we note demand for stablecoins surged over 30x in the past five years, with total outstanding supply near $250 billion in 2025.

  While crypto trading is by far the largest use case today, stablecoin applications are expanding into areas such as remittances, merchant payments, treasury operations and more. Our base case scenario suggests stablecoin supply could grow to $1.6 trillion by 2030 – a shift driven not just by market momentum, but by broader blockchain adoption across the financial and public sectors.
- **Opportunities for banks:** The growth of stablecoins presents new opportunities for banks to create better products and experiences. This could be a direct role as a stablecoin issuer or more indirect roles such as processing trillions in stablecoin transaction volumes; offering redemptions, pay-ins and payouts, merchant acceptances and even integrating stablecoin debit/credit cards into the existing or new payment networks.
- **Infrastructure and strategic hurdles:** Adopting stablecoins at scale will not be frictionless. Building parallel infrastructure rails for atomic settlement when existing ecosystem handle trillions of dollars in transaction value does not come as a priority or without significant disruption for incumbents.

  Embracing these emerging technologies requires a deep commitment on the part of financial institutions. Regulatory clarity is essential and there are encouraging developments happening globally on this front.

Expert View

Stablecoins-Powered Relief Payments

Elisabeth Carpenter
Chief Strategic Engagement Officer, Circle Impact

Q: How can stablecoins improve the speed and transparency of official aid and private sector philanthropic giving?

Stablecoins like USDC are rewriting the rules of humanitarian relief – moving funds at internet speed with the trust and stability of the dollar. In crisis zones, where banking systems falter and physical cash invites corruption, blockchain-based aid flows with real-time transparency and accountability, minimizing the risk of diversion or fraud.

For the millions displaced by war or disaster, this is not theoretical – it is transformative. In Ukraine, digital dollars have served as lifelines – preserving dignity, restoring agency, and helping families sustain themselves. For donors, governments, and humanitarian organizations, stablecoins enhance traceability, reduce costs, and offer a powerful new tool to strengthen the impact of global relief and philanthropic giving.

Q: Can you share a few real-world examples where USDC has been used for humanitarian aid distribution?

USDC has become a vital conduit for humanitarian aid – offering not just speed and cost savings, but dignity and control to those in crisis. In partnership with the United Nations Refugee Agency (UNHCR) and the Stellar Development Foundation, nearly $5 million[37] in USDC has been distributed to thousands of displaced families in Ukraine, Argentina, and other parts of the world. The program delivers digital cash assistance directly to recipients via digital wallets – no bank account required. In Ukraine, where displacement prevents many citizens from accessing traditional banking infrastructure, and nearly 40% of the population is unbanked[38] – this solution has been a game changer. Beneficiaries can receive funds within minutes and cash out in local currency, euros, or dollars at any global MoneyGram location (including 4,500 within Ukraine).[39] Settlement times dropped from weeks to less than a day – cutting costs by over a third and vastly improving reach and reliability.

In Venezuela, during the height of the COVID-19 crisis, Circle partnered with Airtm and the U.S. government to deliver almost 18 million USDC to over 62,000 frontline healthcare workers[40]. These digital dollars provided stability and purchasing power when it mattered most and kept essential services running. This underscores the ability to micro-target digital dollars to intended beneficiaries – even in very complex environments.

[37] CoinDesk, From Aid to Efficiency: Why the Stellar Blockchain Is the Future of Government Spending, 10 April 2025.
[38] Global Finance Magazine, World's Most Unbanked Countries, 17 February 2021.
[39] UNHCR Press Releases, UNHCR Launches Pilot Cash-Based Intervention Using Blockchain Technology for Humanitarian Payments to People Displaced and Impacted by the War in Ukraine, 15 December 2022.
[40] Circle Impact Report, Enhancing Global Impact with Digital Dollars, 2024.

These projects are proof points that programmable, fully-reserved digital dollars like USDC can transform how aid is delivered – near-instantly, accountably, and with humanity at the center.

Q: What are the biggest barriers to using stablecoins, and how do you manage concerns?

Digital access remains a hurdle – but not a barrier. Even in low-connectivity settings, USDC-powered aid can reach individuals without smartphones or bank accounts. Circle partners with NGOs and fintech innovators delivering low-tech interfaces, SMS-based access, and cash-out options through trusted local outlets.

In one recent deployment, a meaningful share of aid recipients was able to access USDC without smartphones – proof that digital dollars can reach beyond the digital divide. Our approach to design is radically inclusive built around people, not platforms. Through interoperability, education, and human-centered tools, we aim to democratize digital finance, laying the foundation for a more inclusive, responsive, and resilient global financial future.

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