Staff memo

Fast payments offer economic benefits, but pose new challenges

RIX-INST and fast payments seen through the lens of financial stability.

May 2025

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Summary

It has been possible to conduct a "fast payment" in Sweden since 2012, and the benefits to both businesses and consumers are well-documented. However, as fast payments become more commonplace, and more complex, known risks take on new shapes.

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Fast payments are already commonplace in Sweden and in the Nordics for peer-to-peer transactions (see FACT BOX – Fast payments in the Nordics and Eurozone) and are increasingly being used to develop other innovative services too. Globally, attention has also been paid to the meteoric rise of fast payments in Brazil (with their PIX infrastructure) and India (with their Unified Payments Interface, or UPI). European authorities are also actively encouraging fast payments in Europe: The European Central Bank (ECB) has developed the TARGET Instant Payment Settlement (TIPS) market infrastructure, and the European Commission adopted the Instant Payments Regulation (IPR) in 2024. Fast payments in Europe are expected not only to offer economic benefits, but also make the European payments system more robust by offering alternative infrastructures for European payments.

The benefits of fast payments have been discussed extensively, and adoption of fast payments suggests that the convenience and user-friendliness of this form of payment is here to stay. However, no solution for payments is risk-free. Rather, faster payments also entail risks that need to be managed—and these risks are no larger than with other payments. Risks should therefore not be seen as barriers to innovation or adoption.

Where fast payments are settled in real-time, the main risk is one of liquidity: where many small payments occur in real-time, banks and payment services providers may struggle to make sure that they have enough liquidity to process unexpectedly large or many transactions. Large payments might move to fast payments services, making liquidity management even more challenging. Where fast payments are settled using the deferred net settlement model, the main concern is credit risk. This is the risk that one party will not meet its obligation for full value when it becomes due, typically when the transaction is settled. There are already toolkits for managing these risks, but new approaches may be needed to manage incidents in real-time.

Fast payments are increasingly conducted by many, specialised actors, for instance by operating as a multi-service chain, known as "embedded finance".[1] The result is that risks are layered, as actors are dependent on one another. This trend is reinforced by new rules that give a new group of actors, payment services providers and e-money institutes, the possibility to apply to use settlement services in the European Union

[1] This phenomenon is also sometimes called "Banking as a Service" or "white labelling".

(EU) and in Sweden by using the Riksbank settlement systems.[2] Thus, for a single payment there are many points at which operational errors, including cyber risks, might occur. Weaknesses in a single actor could have consequences for others in the ecosystem. Settling in central bank money mitigates some risks, but there are still several layers to an instant payment and multiple actors involved, meaning that further risk reducing mechanisms are needed.

Fast payments are entirely digital and operational incidents are felt by users in real time, challenging operators to remedy incidents in real-time. Management of these risks, while possible, becomes a more complex undertaking. Reacting to incidents is also more challenging given that fast payments are "always on", leaving little room for down-time when it comes to operational incidents, but also for bank resolution, should actors face financial difficulties.

RIX-INST, the Riksbank's fast payments settlement infrastructure for the Swedish market, offers their participants tools that mitigate liquidity and credit risks. It also reduces the likelihood of operational risks by requiring that its participants have robust incident mitigation and management capabilities. The Swedish Financial Supervisory Authority (Finansinspektionen) also supervises RIX-INST participants, and the Riksbank oversees central and particularly important actors in the name of financial stability. Nevertheless, it is important that individual actors have robust and innovative risk management approaches so that the fast payments ecosystem as a whole is robust—and to realise the benefits that arise from fast payments.

[2] Changes to the Settlement Act (1999:1309) mean that Payment Services Providers (PSPs) and E-Money Institutes can apply to become participants in the Riksbank's settlement system RIX.

1 Introduction

A fast payment is when the recipient of a credit transfer receives the final crediting of funds in real-time or near real-time. These payments are on the rise across the globe but pose new challenges related to liquidity management and maintaining services that are "always-on".

Considerable attention has been paid in recent years to the convenience and efficiency of fast (or sometimes "instant") payments.[3] There are many advantages to fast payments, for instance for small businesses who appreciate immediate payment, or consumers who want to divide up paying for a meal in real-time. European authorities have also emphasized that making payments cheaper and easier within the European Union (EU) is of strategic importance and supports wider efforts around civil preparedness. They have therefore promoted widespread use of fast payments and passed the Instant Payment Regulations[4] to make fast payments more widely available in the EU while also keeping prices low.

In this form of payment, the recipient of a credit transfer receives the final crediting of funds in real time or near real time. Although fast payments are fast from the perspective of users sending and receiving the funds, this is not always the case when it comes to settling the payment—and the different settlement methods entail different risk management strategies.

While we briefly note consumer risks, for instance the risk of fraud, the focus of this memo is on stability risks, with particular emphasis on the infrastructure provider's perspective. If these risks are not adequately managed, for instance liquidity, credit, and operational risks, can negatively impact the financial system as for any other established payments infrastructure. As fast payments systems are "always on", the risks that arise typically need to be dealt with quickly, making speed a priority. Like the risks that traditionally occur in all financial market infrastructures, acknowledging them is the first step towards managing them. The aim of this Staff Memo is therefore not to treat risks as obstacles to progress and development, but rather to initiate a discussion as to how best to manage them.

This Staff Memo focusses on the new forms known risks have taken given the rise of fast payments. It starts by looking at the risks that are typically understood as arising from fast payments, and how emphasis has shifted towards operational and cyber risks in real-time. It then turns to look at how RIX-INST, the Riksbank-owned fast payments settlement system, operates and how it manages these risks, including risks that have taken on new forms. It concludes with a short discussion of management strategies for handling the renewed focus on certain kinds of risks given the evolving nature of fast payments in Sweden.

[3] See, for instance, BIS (2016), *Fast payments – Enhancing the speed and availability of retail payments* and BIS (2024). *Final report to the G20. Linking fast payment systems across borders: governance and oversight.*

[4] Instant Payments Regulation (Regulation (EU) 2024/886)

2 New features build trust and encourage innovation—but bring new challenges

Better interfaces and the use of consumer-facing technologies have helped to make fast payments not only convenient, but also accessible. However, systems that process payments in real-time and rely on layers of specialised actors poses new challenges for risk management.

2.1 Central banks often act as catalysts for fast payments

Across the globe, central banks have encouraged advances in fast payments, and often it is the central bank that owns the settlement infrastructure for fast payments. In Sweden, the Riksbank owns the fast payments settlement infrastructure RIX-INST. The European Central Bank launched the TARGET Instant Payment Settlement (TIPS) market infrastructure service in November 2018. Other countries where this is the case include the Swiss National Bank, which operates the SIC system, and Australia's New Payments Platform, which integrates fast payments functionality in its RTGS system as a separate module. In some parts of the world, the central bank has also made it mandatory for major banks to adopt fast payments systems, as was the case with Brazil's PIX fast transfer infrastructure in 2020.[5]

Central banks encourage adoption for varied reasons. In India, for instance, the Unified Payments Interface (UPI), is referred to as a "digital public good" and credited with offering a financial means of payment to some 350 million users.[6] A political decision was made in Europe to pass the Instant Payments Regulation in 2024, with the stated aim of accelerating the use of fast payments in euros, while keeping costs low.[7] Fast payments can also be seen as supporting civil preparedness, in that they encourage alternative payment methods in the European financial system.

In Sweden, batch payments are settled at the Riksbank's RIX Real Time Gross Settlement (RTGS) system at designated times. The receiving party is credited after settlement and after crediting information is sent to the receiving bank. Batched payments take hours—or a weekend—to settle, and processed payments are sent by banks in bulk to be checked at a clearing house before being sent for settlement at the central bank. This allows payments to be netted against each other, allowing banks to manage their liquidity and plan for large payments. Settlement at the RTGS occurs in real time, but usually at pre-determined times during the day depending on the rules of

[5] Sampaio, M.C. and Ornelas, J.R.H. (2024). *Payment technology complementarities and their consequences on the banking sector: evidence from Brazil's PIX*

[6] Although it is operated today by the National Payments Corporation of India (NPCI), a non-profit entity, it was launched by the Reserve Bank of India in 2016 as part of broader efforts to modernise India's payment systems. See Cornelli, G., Frost, J., Gambacorta, L., Sinha, S. and Townsend, RM. (2024). *The organisation of digital payments in India –lessons from the Unified Payments Interface (UPI.)*

[7] See Instant Payments Regulation (Regulation (EU) 2024/886)

the clearing system. The Swedish RTGS is not currently open for transactions settlement outside of working hours. However, there is ongoing work that may make batch payments more like fast payments in the future.

Standardisation is one way to promote innovation

While user-facing technologies like apps are the visible face of fast payments, infrastructure providers, typically central banks, have also sought to lower barriers to entry for would-be fast payments providers through standardisation. One focus has been on the release of application programming interface (APIs) which make it easy for payment services providers (PSPs) and software companies to offer payments and services through apps. Often it is the central banks themselves that develop and promote the APIs, as in both Brazil and India. APIs not only streamline payment initiation, they also encourage innovation by letting entrepreneurs focus on product development, as data and functionalities are in the API. Simplification and standardisation through new settlement models can also encourage innovation and attract service providers.

In Europe, there has been coordination and standardisation of new features among payment systems. Both the European Payments Council (EPC) and the Nordic Payments Council (NPC) have developed rulebooks for the implementation of fast payments, known as the Single Euro Payments Area (SEPA) Instant Credit Transfer rulebook[8] and the NPC's Instant Credit Transfer Scheme (NCT Inst) .[9] In Sweden, the Riksbank has also promoted standardisation by requiring that participants follow the NCT Inst in RIX-INST. Standardisation through this standard settlement model is intended to make the settlement infrastructure available to a wider range of financial actors. It has been in use since November 2024. In addition, it is possible for actors to use the Single Instructing Party (SIP) model for specific use-cases.

Financial institutions and fintech companies have used fast payments to create innovative solutions that, for instance, reduce transaction friction and allow them to offer a better customer experience. These include APIs, where the central bank does not offer them. They also include new interfaces and apps that function as a platform for multiple banks, while offering the end user a simpler user experience. These features mean that fast payments have the potential to be more efficient than other kinds of payments.

Encouraging innovation, promoting trust, and increasing user-friendliness has benefited end users. However, it has also meant that the process of executing a fast payment involves many more steps than, for instance, a batch payment. Moreover, in many cases these steps are executed by different actors with different IT systems and dependencies. One actor, for instance, might act as an instructing party to connect with the central bank's settlement system, while another operates payment flow analytics. Still another may offer a platform for third party developers, another cybersecurity, another a point of sale, another a consumer application, and a final one conducts know-your-customer or compliance processes.

[8] See EPC (n.d.). *SEPA Instant Credit Transfer rulebook and implementation guidelines*

[9] See NPC (n.d.). *NPC Instant Credit Transfer Scheme Rulebook.*

New features provided by new actors improve user-experience

New features make fast payments simple to use. One such feature is a QR code, the use of which provides security and certainty of payment. Scanning a unique code ensures that a payment is sent to the intended recipient without error. This simplicity, combined with the assurance of a secure transaction, reinforces consumer trust in the payment system. Another feature is the ability to use a proxy service, for instance a mobile phone number instead of a bank account number, to initiate a transaction.

NFC (Near Field Communication) technology, found on most mobile phones, can also be used to initiate payments. Where NFC functionalities are open to third party developers, NFC can be integrated into new or existing apps. ApplePay and GooglePay, for instance, use this technology to execute card payments through their apps. Using NFC technology could make fast payments quicker and more user-friendly by making it possible to initiate a fast payment by just tapping a phone or smartwatch, without needing to open a specific app. The use of this technology, however, has yet to be used widely for fast payments.

Another feature that increases user friendliness is the “request to pay” or “request for payment” function, which also contributes to trust by giving consumers greater control and transparency. This feature allows individuals to receive a formal payment request before authorising a transfer, ensuring that payments are deliberate and accurate. Such mechanisms reduce the likelihood of errors and disputes, adding a layer of certainty to the payment process. Users of the service also have more control over their payment activities, although with this added layer of control comes renewed responsibility for the payments that they approve.

New features encourage trust, but also pose new challenges

Another trust-building feature is verification or confirmation of payee (CoP), which can also build trust by verifying the payee’s identity before a transaction is completed. Nordic fast payment services like Swish and Vipps MobilePay (see FACT BOX: Fast payments in the Nordics and Eurozone) have already integrated their own CoP solutions.

Some of these features encourage trust. For instance, immediate confirmation of a transaction. As soon as a payment is made, both the sender and the recipient receive confirmation in real time, or close to real-time. This instant feedback not only reassures consumers that a payment has reached its intended recipient, but also enables recipients—especially small businesses or individuals—to respond immediately, for instance by shipping goods or providing services. However, it may also lead to new risks: for instance, where fast payments are used for fraud and phishing in real-time.

Standardisation and new features have not just led to better user experiences and lower barriers to entry. Instead, they have meant that the transaction process is increasingly divided into multiple pieces. Each piece is then completed by a different specialised service provider, making access and the user experience better. However, this creates new dependencies, and a layering of risks. The increase in features and specialised actors that deliver them also means that some payments are not carried out by traditional financial actors.

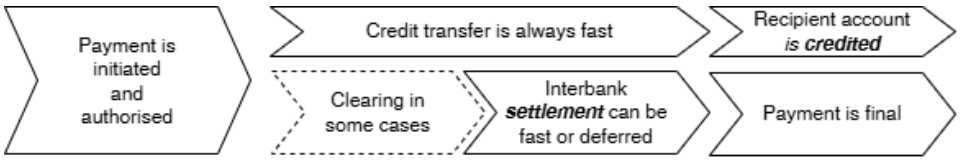
3 Some risks stem from choice of settlement method

Fast payments have attracted international attention because fast fund transfers are convenient and support economic activity. However, they can be settled in different ways—real-time settlement is associated with increased liquidity risk, while deferred net settlement is associated with increased credit risk.

3.1 Interbank settlement at a central bank can be real-time or deferred

Fast payment use is already widespread both globally and among our Nordic neighbours (see FACT BOX: Fast payments in the Nordics and Eurozone). To understand fast payments, one distinguishes between the crediting of funds, which is where the recipient of a payment receives the funds, and the settlement of funds, which is where the obligations of the sending bank or PSP to the receiving bank are finalised. The two are separate but equally necessary parts of a payment, whether fast or batch.

Figure 1. Credit transfer and final settlement are separate, but related, processes

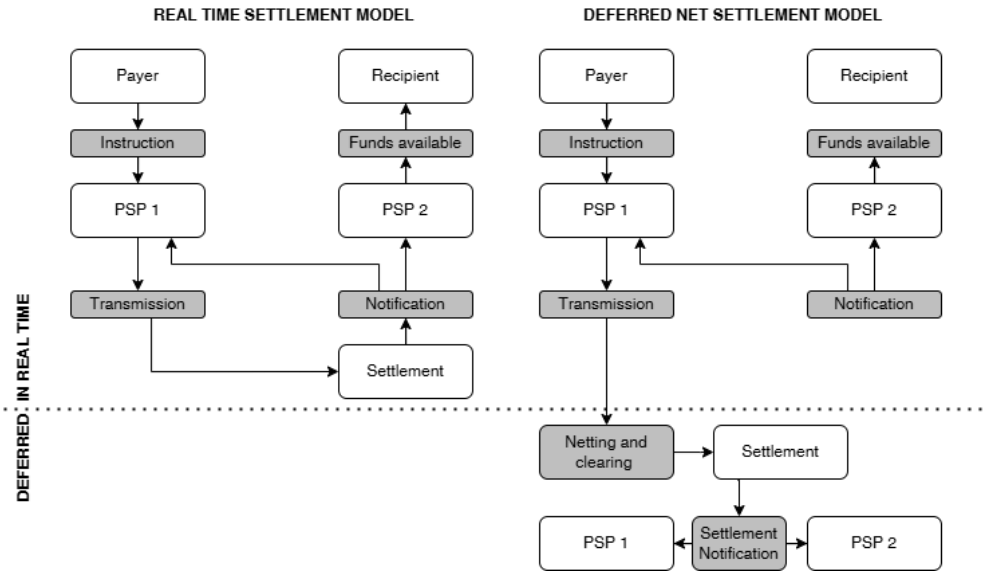


Source: Authors' illustration

While recipients receive a payment made using a fast payment service almost immediately, this does not mean that in all cases the full process of paying is executed immediately. Rather, the process whereby a recipient's account is credited (and they are notified of the transaction) can be considered to be separate from the settlement (and sometimes clearing) process whereby the transaction is finalised. For fast payments, the end user is always credited quickly, but settlement may be either fast or deferred (see Figure 1).[10] The result is two distinct settlement models, known as real-time settlement and deferred net settlement. The processes these two different models follow is summarised in Figure 2.

[10] See Sveriges Riksbank (2024). *Avveckling i centralbankspengar utifrån ett finansiellt stabilitetsperspektiv*

Figure 2. A stylised view of the real-time and deferred net settlement



Source: Adapted from CPMI and World Bank[11]

Both real-time and deferred settlement models are used widely across the globe (see Table 1). However, as with all infrastructure, both models bring stability risks that are worth considering—and managing. Many of these risks are already identified in oversight guidance for financial infrastructures, as enshrined in Principles for Financial Market Infrastructures (PFMI). However, given the novel characteristics of fast payments, some of these risks take on new forms. Even so, PFMI provides time-tested guidance for how traditional risks can be managed or mitigated.

Table 1. Different settlement methods used for fast payments globally

	Deferred net settlement	Real-time settlement		Deferred net settlement	Real-time settlement
Australia		X	Mexico		X
Brazil		X	Nigeria	X	
Chile	X		Norway		X
China	X		Pakistan	X	
Denmark[12]		X	Poland	X	
Eurozone		X	Singapore	X	
Hong Kong		X	South Africa	X	
Iceland	X		Sweden		X
India	X		UK	X	
Kenya	X		USA		X
Malaysia	X				

Source: World Bank[13] and central banks' websites

[11] IMF (2023). *Settlement models in fast payment systems and implications for participant access.*

[12] From April 2025

[13] IMF (2023). *Settlement models in fast payment systems and implications for participant access.*

3.2 Real-time settlement faces a liquidity risk but largely eliminates credit and settlement risks

Sweden's fast payments infrastructure, RIX-INST, uses the real-time settlement model for fast payments that are settled at the Riksbank. In this model, individual payment transactions are processed one-by-one and interbank settlement occurs immediately. However, banks and PSPs need constant liquidity for these real-time settlements, requiring a system to manage liquidity needs, given operating hours and related facilities. A liquidity risk arises: that the bank or PSP does not have the liquidity to honour an unexpected transaction.

Liquidity risk is the risk that a financial institution cannot meet its payment obligations as they come due, either by completely being unable to meet an obligation or by incurring significant losses in the process. This risk can arise in both the deferred and real-time settlement models, but is probably the biggest challenge for fast payment systems with real-time settlement. Here, banks and PSPs need to maintain and predict their liquidity needs in real-time, which can be a challenge given fast settlement. However, there are several tools available to manage this risk. These tools are often offered together to minimise liquidity risks.

Typical tools for managing liquidity are summarised in Table 1. They include the provision of an intraday liquidity facility, typically at the central bank. Where this tool is used, fast payments participants can access credit from the central bank, typically conditional on appropriate collateral and linked to the central bank's RTGS system. This tool is widely used, including by the Riksbank's RIX-INST. Another such tool is the ability to transfer liquidity between fast payments accounts and RTGS accounts, especially when the RTGS is closed. This payment possibility could be either at a set time, for instance at the end of a working day, or an automatic transfer when a minimum balance is reached. Such liquidity transfers could also include transfers between participants, not just between the central bank and a bank. Lastly, real-time and predictive liquidity monitoring helps PSPs keep track of, and make predictions related to, their liquidity. This tool, together with the ability to make real-time or automatic liquidity transfers allows for responsive liquidity management.

Table 2. Liquidity risks and associated management tools

Type of risk	Definition	Risk management tools
Liquidity risk	Risk that a financial institution cannot meet its payment obligations as they come due	• Central Bank intraday liquidity facility • End-of-day balance transfer • Automatic balance transfer • Cross-bank/PSP Transfers • Real-time and predictive liquidity monitoring

Although a liquidity risk arises in real-time settlement, credit and settlement risks are largely eliminated. This is because the credit transfer between the payer, recipient, and PSP occurs very quickly, making it unlikely that something will occur in the interim that will prevent final settlement. The opposite, however, is true for fast payment systems that make use of deferred net settlement.

3.3 Deferred net settlement associated with credit and settlement risks but reduced liquidity risk

Other countries, for instance the United Kingdom with its Faster Payments Service (FPS), use the deferred net settlement model. In this model, payments are credited one-by-one in real-time for users, but interbank settlement is done using batching and occurs at a predetermined time (e.g., end of day) during the settlement system's working hours. In the gap between the crediting of funds and when actual settlement takes place, the receiving bank or PSP implicitly gives credit to the sending bank until settlement occurs. Thus, a credit risk occurs where one party to a transaction will not meet its obligation for full value when it becomes due, typically when the transaction is settled. There is also a risk that the payer's bank goes into default or cannot honour a payment before the payment is finalised but after the recipient has received payment. This is known as a settlement risk. Both risks are particularly acute where the deferred net settlement model is used because net debt positions build up between settlement cycles.

These risks can be managed in several ways, summarised in Table 2. First, settlement systems can offer frequent settlement cycles to avoid net debt positions growing too large. Settlement systems can also place limits on debt positions between settlement cycles. This can be done by limiting bank and PSP exposure, or by limiting the value of each individual transaction. Cross-party limits can take the form of either limits between parties (bilateral) or in total (multilateral). For instance, the Bank of England's fast payment system, uses a net sender cap (NSC) that reflects the collateral that the participant holds at the central bank. Limiting the size of each individual transaction, as for instance is done in Iceland does contain exposure but can make fast payments less user-friendly. These limits to debt positions help contain risk, but do not ameliorate it entirely.

Another widespread tool to limit settlement and credit risk is the use of pre-funding of bank and PSP accounts at the central bank's settlement system, as for instance is done in Norway. Here, settlement of fast payments is done using the pre-funded amounts, meaning that credit and settlement risks are largely eliminated—but required that banks commit considerable liquidity to their accounts. Lastly, participants can enter into loss-sharing agreements, which determine how losses are shared among participants should they occur. Such agreements include settlement guarantee funds and collateralization of net debit positions, which can range from covering the largest participant's potential losses ("cover one") to all participants ("cover all"). For banks and PSPs, keeping more collateral at the central bank reduces risk but increases costs as the capital is then unavailable for other, more productive, purposes.

Table 3. Settlement and credit risks and associated management tools

Type of risk	Definition	**Risk management tools**
Credit and settlement risks	**Settlement risk** is the risk that settlement in a transfer system does not take place as expected, and **credit risk** is the risk that one party to a transaction will not meet its obligation for full value when it becomes due, typically when the transaction is settled.	• Frequent settlement cycles • Limits on debit/credit positions • Transaction value limits • Pre-funding of positions at central banks • Loss-sharing agreements

In net deferred settlement, liquidity needs are typically reduced as bank and PSP transactions are settled net and only at pre-determined times. Banks and PSPs therefore have lower real-time liquidity requirements. However, although they are less likely to be surprised overall, liquidity demands can still develop into a challenge at the pre-determined settlement intervals.

FACT BOX – Fast payments in the Nordics and Eurozone

Denmark

Denmark has offered fast account-to-account (A2A) transfers since 2014. Up until April 2025, fast payments were made account-to-account (A2A) via Finance Denmark's Straksclearing, which was operated by Mastercard. They were then settled at the Nationalbankens Kronos 2 system, which used a deferred net settlement model. From April 2025, Danish kroner transactions have migrated to the European Central Bank's TARGET Instant Payment Settlement (TIPS) system, making the Danish krone the third currency to use TIPS, after the euro and Swedish krona. The move to TIPS also meant a change to settlement in real-time. The best-known fast payments app in Denmark is VippsMobilePay. For VippsMobilePay users of non-participant banks and PSPs, payments can be processed (and settled) through card payment networks.

Finland and the Eurozone

Finland, as a Eurozone country, relies mainly on the pan-European real-time gross settlement (RTGS) payment system RT1 to execute SEPA Instant Credit Transfers (SCT Inst). RT1 is a service by EBA Clearing, a private payment system provider owned by major European banks. It is a separate payment system to TIPS, which Sweden uses, although RT1 transactions can be settled in TIPS. Payments are settled in real-time and one-by-one. APIs and open banking frameworks facilitate broader adoption by businesses and fintech providers. Two fast payments apps are used, namely VippsMobilepay (A2A, only for Danske Bank customers) and Siirto (for customers of Nordea, OP, S-Banken and Ålandsbanken).

Iceland

Iceland renewed its domestic retail fast payment system in 2020, known as EXP. Payments are settled using deferred net settlement through their central bank, Seðlabanki Íslands. Settlement accounts at the central bank are not pre-funded, but the bank provides credit as needed against appropriate collateral. In Iceland fast payments have existed for about two decades and are mainly facilitated by internet banks and mobile banking solutions. In 2024, the central bank expressed interest in joining TIPS.

Norway

Norway has offered fast A2A payments since 2013. Settlement of fast payments occurs in real-time through Straks 2.0, which is operated by Bits AS, which is owned by the Norwegian banks. APIs are widely available to encourage adoption, especially for integration with digital wallets and by fintechs. Most fast payments are A2A transfers via the VippsMobilepay app. Norway plans to join TIPS in 2028.

Sweden

Sweden has offered fast A2A payments since 2012. Since March 2024, settlement of these payments has occurred in real-time through RIX-INST, which uses the TIPS technical infrastructure but is owned by Sveriges Riksbank. RIX-INST offers two settlement models. The first one is open only to instructing parties via Swish, the most used fast payments application. This is called the Single Instructing Party Settlement (SIP) model. The second model, called the Standard settlement model, has been open to all participants in RIX-INST since November 2024.

4 Operational and cybersecurity risks pose challenges in real-time

Not all the risks that arise from the increased use of fast payments systems are financial ones. Nor are they entirely new risks. Rather, the increased number of actors and complexity of fast payments systems means that known operational and cybersecurity risks take on new forms and permutations. One such change lies in the reasons for an increased risk of operational error, namely that there are more actors and systems involved in a single transaction—meaning there are more sites in which an error could occur. These errors could take the form of either human error (e.g., a mistake in manual processing) or software error (e.g., a bug in a piece of software). These operational risks in one of the systems or an actor in the chain have knock-on effects for the rest of the payments chain.

Where there are more actors and digital tools active in a transaction, there are also more points at which the overall digital system can be exposed to a cybersecurity threat. Real-time systems are also attractive targets for cybercriminals due to the immediacy and irreversibility of fast transactions. Moreover, real-time processing allows little margin for error or downtime needed for maintenance and incident management.

This immediacy poses a challenge for those financial actors that offer fast payments. Not only does the always-on nature of fast payments mean that they operate their systems 24/7, but they also need to be available for crisis response, even in the middle of the night and on public holidays. This always-on crisis response can also pose a challenge for handling incidents, as users are dependent on fast payment systems working without interruption.

While there is no clear toolbox for managing these risks, good risk management routines, awareness of the risks that may occur, and good protection in the form of cyber-security is important to manage and mitigate the effects of these risks. This is particularly important when one considers that the increasingly complex nature of fast payment systems means that actors and systems are increasingly reliant on one another.

4.1 Some operational and financial risks can affect the whole system

Researchers across the globe are increasingly aware of how interconnected the financial system has become, including when it comes to payments systems. Good risk management on the part of individual actors or operators can mitigate the effects of a single point in a payment system going down. We are beginning to understand how interconnected fast payments are with other actors and industries, but good risk mitigation will require better and more detailed understanding.

One of the consequences of fast payment systems—and digitalisation more broadly—is that payments processes have become more interconnected. The failure of one actor, whether for financial or operational reasons, could have implications for the whole ecosystem. When a settlement system like RIX-INST, for instance, faces operational problems this can mean that the entire faster payment system might grind to a halt. These systemic risks are disruptions that occur at one point in the financial system, but which have implications, for instance instability, for the entire system.

Similarly, the widespread use of either the same sub-contractor, a common piece of software, or a shared service provider, means that the risk of a failure is concentrated in that actor or system. This concentration of risk means that, should that actor or system fail, whatever the reason, system-wide consequences may follow with implications for financial stability.

5 RIX-INST central to how fast payment risks are managed in Sweden

RIX-INST is the Riksbank's fast payment system for transactions in SEK. It makes use of real-time settlement, meaning that liquidity problems are a risk. It offers several tools to mitigate this risk. Robust operational and cyber risk management is a prerequisite for participation in RIX-INST.

5.1 Fast payments through RIX-INST expected to increase

In Sweden, RIX-INST is the central fast payment settlement system at the Riksbank.[14] It settles payments sent for settlement one-by-one and in real-time. RIX-INST offers real-time settlement and makes use of the European platform Target Instant Payment Settlement (TIPS) for its technical infrastructure. It offers two models for fast payments, namely the Single Instructing Party (SIP) model, used by banks that use Swish, and the Standard settlement model, through which RIX-INST participants can settle fast payments directly without the involvement of Swish. The Riksbank is also preparing to offer cross-currency payment settlement within Europe, specifically between euros, Swedish kronor, and Danish kroner.

Swish, a mobile payment provider, is what most consumers would consider to be the "face" of fast payments in Sweden. Swish is the instructing party and sends payments for settlement at RIX-INST. End users must, however, first approve payments by signing using the BankID application.[15] Banks also need to validate transactions before they are sent for settlement. Smaller service providers who are not RIX-INST participants use larger banks as a go-between. Further actors offer services for technical onboarding, payments between merchants, and similar.

Other fast payment services are expected to emerge in Sweden. Since late 2024, RIX-INST has been open for fast payment providers other than Swish through its standard settlement model. This mirrors developments in other countries, such as the United States, where the FedNow system supports multiple service providers and over a thousand banks. It is expected that this expanded fast payment offering, and standardised model, will lead to innovation and broader adoption of fast payments, aligning with international trends.

More payments might in the future move to RIX-INST

The movement towards the ISO 20022 standard also means that RTGS and INST payments follow the same standard—so payments of all sizes can be processed as fast

[14] Prior to March 2024, Swish transactions were processed through Betalningar i Realtid (BiR), a system operated by Bankgirot, with settlement conducted using commercial bank money backed by central bank money.

[15] BankID is an electronic identity service used for digital identification and signature. It is owned and operated by Finansiell ID-Teknik BID AB, which is owned by several major Swedish banks.

payments. Although RIX-INST is currently used for retail payments, the system can support larger payments, including wholesale[16] or priority payments. Although some large payments today are settled immediately in the RTGS, this is not commonplace. Were the division where large payments are processed on the RTGS, and small ones on the INST to be challenged, many of the risks that are manageable for RIX-INST under current conditions would become an order of magnitude larger, as transaction sizes become larger.

If more payments, including larger value ones, begin to be processed in real-time, whether through RIX-INST or otherwise, existing risks facing fast payments would gain a new dimension. The speed of transactions, even large ones, may leave little time to accommodate transactions, for instance through liquidity management.

Technical systems at RIX-INST set up to mitigate risks where possible

As briefly mentioned earlier, RIX-INST makes use of real-time settlement, where the Riksbank is the owner of the settlement system, uses TIPS' technical infrastructure. While credit and settlement risks are reduced in this model, liquidity risks can be of concern. The Riksbank manages this liquidity risk by making it possible for banks and PSPs to transfer liquidity between RIX-INST and RIX-RTGS almost 24/7, apart from one hour after the RTGS closes for the day.

Banks and PSPs also can also see their account balances in real-time and set up transfers between RIX-INST and RIX-RTGS in real time, at pre-determined times of days, or when certain thresholds (for instance a minimum balance) are met. For these reasons, we argue that liquidity concerns are largely mitigated in the RIX settlement system.

Furthermore, the Riksbank and its participants invest significantly in cybersecurity measures, such as advanced encryption and multi-factor authentication, to safeguard the integrity of fast payments. This reduces the risk of operational and cyber-security failures, although these can never be mitigated entirely. The TIPS platform has also set up robust technical and operational fall-back mechanisms, as well as incident recovery processes.

Given that RIX-INST is "always on", just like fast payments, is also has operators around-the-clock, and routines in place to manage incidents that occur outside of working hours. Normal maintenance can also be scheduled for outside of working hours to minimise the impact on users of fast payment services.

The RIX-INST system follows the Principles for Financial Market Infrastructures (PFMI), meaning that it follows with international standards when it comes to, among other things, managing operational, liquidity and business risks. It is also under the oversight of the Riksbank. Management of operational risks are also covered extensively in PFMI, but the speed and expected growth of fast payments means that RIX, and other actors, means that operational and other risks are expected to evolve too.

[16] In this context, this is a retail payment with a value of over of 1 000 000 SEK

5.2 Renewed focus on risks in light of speed and complexity

New intermediaries have different profiles

Both general trends—like embedded finance—and regulatory changes[17] mean that more actors are involved in processing individual fast payments. It is expected that these actors will make the fast payments landscape in Sweden more innovative and dynamic, as well as improve redundancy and mitigate concentration risks. A single payment spans technical systems that include banks, payment processors, technology vendors, and other service providers, each of which plays a non-fungible role in facilitating a transaction. It is also not always clear to consumers which third party actors are involved in which transactions, and in what capacity.

Some, but not all, of these actors are under the supervision of a financial supervisory authority, for instance Finansinspektionen in Sweden. Those that are eligible to apply to participate in RIX-INST—non-bank actors in the form of payment service providers and e-money institutes—must be under supervision. It is also expected that they fulfil the same requirements as for today's participants to be eligible to join RIX. However, as they have a different profile to many of the existing RIX participants, it may be that existing terms and conditions do not apply to them. For instance, non-bank actors cannot currently be offered intra-day and overnight credit facilities at the RTGS, meaning that they do not have access to extra liquidity if needed. More generally, RIX-INST participants, whether non-bank or otherwise, are not required to be RTGS participants, where liquidity is available at the central bank.

However, not all of the providers of the many specialised services involved in conducting a fast payment are financial services providers. In some cases, they are software providers or technical service providers. Existing oversight and supervision practices take account of services being provided by third parties. However, the scale and scope of this third-party service provision may mean that important actors may have less control over third party providers than envisioned in, for instance, PFMI. Moreover, the sheer number of small third-party providers makes operational incidents more likely—with the added risk that they may become systemic risks where use of their services is widespread.

Whether supervised entities or software providers, invisible intermediaries are part of a broader trend known as embedded finance. The increase in their number, and the complexity of the interactions involved, can lead to difficulties in assessing how and by whom risks should be managed. Participants in the payment ecosystem may also not be under the same regulatory scrutiny, and the importance of some invisible service provider risks being poorly understood or overlooked. This complex fragmented landscape also makes it harder for both authorities and market actors to understand and manage operational risks.

[17] Recent changes to the Settlement Act (1999:1309), which came into effect in April 2025

Combining internationalisation and speed could mean information lags

As fast payment systems like RIX-INST become more global, they also introduce risks associated with internationalisation. New members may come from different jurisdictions, raising concerns about the regulatory frameworks governing their operations. A foreign actor may experience a bankruptcy in their home country, but this could take time to be reflected in the Swedish system. This lag could result in transactions continuing to be processed by an insolvent foreign entity. This business risk is compounded if cross-border transactions are involved. RIX currently manages this risk through participant contracts.

Operational risks more likely but harder to foresee

Although there is focus on Swish and RIX-INST when it comes to operational errors, an operational error in any one of the actors in a payment facilitation chain could mean that a fast payment cannot be processed. If a bank, for instance, faces a minor operational challenge their customers will be unable to initiate a fast payment—even though both Swish and RIX-INST are fully operational. The more actors involved in a payment chain, the more places an operational error can occur, with system-wide effects. Thankfully, these effects are typically short-lived, but the real-time nature of fast payments means that consumers notice them immediately, and operators must respond equally quickly. Coordination between actors, and clear contracts governing responsibility for operational errors, can help to make this risk manageable.

Concentration can be a concern from a stability perspective as an incident experienced by a centrally important actor can have system-wide effects. For instance, although RIX-INST is open for multiple actors to settle fast payments through TIPS, there are still few alternatives to Swish, concentrating fast payments in the hands of one actor. Similarly, digital confirmation of payments is dominated by the BankID service, also a concentration. Concentration is not necessarily a bad thing: a service is often more valuable to users when it is the main service. For instance, Swish's ubiquity makes it more valuable as almost all people—and many businesses—accept Swish rather than a competitor. This is known as a network effect. A more diversified payment chain might be more robust, but it would likely be less convenient for the end consumer.

For this reason, both BankID and Swish are overseen by the Riksbank as systems of particular importance for payments in Sweden.[18] Fast payments in Sweden are also one of many alternatives when it comes to payments, and while there are many fast payments every day, they are typically for small amounts and not used to, for instance, pay salaries or other important functions.

Speed challenges both liquidity and incident response time

The overall speed of fast payments means that if errors occur, they are likely to affect payment processes almost immediately. This places new expectations on actors, including supervisory authorities, to be able to respond to failures in real-time. At the

[18] Under Chapter 3 Section 8 the Riksbank Act (SFS 2022:1568)

same time, there is little or no down-time to allow for patching of errors or maintenance of systems, creating challenges when it comes to making sure that software is robust. “Turning off” a series of services whose main selling point is that they are “always on” is likely to have unforeseen consequences. Thus far, the Swedish fast payments’ infrastructures, including RIX-INST, Swish, BankID and others, are reasonably robust: incidents are few and far between.

When it comes to liquidity, the existing RIX-INST model relies on participants being able to draw on liquidity from the RTGS system. In times of stress, and even for actors that are just processors of transactions and thus do not offer end customer credit, there is the risk of a liquidity deficit. For those non-banks who are eligible to apply to join RIX-RTGS and RIX-INST from this year, liquidity may be of concern. This is both because there is no requirement that they be participants in both RIX-INST and the RTGS, and because they are not eligible for intra-day or overnight credit.

This real-time liquidity risk management is also a challenge for the TIPS cross-currency project. In this project, RIX-INST, as part of TIPS, is preparing to enable cross-currency transactions in Swedish kronor, Danish kroner, and euro. This is a promising project from the perspective of economic activity and convenience, but it brings with it new risks, especially related to liquidity management. Another such risk is around how to stem and trace capital flows across borders, in real-time. While transactions can be traced within the EU, should money be transferred outside of the EU or move into other assets, for instance Stablecoins, then this traceability will likely disappear.

6 Conclusion and management strategies

The economic and societal benefits of fast payments in Sweden and elsewhere has led to a rise in their uptake. But known risks have taken on new shapes, including risks that need to be managed in light of financial stability. In Sweden, these risks can mostly be managed and mitigated.

Fast payments pose risks in new forms, including risks that might evolve to be financial stability risks, for instance under times of financial crisis. However, just as new risks arise as new innovations arise, so too can new risk management strategies. In this way, new innovations that benefit societies—as fast payments do—can be offered with the same confidence as previous generations of new service offerings.

When it comes to risks related to liquidity, new tools could help banks and PSPs manage their liquidity better. One example might be tools that help actors better predict and manage liquidity in real-time. Transaction limits, whether for individual banks or PSPs, or at settlement systems, could be a useful tool to prevent excessively large or rapid transfers from creating liquidity issues. These might also be of importance should cross-currency systems face unexpected liquidity flows. During extreme situations, for instance liquidity outflows during a financial crisis that put strain on banks, new routines and processes for fast bank resolution may also be needed. These risks exist within existing payment systems today but may need to be managed differently.

Operational risks are also more likely to occur in fast payments systems, given the speed and complexity of transactions, and the large number of actors involved. Extensive follow-up and monitoring of participants in systems like RIX-INST and service providers like Swish could reduce the likelihood and impact of operational risks. The terms under which fast payment systems are offered may also need to be reconsidered to account for new risks and the entry and profiles of new actors. This is particularly for new market entrants that, for instance, are not eligible for intra-day or overnight credit.

Cybersecurity is an overarching risk for all digital systems, and fast payment systems are no exception. Therefore, robust, and pre-emptive work around building resilience is needed. More resources and capacity-building related to both operational and cyber incidents, for instance to ensure quick incident response, should minimise the downtime when an incident does occur.

Lastly, regulators or settlement systems may need to introduce new oversight mechanisms to ensure that fast payment systems remain secure and well-managed, particularly as they become more complex and interconnected, including internationally.

Fast payments provide significant economic and societal benefits, and their rise across the globe is for good reason. In this Staff Memo, we have discussed and highlighted potential risks that fast payments may pose, and the new forms that these risks take. We see that these risks should not be an obstacle to further innovation and adoption, but rather prompt discussion as to the best way forward.

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