

Payments Report

2022



Table of contents

1	Trends on the payment market	4
1.1	In Sweden, we prefer to pay digitally	5
1.2	Paying by mobile phone is popular	11
1.3	Payments in stores are rarely made in cash	13
1.4	Difficult for many to pay digitally	18
1.5	One in ten sends money abroad	21
2	Safety and efficiency	25
2.1	Are payments in Sweden safe?	26
2.2	Are payments in Sweden efficient?	33
3	The Riksbank's work and policy	41
3.1	The Riksbank is modernising its systems	42
3.2	The Riksbank gets clearer responsibility for cash	44
3.3	The Riksbank is making preparations for a possible e-krona	47
3.4	The Riksbank is working to improve cross-border payments	51
3.5	The Riksbank contributes to increased resilience	53
	Glossary	55

Payments Report

The Payments Report describes and analyses developments on the retail payments market over the past year. It presents the Riksbank's assessments and work in the payment area. The aim is to contribute to debate and make it easier for external parties to monitor, understand and evaluate the Riksbank's work on the payment market. Since 2019, it has been published at the end of every year but, as of 2024, the annual publication will take place in the spring.

Published 15 December 2022.

The Executive Board made a decision on the Payments Report 2022 on 8 December 2022.

This report is optimised primarily to be read at [riksbank.se](https://www.riksbank.se).

Payments Report 2022



In Sweden, payments are continuing to be made digitally and, increasingly frequently, using mobile applications in place of cash. In order to respond to this development, the Riksbank is modernising its systems and investigating the possibility of issuing an e-krona. At the same time, the Riksbank is working to ensure that it will also be possible to use cash in the future. Payments in Sweden are generally secure, quick and efficient. In addition, the Riksbank is working with other actors to further increase resilience to disruptions in the payment system.

Conclusions and recommendations

Payments in Sweden generally work well. Digitalisation is making payments faster and easier, to the benefit of both individuals and companies. A small number of limited disruptions occurred in the payment infrastructure in 2022. For payments to continue to work well, the following are important points to note:



Part of the population does not have access to digital payment methods and therefore has to use cash. Today, it is difficult for these people to pay their bills or to redeem payments, for example for pensions. This is something that the government and Riksdag need to address urgently. The ability to buy vital goods and services using cash must also be legally protected.



Preparedness and continuity plans in the event of disruptions are fundamental issues for the payment market. In order to increase the resilience of the payment system, there need to be better opportunities to pay by card or withdraw cash in the event of disruptions to the electricity supply or data communication. Several actors in the payment market are working on this issue, but it is important that work be prioritised by all parties involved.



Preparations for a Swedish digital complement to cash, known as the e-krona, need to be continued. An e-krona would preserve public access to government-issued money if cash were to be marginalised further. There is also an ambition to strengthen the resilience of the payment market and contribute to innovation. Another reason for this is that many other central banks are also examining the possibility of issuing a central bank digital currency. According to its current timeline, the European Central Bank will decide in September 2023 whether to launch a realisation phase of a digital Euro.



Cross-border payments must become faster and cheaper. The Riksbank therefore actively participates in several international forums and projects working to improve cross-border payments.



Today, households and businesses use the mobile application Swish to make and receive instant payments. Swish payments are settled in a privately owned system. As of this year, it is possible for instant payments to be settled in central bank money in the Riksbank's RIX system instead, which decreases some risks. The Riksbank expect the banks to migrate Swish payments to the RIX-system in a safe and efficient way before summer 2023.



A government-issued e-identification is necessary. Such ID would promote competition in the payments market and provide equal access to e-ID for all.

1 Trends on the payment market

In Sweden, we prefer to pay digitally and often shop online. Most people have access to Swish, and other mobile payment services are also increasingly being used, especially by younger people. The use of cash is continuing to decline. The digitalisation of the payments market is a global trend with the Nordic countries, in particular Norway, Sweden and Denmark, at the forefront.

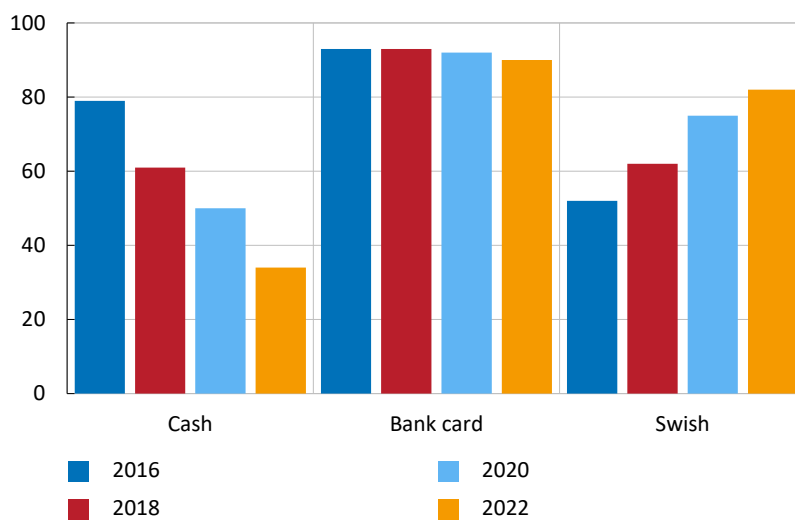


1.1 In Sweden, we prefer to pay digitally

The Riksbank's survey of the Swedish people's payment habits in 2022 shows that the habits that received an extra boost during the pandemic persist: almost all payments are made digitally, we shop online more often and use cash less often.

Figure 1. In Sweden, we usually pay by card or Swish

Percentage of people who paid by cash, card or Swish in the last 30 days.



Note. Several responses possible.

Source: The Riksbank.

Payment habits from the pandemic persist

Sweden is one of the most digital countries in the world. [Nine out of ten](#) Swedes use the internet daily and three out of four identify themselves digitally using mobile e-ID. The European Commission's [Digital Economy and Society Index](#) ranks Sweden fourth after Finland, Denmark and the Netherlands.

In the payments market, cash is being replaced by digital payments, usually by card or Swish. The pandemic years gave an extra boost to this development, especially among the elderly. More people shopped online and many stopped paying with cash in shops to minimise contact. The Riksbank's survey on the Swedish people's payment habits in 2022 shows that these trends are continuing. Digital payment methods are becoming more common, we shop a lot online and the use of cash is continuing to decline.

FACT BOX - The Riksbank's survey of payment habits

The Riksbank's survey on payment habits has been conducted every two years since 2010. The survey provides a picture of how we pay in Sweden and how payment habits change over time.

In the 2022 survey, 2,089 randomly selected persons aged 18-84 responded to the Riksbank's questionnaire. 1,589 persons responded via a web interview. To capture people who do not use the internet, 500 telephone interviews were also conducted. The interviews were conducted between 14 and 30 March 2022.

The survey responses have been weighted by gender, age, region and education to reflect the population of Sweden. Figures from the 2022 survey can be found at [riksbank.se](https://www.riksbank.se)

Swish is replacing cash

In the 2022 survey, 34 per cent said they had paid with cash in the past month. This is a sharp drop from spring 2020, just before the pandemic hit. Back then, the corresponding figure was 50 per cent.

The pandemic thus accelerated the trend but it had been going on for a long time. In 2016, for example, 79 per cent had paid with cash in the last month. At the same time, the use of Swish has increased almost as much. In the 2022 survey, more than 80 per cent said they had used Swish in the last month, compared to 52 per cent in 2016. Swish is mostly used for payments between private individuals or for online purchases. Payments in physical shops, on the other hand, are rarely made with Swish. Figure 1 clearly shows the shift from cash to Swish in recent years.

Although the use of Swish has increased in recent years, cards are still the most common payment method. Nine out of ten people have paid by card in the last month; see Figure 1.

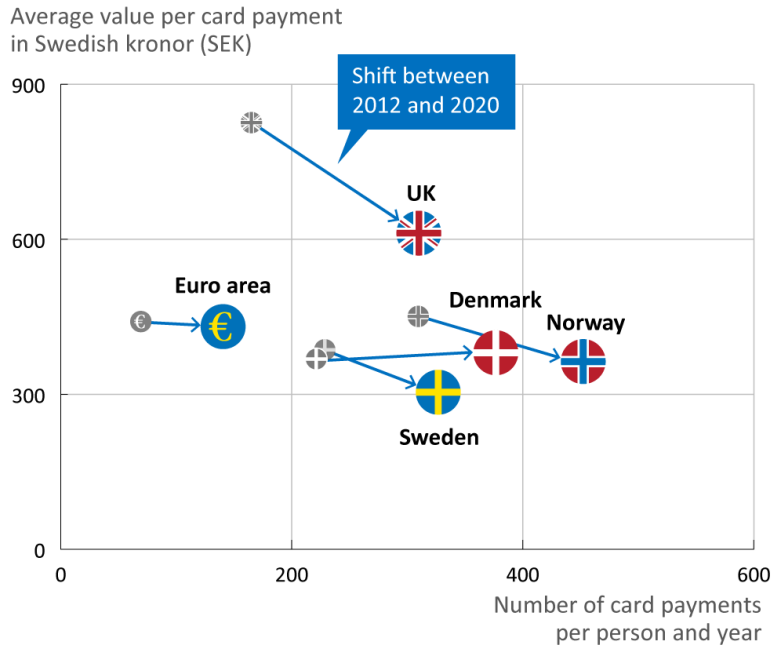
The way we use cards has changed

In the last decade, the way we use cards has changed, both in Sweden and in other countries. The number of card payments per person per year has increased, while the average amount per transaction has decreased; see Figure 2. We are therefore using cards more often and for smaller purchases than before. This may be due to the introduction in 2015 of new rules on card fees in the EU/EEA, which made it [cheaper](#) for shops and merchants to accept card payments. After the introduction of the rules, more shops started to accept card payments. It may also be due to new technologies such as the contactless function that have made it easier and more convenient to use cards.

It has also become easier to make card payments by telephone. Mobile services such as Apple Pay and Samsung Pay integrate cards into phones and make it possible to pay by holding the phone against a card terminal. These services are now increasingly being used (see 1.2 Paying by mobile phone is popular).

Figure 2. The way we use cards has changed

Movement between 2012 (grey flags) and 2020 (coloured flags). The vertical axis shows the average value per card payment in SEK. The horizontal axis shows the number of card payments per person per year.



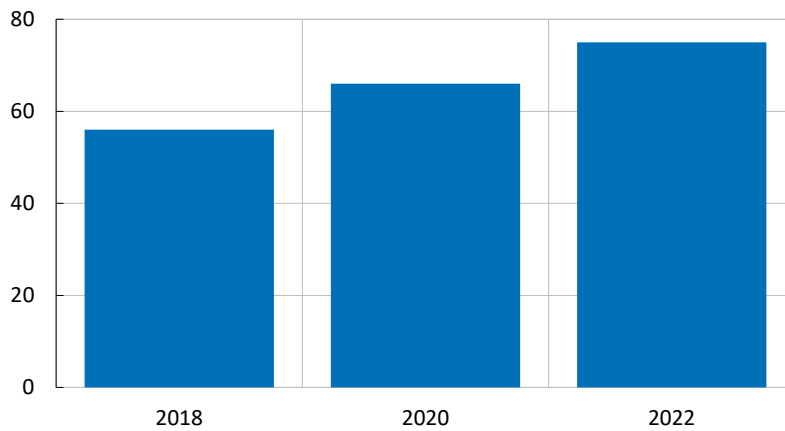
Sources: ECB, BIS and the Riksbank.

Many people shop online

More and more people started shopping online during the pandemic. In the Riksbank's 2022 survey, 75 per cent of respondents said they had shopped online in the past 30 days. In 2018, the corresponding figure was 56 per cent; see Figure 3. The increase is greatest in the oldest age group. Between 2018 and 2022, the share of online shoppers in the 65-84 age group more than doubled, from 26 per cent to 55 per cent; see Figure 4.

Figure 3. E-commerce is becoming increasingly common

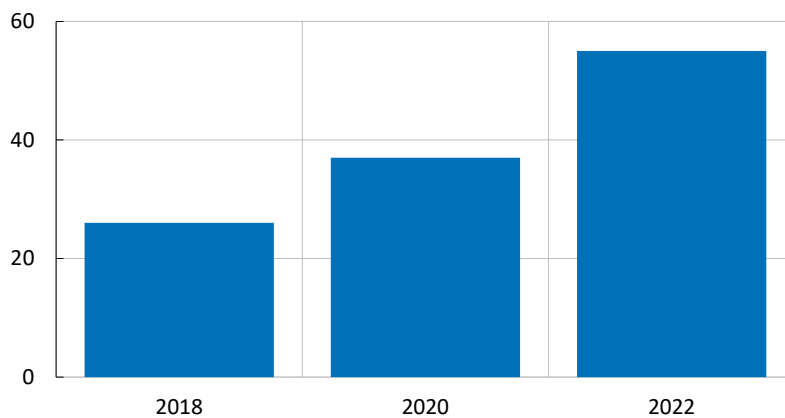
Percentage of people who have bought goods or services online in the last 30 days.



Source: The Riksbank.

Figure 4. E-commerce growing fast among older persons

Percentage of people aged 65-84 who have bought goods or services online in the last 30 days.

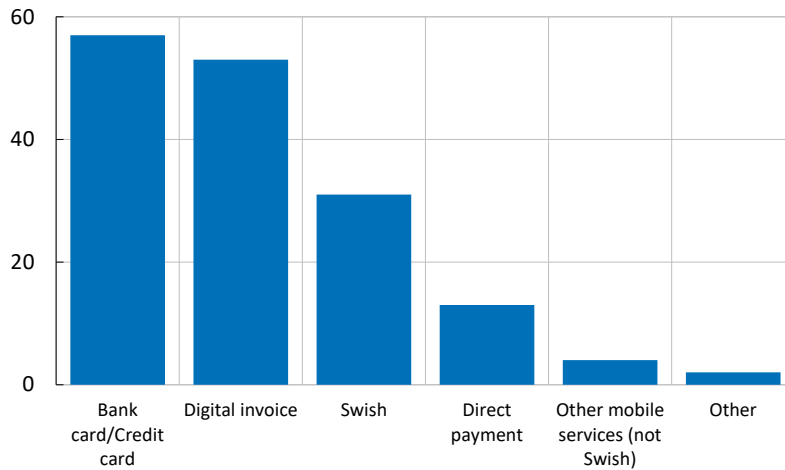


Source: The Riksbank.

When shopping online, payments are most often made by card or a digital billing service such as Klarna; see Figure 5. Just over 30 per cent have paid using Swish, which is an increase of 6 percentage points from 2020.

Figure 5. Paying by card and invoice is common in e-commerce

Payment methods used by Swedish people in e-commerce in the last 30 days, percentages.



Note. Several responses possible. A direct payment involves a customer, following a link from an online shop, accessing their online bank, where payment is made directly.

Source: The Riksbank.

The digitalisation of the payments market is a global trend

It is in the Nordic countries, in particular Norway, Sweden and Denmark, that the use of cash has decreased the most in favour of digital payments. In these countries, more than 80 per cent of payments in physical shops are made by card or mobile phone. In the euro area and in countries such as the United States, United Kingdom and Australia, cash payments are more common but more and more people started paying digitally there too during the pandemic. In the United Kingdom, for example, the number of cash payments fell by around 25 per cent in 2020.

FACT BOX - Decline in cash in Sweden stands out internationally

In most advanced economies, demand for cash is growing while the share of cash payments is declining. This is a phenomenon known as the cash paradox.

The cash paradox is often explained by the public's desire to have cash as a means of saving, especially in times of crisis. Internationally, this is also reflected in the statistics on the amount of cash in circulation. Often, the amount of cash in higher denominations, which is particularly suitable for savings, increases, while the amount of cash in smaller denominations decreases.

The decline of cash in Sweden differs from the international development in two ways. Firstly, the cash paradox does not apply, as the increase in digital payments has gone hand in hand with the decrease in the demand for cash. The amount of cash has almost halved since 2007. Secondly, the amount of cash in both small and large denominations has decreased in Sweden over the same period.

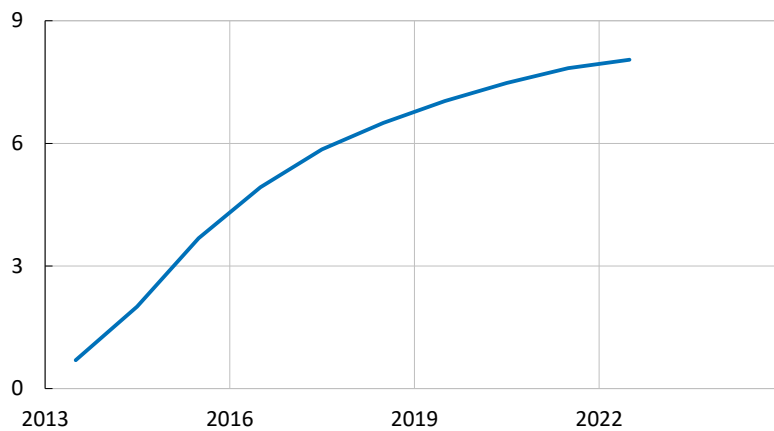
However, the fact that the amount of large denominations is decreasing in Sweden does not necessarily mean that the demand for cash as a means of saving has decreased. It may also be due to supply factors, such as the fact that the 1,000-krona banknote has become more difficult to obtain as bank branches with cash handling facilities have disappeared. Those wishing to save in Swedish cash may, in practice, have been forced to save in lower denominations.

1.2 Paying by mobile phone is popular

It has become increasingly common to make payments using a mobile phone. Almost everyone aged 15–65 has the Swish application downloaded on their mobile phone. Other ways of paying via mobile phone have also become more common, for example with services such as Apple Pay and Google Pay.

Figure 6. Most people in Sweden have Swish

Swish users, millions.



Note. Data for 2022 extends to the end of September.

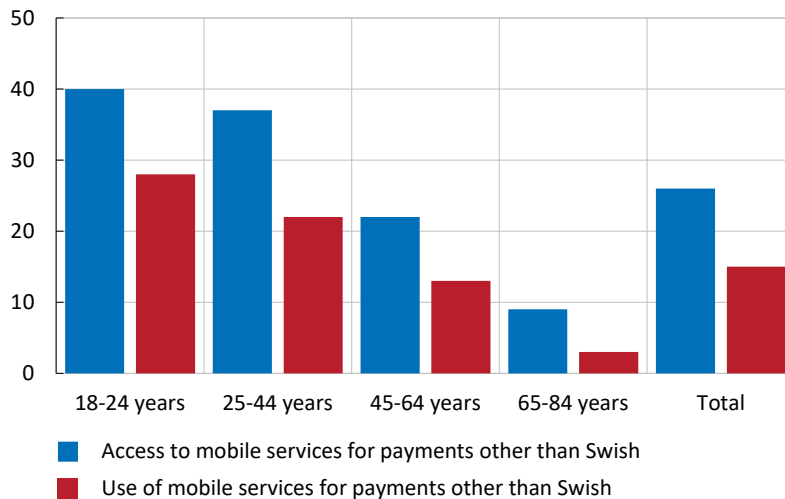
Source: Swish (Getswish AB).

Mobile phones have become an important payment instrument. In 2022, a milestone was reached when the number of private Swish users passed 8 million; see Figure 6. In the age group 15–65, as many as 95 per cent have the [Swish application](#) downloaded on their mobile phone.

In addition, other ways of paying via mobile phone have also become more common. Services such as Apple Pay, Samsung Pay and Google Pay integrate bank cards with mobile phones and allow payments to be made by holding a phone against a card terminal. Both access to and use of these services is increasing. In the 2022 survey, one respondent in four said they have access to other mobile payment services than Swish; see Figure 7. In the 2020 survey, only 16 per cent said they did. Unlike Swish, which is widely used by both younger and older people, it is mainly younger people (18–44 years) who use other mobile services.

Figure 7. Access to and use of mobile payment services other than Swish

Percentage of people with access to mobile payment services other than Swish, such as Apple Pay and Samsung Pay, and percentage of people who have paid with these in the last 30 days.



Source: The Riksbank.

Almost no one pays using cryptocurrencies

In the Riksbank's survey on payment habits in 2022, 2 per cent of respondents said they had access to cryptocurrencies, but none had paid with them in the past 30 days. According to a [report](#) by the Swedish Internet Foundation, it was almost only young men that bought or sold cryptocurrencies in 2022. It also shows that the proportion who have bought or sold cryptocurrencies has doubled since 2021.

FACT BOX - Cryptocurrencies lack the characteristics of ordinary money

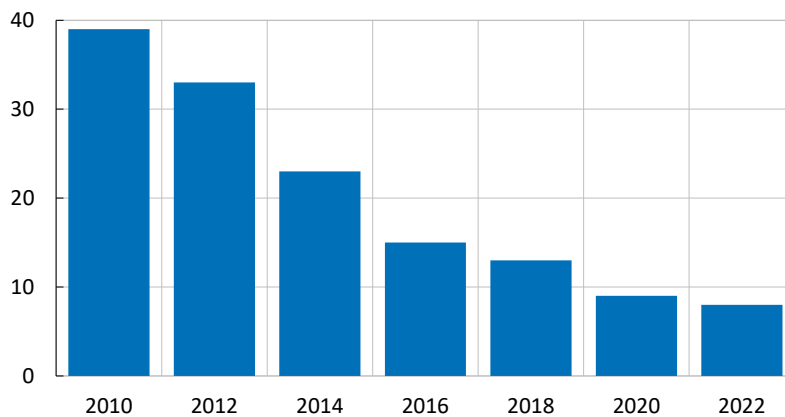
So far, most cryptocurrencies have been used as speculative investments rather than as a means of payment. One reason for this is that they lack characteristics that we associate with traditional means of payment, such as being widely accepted for payments and retaining their value over time. One clear example of this is the cryptocurrency Bitcoin, which lost around 60 per cent of its value between January and December 2022. This is also why the Riksbank considers crypto-asset to be a more appropriate term than cryptocurrency, which alludes to currency, which is to say money. In this report, we have nevertheless chosen to use the more familiar term cryptocurrency. This is to prevent any misunderstandings about what we mean.

1.3 Payments in stores are rarely made in cash

In recent years, it has become less common to pay with cash. Older people use cash more often than young people, but the difference between younger and older people has decreased. Although cash is used less, it can be important in a crisis situation.

Figure 8. The use of cash has decreased over time

Percentage of people who paid cash for their last purchase in physical shops.



Source: The Riksbank.

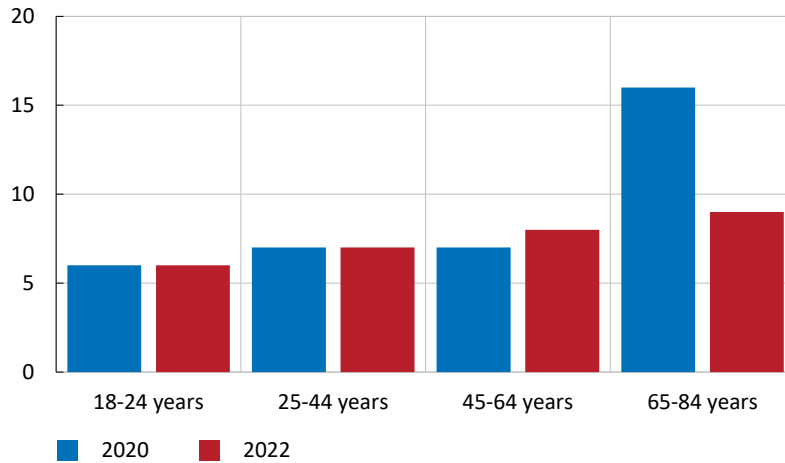
Paying with cash in a physical shop has become less common. In this year's survey, only 8 per cent responded that they paid in cash for their most recent purchase in store. This can be compared with 2010, when the corresponding figure was just under 40 per cent; see Figure 8.

Older people use cash to a lesser extent than before

Older people use cash more often than young people, but the difference between younger and older people declined during the pandemic. This is mainly due to the fact that fewer people in the oldest age group use cash; see Figure 9. One possible explanation is that older people became accustomed to digital payments during the pandemic and started using Swish to a greater extent than before. The reason could be that many elderly people stayed at home more often and instead repaid family and friends who helped them with various purchases by transferring money via Swish. The fact that the pandemic gave digitalisation an extra boost is also a global trend.

Figure 9. Older people pay less in cash than before

Percentage of people in respective age group who paid cash for their most recent purchase in a shop.



Source: The Riksbank.

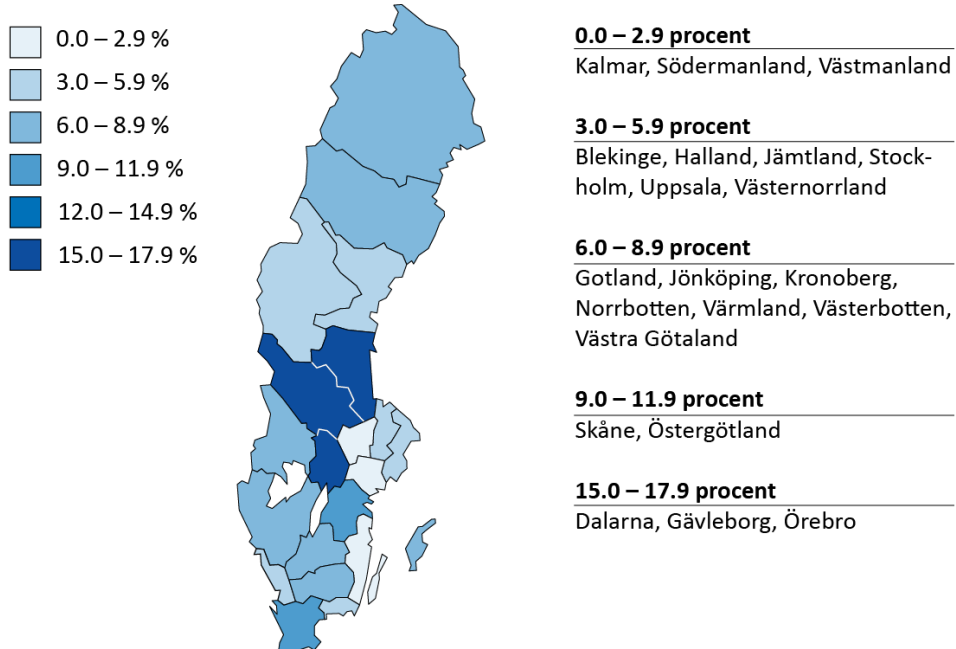
The use of cash differs from county to county

In this year's survey, less than 5 per cent of the respondents in Södermanland, Blekinge and Västmanland stated that they paid in cash for their most recent purchase in store. In the counties of Dalarna, Örebro and Gävleborg there are more people who use cash, between 15 and 20 per cent; see Illustration 1.

There are several factors that can influence the amount of cash used in a given region, such as the age of the population, the level of education, the level of income and the availability of ATMs. Often these factors interact with one another and it is therefore difficult to pinpoint a single factor that explains why cash is used more in some regions than in others.

Illustration 1. Cash use, Sweden

The map shows the percentage who said they paid with cash for their last purchase in a physical shop.



Note. In the counties of Gotland and Blekinge, the results are based on a small sample (22 and 23 survey responses respectively) and should therefore be interpreted with some amount of caution.

Source: The Riksbank.

FACT BOX – The Payments Inquiry is extended

The digitalisation of society has led to fewer and fewer people using cash. This was one of the reasons why the Riksbank submitted a [proposal](#) to the Riksdag in April 2019 to review the role of the state in the payments market. Among other things, the Riksbank proposed that a committee should investigate whether the Riksbank could issue an e-krona and whether it could be given the status of legal tender.

The Government appointed a commission of inquiry in December 2020. It was originally due to report by 30 November 2022, but the Government has now extended this to 31 March 2023. The reason is that the Inquiry needs more time to analyse the consequences of the closure of Kassagirot (see 2.2 The closure of Kassagirot affects vulnerable groups). In addition, the European Commission has announced proposals for a digital euro and instant payments, which the Inquiry needs to take into consideration.

In a crisis, different means of payment are needed

Many withdrew cash after Russia's invasion of Ukraine

When Russia invaded Ukraine on 24 February 2022, many were reminded of the Swedish Civil Contingencies Agency's (MSB) recommendation to have cash at home. That week, the number of withdrawals from Bankomat ATMs increased by 28 per cent. According to the Swedish Trade Federation, the use of cash in commerce did not increase in connection with the withdrawals. This suggests that cash was withdrawn for contingency purposes and saved at home.

The Swedish development was not unique. Withdrawals increased in many countries, especially in countries bordering Russia or Ukraine (e.g. Poland and Lithuania). In addition, it is common for individuals to withdraw extra cash in times of uncertainty. Since the 2008 financial crisis, cash withdrawals have increased in many countries, which may be due to the public's preference for cash as a means of saving in times of crisis (see 1.1 FACT BOX – Decline in cash in Sweden stands out internationally).

Not all payments can be handled in cash during a crisis

One reason why it is important to have cash at home is that it can be difficult to get hold of during a crisis. Cash management is dependent on, for example, electricity, data communications and transport and can be affected by disruptions to such functions. The only cash that is certain to be available in the event of a disruption is that one already has at home and in one's wallet (see 2.1 Cash services depend on electricity and data communications).

But cash cannot be the only solution for payments in times of crisis. It cannot replace all digital payments in society, especially large electronic payment flows such as salary payments, pension payments and invoice payments. Moreover, relying on one payment method alone is vulnerable.

It is therefore important that digital payment methods also work in a crisis and that individuals have access to different payment instruments. For example, in addition to cash, it can be useful to have access to mobile applications such as Swish, to have cards from several issuers and to be able to identify oneself digitally in different ways.

FACT BOX – Payments in wartime: Experiences from Ukraine

The Riksbank is responsible for ensuring that the general public in Sweden can make the necessary payments in peacetime crisis situations and in the event of increased preparedness. The National Bank of Ukraine (NBU) has a corresponding role. The Riksbank can learn from Ukraine in ways that can help strengthen Sweden's preparedness. The Ukrainian payment market was relatively digitalised when Russia began its full-scale invasion war on 24 February 2022. For example, data from the [World Bank](#) show that 72 per cent of the population over the age of 15 had a credit or debit card in 2021 and that 62 per cent had used a mobile phone to make a payment. In Sweden, the degree of digitalisation is even higher (see 1.1 In Sweden we prefer to pay digitally).

According to the [NBU](#), digital payments have worked well during the war. There have been no major disruptions to the PROSTIR national card network or the international card networks. The central settlement system in Ukraine (SEP), which is provided by the NBU, has been in operation 23 hours a day throughout the war.

One important reason why the payment system worked well is that the NBU and other participants in the payment market were well prepared for how they should act. Since Russia began the war in eastern Ukraine in 2014, the NBU, together with financial and payment market participants, has been preparing itself for further Russian aggression. For instance, they have developed detailed contingency plans and carried out joint exercises. In addition, the NBU has prepared to continue to operate from different locations in the country. Banks were given the right to place their information resources in cloud storage outside of Ukraine.

On the same day as the full-scale invasion began in February 2022, the NBU was able to quickly put in place a number of [measures](#) aimed at reducing financial stability risks and maintaining public confidence in the financial system. Among other things, the exchange rate for the Ukrainian currency Hryvnia was locked and the possibility to purchase foreign currency was restricted. A full [deposit guarantee](#) was also introduced for accounts in Ukrainian banks.

The NBU called on the public to use digital means of payment as widely as possible. They also called on the public to withdraw cash from shops rather than ATMs or bank offices. The purpose of this is to minimise the need for cash transports to and from shops, banks and ATMs.

The experiences of the war in Ukraine show the importance of both government and private actors being prepared to respond to crisis situations and to heightened alert.

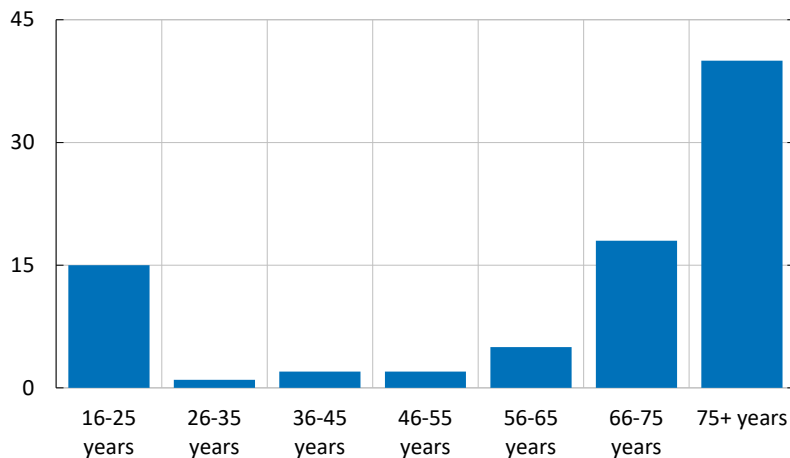
Following the Russian invasion, many Ukrainians have fled to other parts of Europe. The NBU therefore signed agreements with several central banks in European countries, including the [Riksbank](#), which enabled Ukrainian refugees to exchange Hryvnia in cash for local currency.

1.4 Difficult for many to pay digitally

A large proportion of all payments are made digitally. At the same time, the range of manual payment services is decreasing. For those who cannot use digital payment methods, it is therefore becoming increasingly difficult to pay. Both society at large and private actors in the payments market have a responsibility to help people who, for various reasons, cannot use digital means of payment.

Figure 10. Difficult for some groups to pay bills online on their own

Percentage of each age group needing help to pay bills at an online bank.



Source: The Swedish Internet Foundation, *The Swedes and the Internet 2021*.

The digitalisation of the payment market is progressing rapidly and today almost all payments are made digitally. But not everyone has switched to digital payment methods. Some because they do not want to, others because they cannot.

We do not know how many people *cannot* use digital payment methods. But the Swedish Internet Foundation's survey "[The Swedes and the Internet](#)" gives some indications. In the survey, more than 15 per cent of respondents aged 66–75 said they could not pay bills themselves using an online bank. In the oldest age group, even more people need help; see Figure 10. The large number of people in the 16–25 age group who need help is probably due to the fact that many live with their parents and do not handle household bills themselves. This is therefore more of a temporary problem that will be resolved when the group reaches adulthood. However, a more permanent problem exists for asylum seekers whose only identity document is an LMA card from the Swedish Migration Agency and for people who have been refused a bank account for some reason and are therefore unable to pay bills digitally (see 2.2 Lack of access to basic payment services and 2.2 Lack of access to a payment account).

Both society at large and private actors in the payments market have a responsibility to help people who, for various reasons, cannot use digital means of payment. It is important, for instance, that help and tools are readily available to facilitate digital payments. One such tool is [Payment Help](#). This is a private initiative with the aim of including everyone in the digital economy, regardless of circumstances and age.

The supply of manual cash services is decreasing

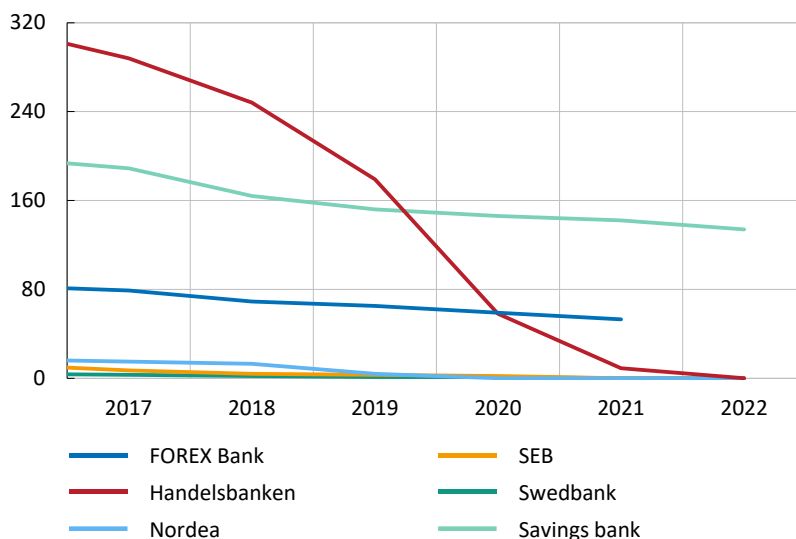
In 2017, there were 660 bank branches where you could withdraw cash over the counter. Today, the service is only available at 134 Savings bank branches. As of April 2022, none of the major banks offers this service; see Figure 11.

There are also fewer places where people can cash in their payment slips and pay their bills in cash. This is partly due to the fact that all major banks have stopped handling cash, but also because the company ClearOn discontinued Kassagirot in August 2022. The Kassagirot system enabled petrol stations and grocery stores to act as payment service agents and help their customers with various cash payment services. Kassagirot was also the only payment service that allowed asylum seekers to identify themselves with an LMA card to pay bills (see 2.2 The closure of Kassagirot affects vulnerable groups).

As manual cash services disappear, consumers are being directed to automated and digital services. This makes it more difficult for people who are unable to use digital payment methods, or are excluded from the digital payment market for whatever reason, to pay. It has also led to a shortage of places where coins can be deposited into accounts, as deposit machines generally do not accept coins. In addition, the general public is becoming more dependent on having access to ATMs to withdraw cash – which can increase the vulnerability of the payment system.

Figure 11. The number of bank branches handling cash is decreasing

Number of bank branches offering over-the-counter cash withdrawals.



Note. FOREX Bank sold its deposit and lending activities to ICA Banken in May 2021. Its banking licence expired in spring 2022. It has therefore been excluded for 2022. Data for Swedbank in

Trends on the payment market

2018 is missing. Number of branches is estimated.

Source: The Swedish Agency for Economic and Regional Growth Pupos Service Analysis.

1.5 One in ten sends money abroad

In Sweden, one in ten sends money to a private person abroad every year. The most common payments are amounts of less than SEK 2,000 within Europe. The cost of sending money abroad varies depending on the payment intermediary used and the country to which the money is being sent.



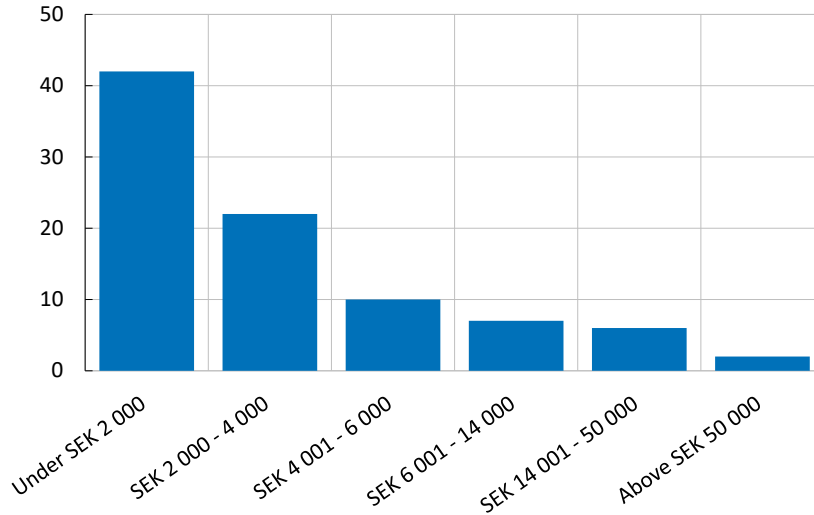
Cross-border payments can be made in different ways

We make cross-border payments when we pay by card abroad or when we buy goods and services online from abroad. Transfers abroad via banks and other payment service providers are also cross-border payments. Such transfers may involve, for example, taxes, fees, school fees or gifts (see 2.2 FACTS - How a cross-border payment works).

In the Riksbank's 2022 survey, there were several questions about transfers from private individuals in Sweden to private individuals abroad. In the survey, around 10 per cent responded that they send money to other private individuals abroad every year. Small amounts (less than SEK 2,000) are the most common; see Figure 12.

Figure 12. Mainly smaller amounts sent from Sweden

Response to the survey question “If you have sent money abroad, how much did you send on the last occasion?”, percentages.



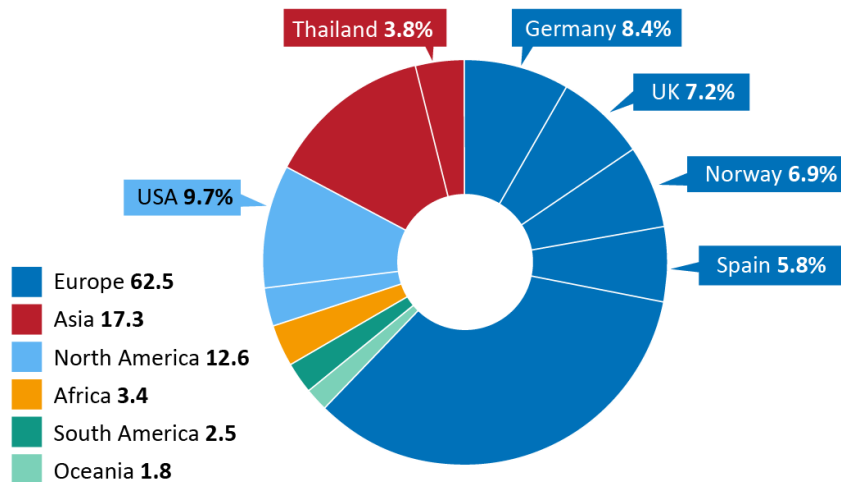
Note. The results are based on a relatively small sample (216 interview responses) and should therefore be interpreted with some caution.

Source: The Riksbank.

According to the survey responses, money is sent to individuals all around the world, but above all to people in Europe. A good 60 per cent sent money to another European country the last time they sent money. Among the European countries, Germany is the most common destination, followed by the United Kingdom, Norway and Spain. The individual country to which Swedes send money most often is the United States. After the United States, Thailand is the most common non-European country to which people send money; see Figure 13.

Figure 13. Most common to transfer money to European countries and the United States

Response to the survey question “If you have sent money abroad, to which country did you send money on the last occasion?”, percentages.



Note. The legends show the percentage for each continent to which survey respondents reported sending money the last time they sent money abroad to another private individual. The results are based on a relatively small sample (216 survey responses) and should therefore be interpreted with some caution.

Source: The Riksbank.

Cross-border transfers can be expensive

The list prices of various payment intermediaries suggest that the cost of sending money abroad can be high. However, the cost varies depending on the payment service used and the country to which the money is sent. The cheapest options are often new services that have emerged in recent years and with these, the average cost of an international transfer is 2-3 per cent of the amount sent. Traditional options, such as bank transfers, are often more expensive. However, it is difficult to know what individuals actually pay for their transfers. This is because we do not know which payment intermediaries or payment services are used. The list prices of different payment intermediaries therefore only give an indication of the cost.

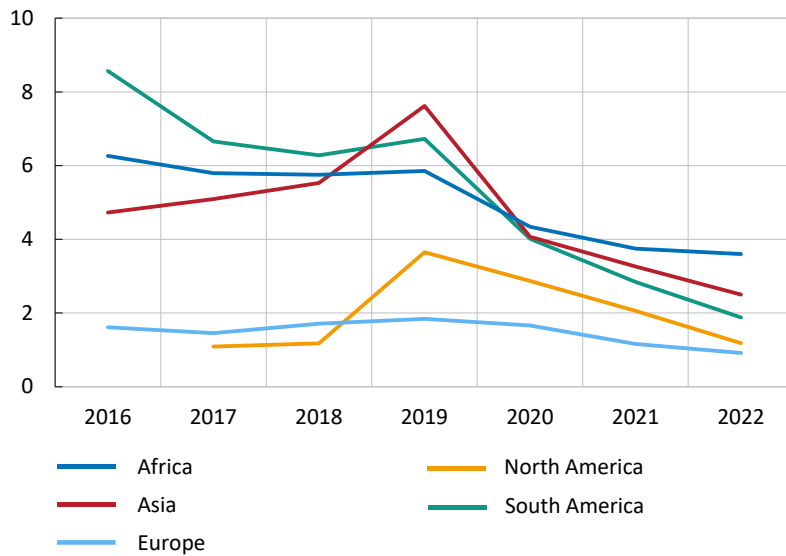
According to statistics from [Money from Sweden](#), list prices have fallen over time, especially in the last three years. Figure 14 shows the cost of sending SEK 1,000 from Sweden to different parts of the world. The cost shown is an average of the three *cheapest* options per country and quarter, and is presented as the average for the continent. There may therefore be differences between what consumers actually pay and the costs shown in the figure.

According to these statistics, sending money within Europe is the cheapest. There it costs on average 1 per cent, or SEK 10, to send SEK 1,000. The figure also shows that it has become cheaper to send money to Asia, Africa and South America. One reason

why it has become cheaper is that the internet, digitalisation and new common standards have made it easier for new players to set up. They often offer more efficient and cheaper services and challenge incumbents, putting downward pressure on prices.

Figure 14. The cost of sending money abroad has fallen over time

Cost (in percent) to send SEK 1,000 from Sweden.



Note. Three cheapest options by country and quarter presented as means by continent. Data for North America 2016 is missing.

Sources: Money From Sweden and the Riksbank.

FACT BOX - Money from Sweden and other price comparison services for cross-border payments

[Money from Sweden](#) is an independent and free price comparison service for cross border payments run by the Swedish Consumer Agency. It allows you to compare how much it costs to send money to different countries and with different payment service providers.

There are also international price comparison sites. One example is [Monito.com](#), which compares the cost of different payments to and from different countries, including Sweden. Monito has also rated the various payment service providers that offer cross border payments.

2 Safety and efficiency

Payments in Sweden are generally safe and efficient. Digitalisation makes them faster and easier, and improvements in the Riksbank's services increase safety and efficiency. But digitalisation also brings problems. For example, digital payments are sensitive to disruption, it has become more difficult to pay bills over the counter and the cash infrastructure is becoming increasingly vulnerable.



2.1 Are payments in Sweden safe?

Payments in Sweden are generally safe. There have been few disruptions to the critical payment infrastructure in 2022 and there is relatively little card fraud in Sweden. In addition, there are several different ways of making payments, which increases resilience to disruptions.

Offline payments could improve resilience further. In contrast, the cash infrastructure is vulnerable.



What is required for payments to be safe?

By safe, we mean that the money should retain its value over time and not be counterfeited or used for fraud. Payment service providers and payment systems should be surrounded by a clear regulatory framework and be resilient to disruption. There should also be multiple payment methods so that payments can be made even if one of the systems is disrupted.

All payments require an underlying infrastructure

In order for us to pay, we need payment instruments, such as cash, a card or a mobile phone, and equipment at the payment recipient's premises, such as a cash register or card terminal. Payments also require an underlying infrastructure. For example, cash requires ATMs, transport and storage systems. Both ATMs and cards require a digital infrastructure.

The underlying infrastructure involves many elements and many actors. All parts of the payment process need to work in order for payments to be made securely. Consequently, it is important that both private and public actors involved in the execution of a payment cooperate with each other. For example, the Riksbank leads the group for private-public co-operation in the financial sector (FSPOS), a forum that was set up

to help ensure that critical financial services always work. The forum's participants come from public institutions in the financial sector and the private business sector.

Most payments in Sweden go through the Riksbank's system

[RIX](#) is the Riksbank's settlement system where credit institutions, clearing organisations, the Riksbank and the Swedish National Debt Office complete payments with one another, known as settlement. Apart from card payments that go through the card systems (see Illustration 3) and Swish payments, almost all electronic payments in Swedish kronor that go from one bank to another pass through RIX. Currently, Swish payments are settled in a private system called BiR (Betalingar i Realtid), but the plan is that these will also start to go through RIX in 2023 (see 3.1 Swish payments may start to be settled in RIX-INST in 2023).

Digital payments infrastructure works well

RIX and the clearing organisation Bankgirot are central hubs in the Swedish payment system. Disruptions and interruptions in any of these systems therefore affect the entire payment system, which may result in one or more payment services not functioning. In 2022, there were no major disruptions in either RIX or Bankgirot.

However, there has been some disruption to other actors in the payments market. For example, [Swish](#) had a technical problem in September that affected the ability of all users to pay. Another disruption that received a lot of attention was an IT incident at Swedbank. Swedbank had problems displaying the correct balances on its customers' accounts, which also led to some customers being unable to pay. Since the incident, [Finansinspektionen](#) has launched an investigation to examine the course of events, how Swedbank handled the situation and how the bank's controls and preparedness worked.

Good preparedness is important

In the [Financial Stability Report](#), the Riksbank has repeatedly highlighted that the Swedish financial system is exposed to the risk of cyberattacks. In Europe, the security situation has seriously deteriorated in 2022. As a result, there is a heightened risk of cyberattacks against the financial infrastructure, which includes the payment system and the payment infrastructure. It is therefore important that all actors in the financial system have good crisis preparedness.

The cash infrastructure is vulnerable

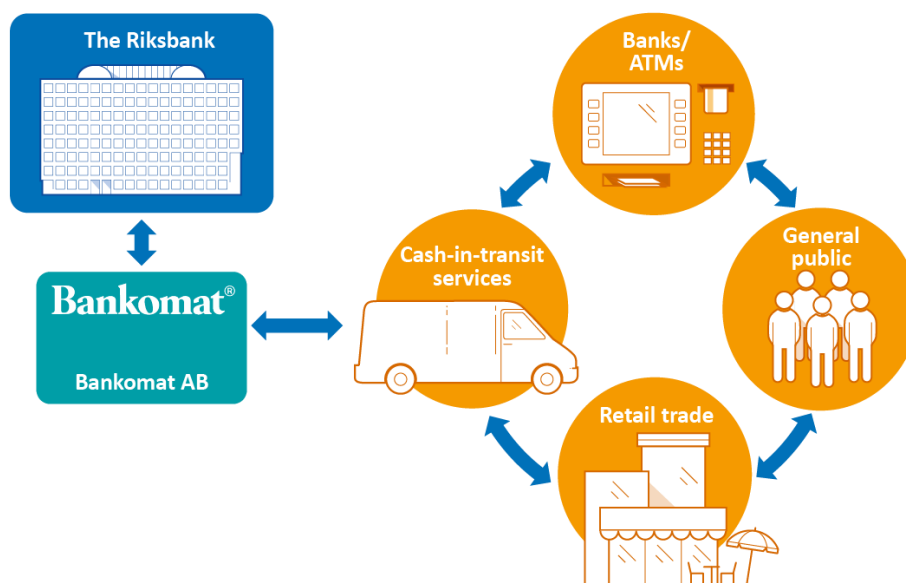
Today, the underlying cash infrastructure is based on cooperation between the Riksbank, the banks and the cash-in-transit companies. In somewhat simplified terms, it works as follows. The Riksbank manufactures cash, destroys worn-out cash and keeps stocks where banks can withdraw and deposit cash.

Banks interact with the public and are responsible for ensuring that they can withdraw cash from their accounts and that businesses can deposit cash into their accounts. In general, banks do this through the company Bankomat AB.

The cash-in-transit companies work on behalf of the Riksbank, banks, shops and other companies. They sort, count, register and transport cash. Of all those involved in this chain, only the Riksbank and the banks have any statutory responsibility for their areas. That responsibility includes the services they buy from cash-in-transit companies.

In November, the Riksdag adopted a new Sveriges Riksbank Act that will enter into force in January 2023. This means that the current cash infrastructure will change (see 3.2 The Riksbank gets clearer responsibility for cash).

Illustration 2. The cash infrastructure in Sweden



Since 2020, Loomis is the only nationwide cash-in-transit company in Sweden. The entire cash distribution chain is therefore highly dependent on this company. Although the Riksbank and the banks are responsible for some of the services Loomis provides, there would be a risk of disruption in the distribution of cash if, for example, Loomis were to decide to cease all or part of their operations in Sweden for reasons of profitability. There is also a risk of interruption to cash distribution should there be a disruption in their operations (see 3.2 More needs to be done to ensure that cash can be used in the future).

The cash infrastructure is also dependent on the digital infrastructure. All withdrawal and deposit services require electricity and data communications. In addition, cash withdrawals almost always require a working card.

Offline payments can improve resilience to disruption

The underlying infrastructure for both cards and cash is dependent on functioning electricity and data communications. A prolonged disruption in which electricity or digital infrastructure is knocked out would therefore make it difficult to use both cash and cards.

Cash services depend on electricity and data communications

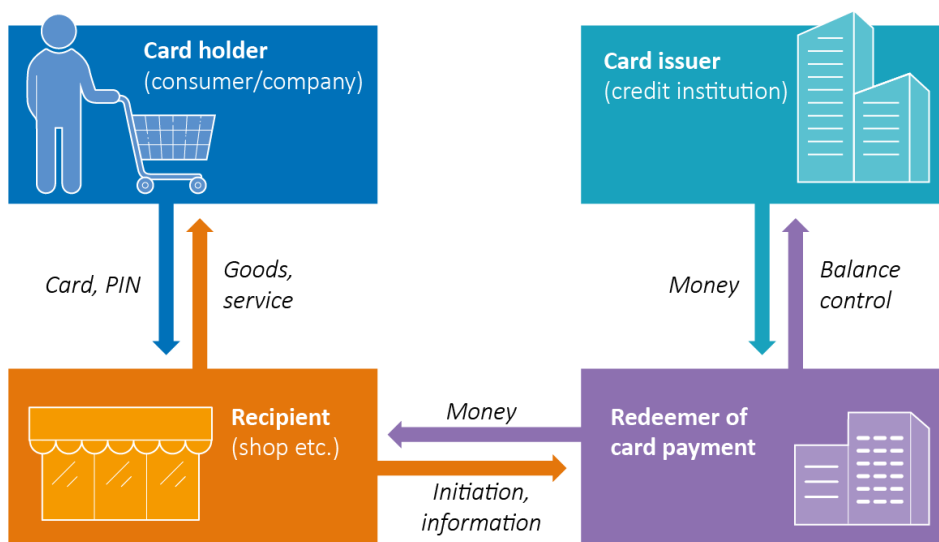
Demand for cash in Sweden increased rapidly when Russia invaded Ukraine (see 1.3 Many withdrew cash after Russia’s invasion of Ukraine). Thanks to good cooperation between Loomis, Bankomat and the Riksbank, demand could be met without interruption. However, a scenario in which electricity or data communications are knocked out could be more difficult to manage.

As responsibilities stand today, it is up to the banks to ensure that their customers can withdraw money from their bank accounts. The major banks have chosen mainly to use Bankomat to give their customers access to cash. Bankomat is currently investigating the feasibility of withdrawing and depositing cash via their ATMs even when electricity or communication networks are not working. It is important that this work continues as it contributes to strengthened preparedness.

Limited ability to pay by card offline

The card payment infrastructure in the Swedish payment market is based on a four-party model in which the key actors are cardholders, payment recipients, redeemers of card payments and card issuers. Occasionally, a disruption may occur so that controls between the players cannot be carried out, for example in case of a power failure or when data communications are not working. When a payment is made even though at least one actor is unavailable, it is usually referred to as an offline payment.

Illustration 3. Card infrastructure



REGULATORY FRAMEWORK (e.g. Visa, Mastercard)

All payment cards on the Swedish card market are connected to international networks, such as the VISA and Mastercard networks. These networks have rules limiting possibilities for offline payments, usually in the form of monetary limits. The card issuers, which are usually banks, are subject to the networks’ rules but can also set parameters in cards’ chips to further limit the cards. Customers rarely know whether

their cards will work in offline mode. It is important that card issuers are transparent about what applies to individual customers' cards.

Credit cards generally have a greater scope for offline purchases than debit cards. A credit card allows the cardholder to make purchases on credit without an adequacy check being run against their account, only a check against the existing credit limit. Instead, the cardholder has the option of paying all, part or none of the amount against an invoice at a later date. However, some cards, so-called online cards, are blocked for offline purchases.

If the key actors in the card infrastructure were to increase the ability to pay offline, the resilience of the payment system would be improved. On the other hand, offline payments pose a credit risk to the payment recipient's bank, as there is no adequacy check against the customer's account.

Norway increases possibilities for offline payments

In 2022, [Norway](#) has strengthened its preparedness for card payments and also tightened the requirements for banks to have cash in reserve in case of disruptions in the digital payment system. The strengthened preparedness for card payments means that there is a better backup solution that allows offline payments at several grocery chains, pharmacies and petrol stations. With the new backup solution, card terminals in Norway can operate offline for seven days. Previously, the terminals would only work for a few hours if data communication were interrupted. Unlike Sweden, Norway has national payment cards and the national card network BankAxept. In Sweden, we only have international card networks and these are not as easy to regulate to provide extended offline payment possibilities. However, the Riksbank is holding discussions with the banks to review these possibilities.

Point-of-sale systems also need to work offline

Even if you have cash at home and a card that works offline, problems can arise when you have to pay in a crisis situation. For example, point-of-sale systems may be disrupted, preventing shops from taking payment from customers. In the summer of 2021, disruptions occurred with a supplier, among other things, of Coop's point-of-sale system, forcing Coop's shops to close for several days. To minimise vulnerability, critical sectors need to plan how they can accept payments even in the event that IT systems, power supplies or data communications fail.

Counterfeiting and fraud

Swedish banknotes are difficult to counterfeit

Sweden has secure banknotes with security features that are very difficult to counterfeit without detection. Despite this, the number of [counterfeit banknotes](#) found was high in 2020 and then fell in 2021. The counterfeits found are very simple copies and it is almost exclusively 500-krona banknotes that are counterfeited.

When few people use cash, the risk of counterfeit notes increases

With fewer people using cash regularly, knowledge of what a genuine banknote looks like is declining and the risk of counterfeit banknotes circulating in society is increasing.

A genuine banknote is easy to distinguish if you are aware of the [security features](#). When checking a banknote, several security features should be examined in combination: the security strip, the colour-shifting image, the watermark, the intaglio printing, the see-through picture, the security thread and the microtexts.

Card fraud remains at low levels

Card fraud most often occurs when the card is read during payment or when it is inserted into an ATM. Compared to other countries in Europe, the number of [card frauds](#) in Sweden is relatively low. In addition, the number of reported cases of card fraud has fallen in recent years. One explanation for this is that, since 1 January 2021, Sweden has been applying the EU regulations on requirements for strong customer authentication. This means that a customer must be able to identify themselves with at least two of the following elements when making digital payments or logging into payment accounts:

- knowledge (something that only the user knows, such as a password or PIN)
- possession (something that only the user possesses, such as a card or a phone)
- inherence (something that is unique to the user, such as a fingerprint).

The requirement for strong customer authentication applies regardless of whether a card is swiped, a chip is used or a contactless payment is made. However, in certain cases, such as low value payments, an exemption may be made to the requirement for strong customer authentication.

Fraud in online purchases against invoice

In 2022, the [government](#) proposed legislative changes to increase consumer protection in e-commerce. Among other things, the proposal clarifies that the requirement for strong customer authentication also applies to online invoice payments. This payment method has become more common in recent years and is often marketed as 'buy now, pay later'. Every year, around [11,000–15,000 cases of identity fraud](#) are reported in e-commerce. Under the new proposal, consumers will have to prove their identity, for example with a physical security device or e-identification, when making a purchase against invoice online. This could further reduce the risk of fraud.

BankID fraud

As use rises of Swish, BankID and others, they are also being exploited as tools to commit fraud. Both services are used in combination with online banking to access victims' money. To reduce the risk of fraud, it is important not to share login details or passwords.

Swish fraud against companies

A new form of fraud against companies emerged in spring 2022. A customer showed a website to a company's cashiers with a false confirmation of a sent Swish payment. This form of fraud began to spread in the spring and subsequently some traders stopped accepting Swish payments for purchases in physical stores to prevent the fraud. To protect themselves against Swish fraud, Swish and the Swedish Trade Federation recommend that businesses use the Swish business app, which can be used to verify incoming payments, or Swish Commerce, which can be integrated into the store's point-of-sale system.

Fraudsters selling fake e-kronas

The Riksbank is investigating the possibility of issuing a digital complement to cash, known as the e-krona (see 3.3 The Riksbank is making preparations for a possible e-krona). No decision has yet been taken on a launch and it is therefore not possible to buy, sell or pay using the e-krona. Nevertheless, there have been attempts at fraud in which fraudsters try to sell the "newly launched" e-krona through advertisements on social media and news sites. The Riksbank has been involved and has taken various actions when fraud linked to the e-krona has come to light.

2.2 Are payments in Sweden efficient?

Payments in Sweden are generally efficient. Digitalisation reduces the cost of payments to society because digital payments are cheaper than cash payments. Digital payments are now faster than ever, but it can still be expensive and cumbersome to make payments abroad. Digitalisation is also marginalising manual payment services and cash, increasing digital exclusion.



What is required for payments to be efficient?

By efficient, we mean that costs to society, including energy consumption, for various methods of payment should be low. Payments should also be fast and convenient, users should have good access to payment services and there should be different payment methods to choose from, depending on the situation and circumstances.

Digital payment methods in Sweden are efficient

The social cost of digital payments in Swedish kronor is lower than for cash (see the [Payments Report 2020](#) for an explanation of why). From an efficiency point of view, it is therefore positive that more and more people are choosing to pay digitally, as this lowers the overall cost of payments to society.

But there are also downsides to an increasingly digital payments market. As more and more people pay digitally, cash and other manual payment methods become marginalised. For people who cannot use cards or digital payment services, this becomes problematic as it makes it difficult to pay bills and make purchases (see 1.4 Difficult for many to pay digitally).

Cost studies measure the social cost of different payments

To measure the social cost of different types of payments, the Riksbank conducts cost studies. The Riksbank collects data from households, companies, the public sector, banks and other payment service providers and then calculates the total cost to society of different payment methods. The last time the Riksbank carried out such a study was in 2009. The [study](#), published in 2012, showed that payments by card and direct debit were more cost-efficient than payments by cash.

The cheaper nature of digital payments is confirmed by a recent [cost study](#) by Norges Bank. The study was published in May 2022 and shows that the social cost of a cash payment in Norway is around NOK 19. The social cost of a card payment is comparatively low, around NOK 5.

The Riksbank is now working on a new cost study. This study is similar to the one recently published by Norges Bank and aims to measure the costs to society of different types of payments in Sweden. The study will be published in early 2023.

Government issued e-identification needed

Digital payment services often require payers to be able to identify themselves with e-ID. There are several kinds of e-identification used in Sweden today. BankID is the most common, with around [8.2 million](#) users in 2021. It is the banks that issue BankID and they decide who can access the service and how it can be used. This means that it is the banks that decide whether we are whom we say we are. Physical ID documents, such as passports and driving licences, are the responsibility of the state. This should also be the case for digital ID.

A government e-ID is therefore needed. Such an ID could foster competition in the payments market and would provide equal access to e-ID for all.

The Swedish payment infrastructure is being renewed

To ensure that payments in Sweden remain efficient and to simplify payments abroad, existing systems are being replaced with new payment infrastructure and a new regulatory framework. Bankgirot, for example, will be replaced by the Nordic initiative P27, which aims to make payments in the Nordic countries smoother. The transition from the old payment infrastructure to the new one is managed by the [Swedish Transformation Programme](#). In addition, the Swedish payment market is planning to change the message format of payments to a new format, ISO 20022. The new format is used internationally and will facilitate the handling of cross-border payments. The Riksbank is also modernising its systems and has launched a new settlement service, RIX-INST (see 3.1 The Riksbank is modernising its systems).

RIX-INST can increase the efficiency of the Swedish payment system

Instant payments are increasingly in demand. This is illustrated not least by the popularity of Swish. It is also illustrated by a regulatory proposal from the European Commission. The proposal updates the so-called SEPA regulatory framework, which

means, among other things, that payment service providers offering credit transfers in euros will also be obliged to offer instant payments in euros.

It is now important that new solutions or services for instant payments can be handled in the payment infrastructure and in the Riksbank's system. This is one of the reasons why the Riksbank launched the new settlement service RIX-INST in May 2022. The plan is for instant payments such as Swish to be settled in the new service. Settlement can then be carried out in central bank money (see 3.1 Swish payments will start to be settled in RIX-INST in 2023).

In RIX-INST, payments made by banks on behalf of a customer, usually small amounts that were previously aggregated and settled on a few occasions daily, can now be settled individually, one by one. The service will be open 24 hours a day, every day of the year. It will then be possible for banks to offer account-to-account payments that reach the recipient immediately. In the aggregation model, it could take a day or more for the recipient to receive the money in their account. The new settlement service is in place but not yet used by banks, which need to adapt their systems to take advantage of it.

RIX-INST uses the TARGET Instant Payment Settlement (TIPS) platform of the Eurosystem. One advantage of sharing systems with other central banks is that costs can be shared. Another advantage is that payments to and from the euro area can be faster, smoother and cheaper when the Swedish krona and the euro are in the same technical system (see 3.1 RIX-INST can facilitate instant payments between different currencies).

Common rules make payments more efficient

Digital payment systems involving different actors depend, among other things, on a regulatory framework. The framework can be compared to a common language that the participants in the system need to use in order to make payments safely and efficiently. For payments in the Nordic region, the Nordic Payment Council (NPC) has developed a common language in the form of standards and guidelines for payments in the Nordic region.

One advantage of the NPC framework is that it is based on international regulations and modern standards for instant payments, such as ISO 20022. This makes it easier to build solutions for cross border payments. It also makes it easier for banks to manage payment data, which makes it easier for them to carry out money laundering controls (see 3.1 Payments moving to ISO 20022).

All banks participating in RIX-INST will be required to adhere to the NPC's framework regarding instant payments from November 2024. This means that participants will be able to develop payment products based on the framework.

Competition contributes to efficient payments

Competition means that market players must constantly develop and improve their services and products to avoid falling behind their competitors. This often leads to efficiency in the form of lower prices and better solutions.

In recent years, companies with new attractive payment services have established themselves on the Swedish payment market. For example, Klarna and Trustly offer solutions where customers can pay via online bank or by invoice for online purchases. Those who want to pay by card can often register their card details with the retailer or a payment service company, and then a purchase is just a click away.

Network effects lead to efficient solutions but can hamper competition

There is a tradition among Swedish banks of creating jointly owned systems such as Bankomat, Swish, BankID and P27. This has led to efficiency gains and convenient solutions for consumers. In many other countries, it does not work as smoothly. For example, in other countries, it can be difficult or expensive to withdraw money from another bank's ATMs.

Cooperation between banks allows them to exploit economies of scale and network effects, but also leads to market concentration. In combination with other barriers to entry, it may hamper competition in the payments market.

Second EU Payment Services Directive will improve competition

Digital payments are essentially about moving money between bank accounts. The provider of the payment service may be different from the bank where the customer has an account. If banks can restrict payment service providers' access to these accounts, they can limit competition.

The EU's second Payment Services Directive (PSD2) was incorporated into Swedish law in May 2018. The law aims, among other things, to promote competition in the payments market by giving payment service providers the opportunity to access their customers' payment accounts. This allows them to initiate payments and compile account information. For example, a payment service provider can offer a payment service by connecting to the customer's bank and initiating a payment with the customer's consent. This needs to be made possible to enable non-bank providers to offer payment services.

The European Commission conducted a review of PSD2 in 2022 and may present a new proposal for EU legislation in 2023.

Access to certain payment infrastructure governed by EU directives

The EU Finality Directive determines who can be a participant in a settlement system, such as the Riksbank's RIX system or Bankgirot's BiR system. The purpose of the Finality Directive is to make it clear when a payment has been settled, i.e. when money has changed hands. It minimises the risk of legal disputes if a party to the payment should go bankrupt while the payment is being processed.

The European Commission is now reviewing the Finality Directive. One issue included in the review is which agents will be able to participate in settlement systems in the future. At present, it is largely only banks that are allowed to participate in a settlement system. A broader circle could include, for example, payment institutions. Broadening the scope could help to increase competition, but it could also increase the risks in the payment system and therefore needs to be analysed in detail.

Access to basic payment services is poor

Basic payment services are services that allow you to withdraw cash, pay bills and deposit daily takings in cash in a bank account. The aim of the Riksdag is that everyone in society should have access to basic payment services at reasonable prices. It is primarily the market that shall provide these services. The county administrative boards are responsible for monitoring access to the services and, with the support of the Swedish Post and Telecom Authority, can take action, for example by setting up payment service agents, in places where access is lacking.

The closure of Kassagirot affects vulnerable groups

To maintain access to basic payment services, the county administrative boards and the Swedish Post and Telecom Authority (PTS) have used ClearOn's service Kassagirot. By acting as an agent for Kassagirot, shops, petrol stations, kiosks and other businesses have been able to help customers with basic payment services, as well as deposits of cash into accounts and cashing in payment slips from, for example, the Swedish Pensions Agency or the Swedish Social Insurance Agency.

In August 2022, ClearOn announced that it would close Kassagirot on 31 August of the same year. This meant the end of 149 payment service agents. Of these, 22 were state-subsidised. As a result, about half of the places where bills could be paid with cash disappeared, meaning that large parts of the country now lack this service.

The County Administrative Board of Dalarna, which coordinates the county administrative boards' work on basic payment services, writes in its annual [monitoring report](#) that 15 of 21 county administrative boards consider that access to basic payment services is *not* satisfactory for private individuals in general. This is a considerable deterioration from 2021, when only three county administrative boards made the same assessment. The deterioration is largely due to the closure of Kassagirot.

The County Administrative Board of Dalarna County also writes that it is for instance people without a payment account, asylum seekers, the elderly and people with disabilities who have used Kassagirot. Many of these people now find it difficult to pay bills on their own. People who do not have a payment account and have therefore had their pension or insurance paid out by payment slip have also found it difficult to redeem these for cash. To deal with this problem, many have had to have their pension or insurance paid into a relative's bank account. This is a particularly serious problem, as it means that these people do not have control over their own money.

It is important that the Riksdag and the Government take decisions that ensure that everyone can pay their bills. One part of this could be to give responsible authorities

the tools to maintain basic payment services that are not dependent on individual private companies. The Riksdag and the Government must also ensure that payments from Swedish authorities are made using a means of payment that the recipient can use.

In September, the Payments Inquiry, which is investigating the role of the state in the payments market, was given an extended [mandate](#) to investigate, among other things, the consequences of the closure of Kassagirot. The Inquiry needs to consider what requirements need to be made to ensure that everyone in society can make their payments.

Some lack access to a payment account

In today's society, having access to a payment account and payment services is essential for managing one's finances. Within the EU, the Payment Accounts Directive gives all consumers legally resident in the European Economic Area (EEA) the right to open a payment account with basic functions.

However, [Finansinspektionen](#) (FI) reports that more and more consumers are experiencing that banks are refusing to allow them to open a payment account or that their payment account has been blocked or terminated. The [Swedish Consumers' Banking and Finance Bureau](#) writes that the most common complaint made to the bureau concerns terminated payment accounts. It is also common for consumers to turn to the bureau because they have been refused a payment account. Most often, it is people who do not have a Swedish identity document but have an EU passport or other identity document issued by a competent authority who are denied a payment account. It is also common for employers, often IT companies or universities, to complain that workers from countries outside of Europe have problems opening payment accounts.

Payments must be energy efficient

Climate change affects society and therefore our economy, which can create risks in the financial system. To this end, the [Riksbank](#) monitors the climate risks in its policy work. Last year's [Payments Report](#) examined the energy consumption of different payment methods and found, among other things, that card payments require less energy than cash.

Cryptocurrencies require a lot of energy

Many cryptocurrencies require a lot of energy. For example, Bitcoin emits around [70 million](#) tonnes of carbon dioxide annually. That is considerably more than Sweden's total emissions in a year, which are usually around 50 million tonnes. Moreover, Bitcoin mining relies on a technology that increases emissions as the value of the asset rises. The more the value of Bitcoin increases, the more energy is required to mine it.

A new [report](#) from the IMF analyses the energy consumption of different technologies for cryptocurrencies and central bank digital currencies. The report shows that the un-

derlying technology plays a major role in energy consumption. According to the authors, central bank digital currencies, and even some cryptocurrencies, can be more energy efficient than many traditional payment methods, such as debit cards.

Many want to regulate cryptocurrencies

In June, the EU established a [regulatory framework](#) for cryptocurrencies. Among other things, the framework requires operators to provide information on their environmental and climate footprint. Within two years, the EU will review the environmental impact of cryptocurrencies and propose mandatory minimum standards. In Sweden, both [Finansinspektionen](#) and the [Swedish Environmental Protection Agency](#) have argued for a ban on certain particularly energy-intensive technologies used to mine cryptocurrencies.

Cross-border payments must be made more efficient

It is difficult to assess the effectiveness of external payments because statistics are often lacking. However, the statistics that are available show that people send large amounts of money between countries and that the cost can be high.

Remittances are a type of cross-border payment

One type of cross-border payment that has attracted international attention recently is the so-called remittance. These are transfers of money from people working abroad to relatives and friends living in their home country or in other countries. This type of payment is important for many individuals and countries, while often being both cumbersome and expensive, see [Remittances – the overlooked payments](#).

The International Fund for Agricultural Development (IFAD) estimates that one billion people send or receive remittances annually. For the recipients of remittances, the money is often an important source of income. Estimates from the [International Fund for Agricultural Development](#) show that migrant workers send an average of SEK 2,000 each month, which can represent as much as 60 percent of the recipient's income.

However, a relatively large proportion of what is sent goes to intermediaries. According to the World Bank, the average cost of a remittance is [6 per cent](#) of the value sent. This means that some SEK 450 billion annually ends up with intermediaries instead of the final beneficiaries.

G20 initiative to make cross-border payments smoother

More efficient cross-border payments would facilitate international trade and financial integration, which in turn can support economic growth and global development. To this end, in November 2020, the G20 countries launched a five-year work programme to improve cross-border payments. The aim of the work programme is to address some of the [problems](#) that contribute to cross-border payments still being slow, expensive and cumbersome.

On behalf of the G20, the Financial Stability Board (FSB), in collaboration with the Bank for International Settlements' Committee on Payments and Market Infrastructures (CPMI), has developed a [work plan](#) with 19 work areas that are seeking solutions to these problems. The Riksbank has an active and leading role in several of the working groups (see 3.4 The Riksbank is working to improve external payments).

FACT BOX – How a cross-border payment works

For consumers, there are mainly three types of cross-border payments: card payments, bank transfers and payments via other payment service providers. Card payments are the most common form of cross-border payment and are used to purchase goods and services from other countries. Bank transfers are common for the purchase of larger items such as cars, boats and property. They are also common for payments of taxes and fees, gifts and the like. Payments via another payment service provider have traditionally been used to send money to friends and family abroad, but have become more common in other areas, such as buying goods and services online.

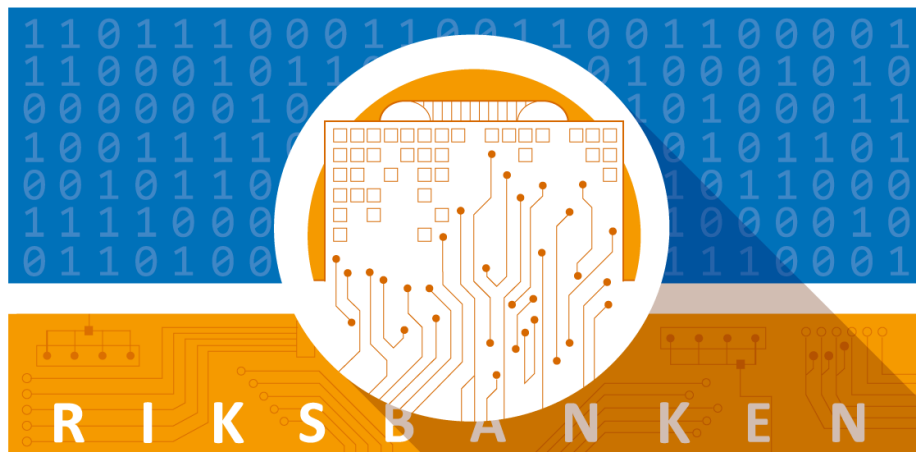
Card payments are often convenient, but they can be relatively expensive as there is an exchange rate charge. Bank transfers within the EU are usually convenient and cheap, and often cost about the same as a domestic payment. However, bank transfers to countries outside the EU, and especially outside Europe, can be very costly. They can also take a long time, depending on the number of actors in the chain. Payments via payment service providers were previously expensive, but now several payment service providers offer convenient and cheap payment services.

Regardless of the payment method used, a cross-border payment requires an exchange between currencies. Usually, money will also be moved between different actors. This can be done through various arrangements.

One arrangement is for the cross-currency part of the payment to be made within an institution. This happens when the payer and the recipient have an account with the same bank operating in several countries, such as Western Union. Another is the so-called correspondent banking arrangement, where banks in different countries have accounts with one another. In correspondent banking arrangements, payment messages are mainly sent over the **SWIFT** secure financial messaging network. A third arrangement is when the payment infrastructures of different countries or different currencies are interconnected. This may, for example, allow a payment service provider in one country to send a payment to the payment infrastructure in the other country. Such arrangements exist to a small extent, but are being developed in several regions. In Europe, for example, the TIPS platform may enable such arrangements. For a more detailed description and an overview of costs, relevant regulation and ongoing initiatives for improvements, see [Cross-border payments in the spotlight](#) and [Remittances – the overlooked payments](#).

3 The Riksbank's work and policy

The Riksbank shall promote safe and efficient payments. The digitalisation of the payment market is proceeding apace and the Riksbank is modernising its systems to meet this development. The Riksbank is also working to ensure that cash can continue to be used in the future and is developing a proposal for a digital complement to cash, known as the e-krona. The Riksbank participates actively in international cooperation on central bank digital currency and cross-border payments.



3.1 The Riksbank is modernising its systems

Almost all electronic payments between banks are settled in the Riksbank's RIX system. The aim is for this to be conducted as smoothly and efficiently as possible. The Riksbank is now developing the system and offering a new settlement service, RIX-INST. The Riksbank is also investigating the possibility of sharing additional systems with other European countries.



RIX is the hub of the Swedish payment infrastructure

Apart from card payments, almost all electronic payments between banks are made through accounts that the banks have in RIX (see 2.1 Most payments in Sweden go through the Riksbank's system). The RIX system consists of two settlement services: RIX-RTGS (for large payments and aggregated retail payments) and RIX-INST (for individual instant payments).

One way to manage and further develop settlement systems while keeping costs as low as possible is to share them with other central banks. This is one of the reasons why RIX-INST uses the Eurosystem's instant payment settlement system – TARGET Instant Payment Settlement (TIPS). In addition, the Riksbank has taken a strategic decision to explore the possibilities of using the other Eurosystem payment and securities settlement platforms, T2 and TARGET2-Securities (T2S), respectively.

RIX-INST may facilitate instant payments between different currencies

At present, TIPS only allows payments to be settled in the same currency, meaning that the payer and the recipient have accounts in the same currency. As a result of the Riksbank's use of the Eurosystem's TIPS platform, the Riksbank and the European Central Bank (ECB) are now investigating whether TIPS could also be used to settle

payments between different currencies, in an initial stage between the euro and Swedish krona. [Danmarks Nationalbank](#) has also decided to join TIPS, while [Norges Bank](#) is considering joining.

Payments moving to ISO 20022

Digital payments rely on communication between the parties involved in the payment – systems must therefore communicate using the same 'language'. All around the world, central banks, banks and financial infrastructures use the SWIFT network and its format and standards to make payments. SWIFT's previous standard has limitations, including the amount of information that can be sent with a payment. Consequently, in autumn 2020, SWIFT presented a strategy and timetable for migration to the new ISO 20022 format.

In March 2023, the Eurosystem will migrate to ISO 20022 for payments. Globally, the transition is expected to last until 2025, which is SWIFT's end date for its old format and the old standard for cross-border payments. RIX-INST, which went live in May 2022, is based on ISO 20022.

The international use of ISO 20022 opens the door to faster and more efficient processing of payments between countries and currencies. The new format, which includes more information, can also help to increase the transparency and traceability of cross-border payments.

Swish payments will start to be settled in RIX-INST in 2023

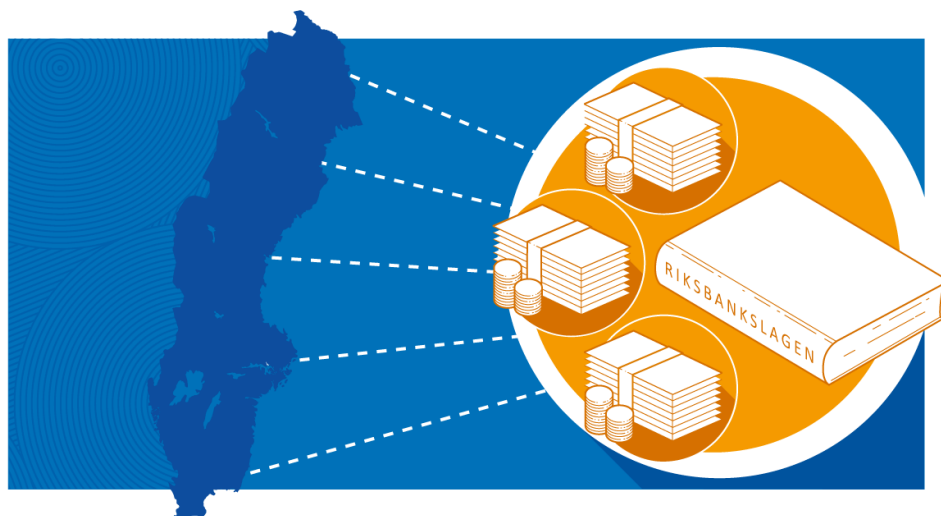
Currently, households and companies use the mobile service Swish to send and receive instant payments. Swish payments are settled via the banks' accounts in a private system called BiR (Betalingar i Realtid). The plan is for this to change in 2023, when Swish payments will be settled in RIX-INST. The advantage of this is that settlement can take place via the banks' accounts with the Riksbank. Money in accounts at the Riksbank, known as central bank money, reduces risk during settlement. This is because the Riksbank cannot go bankrupt.

Another advantage for the banks of moving Swish to RIX-INST is that it is part of the same system as the settlement service for large-value payments (RIX-RTGS). Liquidity that participants have set aside for Swish or other instant payments (in RIX-INST) and large-value payments (in RIX-RTGS) will therefore be in the same system, which will allow participants to move their liquidity between the different services more easily on an almost 24-hour basis. It will also allow participants to reduce their costs for the liquidity used for instant payments.

In order to ensure that the renewal of the Swedish payment infrastructure does not come to a halt, it is of great importance that the banks prioritise the migration of Swish payments from BiR to RIX-INST.

3.2 The Riksbank gets clearer responsibility for cash

According to the new Sveriges Riksbank Act, the Riksbank will be responsible for at least five cash depots and will supervise cash management in Sweden. However, the possibility of paying with cash must also be enshrined in law. It is also important that cash-in-transit companies can maintain operations and that the banks take greater responsibility for cash.



The new Sveriges Riksbank Act clarifies the Riksbank's responsibilities

In November, the Riksdag adopted a new Sveriges Riksbank Act that will enter into force in January 2023. The new Act gives the Riksbank clearer and partly expanded responsibility for the cash infrastructure in Sweden. One reason for giving the Riksbank this responsibility is that it is becoming less and less profitable for the private sector to maintain the cash infrastructure. The Riksdag's decision ensures that parts of the infrastructure will be maintained. The Act also gives the Riksbank a new responsibility with regard to civil contingency planning for payments (see 3.5 The Riksbank gains new responsibility over civil contingency planning for payments).

The Riksbank must operate at least five banknote depots

Since 2014, the Riksbank has managed its cash management from an office near Märsta in Stockholm County. From there, banks have been able to purchase banknotes, which they have, in turn, stored in banknote depots. It is from these depots that cash-in-transit companies collect and deliver banknotes on behalf of banks, shops and others.

Under the new Sveriges Riksbank Act, the Riksbank will operate at least five banknote depots, one of which will be located in Norrbotten or Västerbotten County and one in Jämtland or Västernorrland County.

From 1 January 2023, the Riksbank will operate depots in Märsta, Jönköping and Umeå. By 1 January 2026, the Riksbank will have opened one depot in Jämtland or Västerbotten County and one in southern or central Sweden. Through Bankomat AB, the banks currently operate depots at four locations in the country.

The Riksbank shall analyse cash management and report to the Riksdag Committee on Finance

The Riksbank shall monitor, analyse and, if necessary, coordinate the management of cash in Sweden. This means that the Riksbank must have an overall view of how cash management works and the challenges that exist. The Riksbank will present its monitoring and analysis to the Riksdag Committee on Finance on a regular basis. The Riksbank will have to cooperate with other authorities with related tasks, such as the Swedish Post and Telecom Authority and the county administrative boards, which, among other things, monitor access to basic payment services.

The cash infrastructure must function in crisis situations and under increased preparedness

Under the new Sveriges Riksbank Act, companies providing cash withdrawal and handle daily takings, among others, must plan to maintain their operations in peacetime crisis situations and in the event of increased preparedness. The banks and Bankomat AB will need to ensure the continuity of their cash services.

More needs to be done to ensure that cash can be used in the future

With the new Sveriges Riksbank Act and the obligation for certain major credit institutions to provide cash services, the Riksdag has ensured that parts of the cash infrastructure have stronger legal protection. But this is not enough to ensure that cash will be an effective means of payment in the future.

Cash needs stronger legal protection

Since the company ClearOn discontinued its Kassagirot service, there have been very few options for redeeming payment slips and paying bills in cash. If cash is to be used in the future, the right of individuals to pay with it must be protected. The Riksbank believes that it must be possible, at a minimum, to use cash to purchase vital goods and services and that this is best ensured by strengthening its status as legal tender.

The activities of cash-in-transit companies must be maintained

At present, Loomis is the only nationwide cash-in-transit company in Sweden. Both the Riksbank and private banks engage Loomis to provide cash services. This can include, for example, refilling ATMs or handling daily takings. Both the Riksbank and the banks must have a plan for how these services will be maintained in the event that Loomis were to cease operations in all or part of Sweden. At the political level, a decision needs to be made on whether cash transports to and from individual shops should be dependent on a single private operator (see 2.1 The cash infrastructure is vulnerable).

The banks must take greater responsibility for cash

The Riksbank has long argued that the banks should be obliged by law to accept cash deposits from private individuals. Today, some major credit institutions are obliged to provide cash services but only for cash withdrawals and deposits of daily takings. The banks must also offer manual cash services to help customers who cannot use ATMs or other automated and digital services (see 1.4 Difficult for many to pay digitally).

3.3 The Riksbank is making preparations for a possible e-krona

The Riksbank is investigating the possibility of issuing a digital complement to cash, known as the e-krona. This would preserve public access to government-issued money even if cash were to be marginalised further. In addition, the e-krona could strengthen the resilience of the payments market. No decision has yet been taken to issue an e-krona. Many other central banks, including the European Central Bank and the Federal Reserve, are also examining the possibility of issuing a central bank digital currency.



The e-krona could preserve, strengthen and renew the payments market

Today, the public has access to Swedish kronor in two forms – government-issued money in the form of cash and digital money issued by private actors. Of the privately issued money, deposits at commercial banks are the most common. There is also electronic money, although this is rare in Sweden (see [Riksbank.se](https://www.riksbank.se), where we explain what electronic money is).

As the use of cash decreases, there is a risk that the general public will no longer have access to and be able to pay with government-issued money in the future. Businesses and individuals would then become wholly dependent on private operators to make payments. The Riksbank is therefore investigating the possibility of issuing a digital complement to cash, known as the e-krona.

The e-krona could ensure that we *preserve* several of the functions of cash in a future where cash is no longer used. One such function is the ability to exchange every krona deposited in a Swedish bank into money issued by the Riksbank. This is important because it means that a krona is worth the same regardless of which bank it is in. The

Riksbank and other central banks usually say that cash and central bank digital currency ensure that we have a unified monetary system.

The Riksbank considers that the e-krona could also *strengthen* the resilience of the payment market. It would complement the supply of money and payment services from the private sector. It is important that there are several alternatives in the event of serious disruptions to bank or card company systems. The e-krona would also contribute to the *renewal* of the payments market. By providing an e-krona, the Riksbank can give players other than banks direct access to an alternative payment infrastructure in which they can offer payment services to their customers. This could make it easier for smaller and new actors to develop new and innovative solutions and products.

No decision on e-krona yet

No decision has yet been taken to issue an e-krona. This is an issue that will affect society as a whole and it is ultimately for the Riksdag to decide.

In December 2020, the Government launched an inquiry to analyse the future role of the state in the payments market. Among other things, the inquiry will consider whether Sweden needs an e-krona. Its findings will form an important foundation for the Riksdag's decision on whether an e-krona should be issued. The inquiry was due to report on 30 November 2022, but it has been extended until 31 March 2023 (see 1.3 FACT BOX - Payments Inquiry extended).

It is important that the Riksbank is ready to issue an e-krona if the Riksdag decides this should happen. The Riksbank is therefore working to prepare for an issuable e-krona. It is also important that other players in the payments market follow this work and participate in the preparations.

The Riksbank is testing a technical solution and preparing for a possible issuable e-krona

Since 2020, the Riksbank has been running a pilot project together with the company Accenture. The aim of the pilot has been to learn more about what a technical solution for an e-krona could look like without determining any specific model or technology from the outset. In parallel with the technical work in the pilot, the Riksbank has analysed various legal aspects linked to an e-krona, such as data protection, financial confidentiality and what kind of asset the e-krona could be.

In 2022, the second stage of the pilot was completed and a third stage was launched. The third stage will continue well into 2023 (see 3.3 FACT BOX - Lessons from the pilot project).

At the same time, the Riksbank is working on preparations for a possible issuable e-krona. This includes looking at other possible technical solutions, investigating how the e-krona could be distributed to the public and which actors would be involved in this. In addition, work is continuing on examining the legal aspects of an e-krona.

The Riksbank is looking to the market for more knowledge

In 2022, the Riksbank launched a [dialogue forum](#) with representatives from the banking sector, Fintech companies, retailers and universities, among others. Among other things, this will discuss different ways of using an e-krona and what the division of roles in the e-krona system could look like.

In April 2022, the Riksbank opened a [Request for Information \(RFI\)](#) whereby potential suppliers were asked to describe their technical solution for an e-krona. The aim of this was to obtain an overview of the solutions currently available on the market ahead of a possible future procurement of an e-krona system.

The Riksbank is also investigating how private individuals experience different payment situations. This is being done through a survey and interviews with private individuals. The results will help the Riksbank to better understand how an e-krona can be designed to meet the public's needs in a rapidly changing payments market.

FACT BOX - Lessons from the pilot project

The work of the e-krona pilot has been divided into different stages. During the first stage, a test environment was created to simulate how an e-krona payment could work (see [Payment Report 2021 - Test of technical solution for an e-krona](#)).

The results of the second stage, which was carried out as a collaboration between the Riksbank, Handelsbanken and the company TietoEVERY, showed that it is possible to integrate a potential e-krona into the current internal systems of the banks. This is important because it would allow bank customers to switch between money in bank accounts and the e-krona. The tests also showed that it would also be possible to make transactions with the e-krona offline. However, offline payments entail some risks. Such payments cannot be checked by the e-krona network when they are being made but only once the payment has been synchronised in online mode. This means that, at least in theory, it would be possible to manipulate payments in offline mode. For the tested solution to become a reality, such risks need to be further investigated.

During the first part of the third stage, the Riksbank tested whether the technical test solution developed for the e-krona offers better opportunities for developing smart payments than traditional technology. Smart payments and smart contracts are concepts that have received increasing attention in recent years. These terms refer to the possibility of creating payment solutions through programming where one or more conditions must be met for the payment to go through. One example concerns buying online, where a payment could be programmed to be executed only once the goods have reached the right address. If the goods do not arrive, the payment will not go through either. The stage three tests showed that the solution developed for the e-krona has some potential for creating smart payments but that more testing and research is needed before this can become reality.

International cooperation on central bank digital currency

An increasing number of central banks are exploring the feasibility of issuing central bank digital currencies. In order to keep pace with developments and have the opportunity to influence events going forward, the Riksbank is participating in several international collaborations on central bank digital currency.

Since 2020, the Riksbank has been a member of an international working group with participants from the European Central Bank (ECB) and the central banks of Canada, Japan, Switzerland, the United Kingdom and the United States. The aim of the collaboration is to share lessons learned, create a common vision and discuss the way forward for central bank digital currency that is available to the public.

The Riksbank has also led several fields of activity in the G20 countries' project to improve cross-border payments. One of these fields of activity is investigating how central bank digital currency can be used to simplify cross-border payments (see 3.4 The Riksbank is working to improve cross-border payments).

FACT BOX – The ECB and many countries are preparing their own central bank digital currencies (CBDC)

An increasing number of central banks have begun to consider the implications of a cashless future and the need for central bank digital currency.

Since autumn 2021, the [ECB](#) has been exploring how a digital euro could be designed and distributed to retailers and the general public. In September 2023, according to the current timetable, it will decide whether to launch the realisation phase. Central banks in other countries, including the [United States](#), [United Kingdom](#), [Canada](#), [India](#) and China, are also exploring the need for a central bank digital currency and what this could look like. In a [survey](#) conducted by the Bank for International Settlements (BIS), 90 per cent of 81 central banks surveyed said that they are actively working on issues related to central bank digital currency.

In some countries, a central bank digital currency for the public has already been issued. In October 2020, the Central Bank of the Bahamas issued the [Sand Dollar](#), becoming the first country in the world to have a central bank digital currency. Since then, Nigeria has launched the digital currency [eNaira](#) and the Eastern Caribbean Central Bank has issued [Dcash](#).

3.4 The Riksbank is working to improve cross-border payments

For individuals, payments to some countries are expensive and slow. Changing this requires cooperation between countries around the world. The Riksbank therefore participates actively in several international projects aimed at improving cross-border payments. To be able to follow developments more easily, statistics on payments from Sweden to other countries need to be improved.



Global cooperation and good statistics are important

Smooth and cheap cross-border payments can contribute to economic growth, international trade, global development and financial integration. Global cooperation is a prerequisite for this. It is therefore important that the Riksbank and other actors in the Swedish payments market become involved in the international work being done to improve cross-border payments.

Following the development of cross-border payments requires good statistics. Today, there is often a lack of data on payments from Sweden to foreign countries and the statistics that do exist are of poor quality. To improve this, targeted surveys on cross-border payments are needed. Such surveys cost money and the Riksbank believes that the authorities with an interest in improving cross-border payments should review how these costs can be shared.

The Riksbank plays an active role in the G20 initiative

In November 2020, the G20 countries launched a five-year work programme to improve external payments. The programme has been divided into 19 work areas. 16 of these focus on how to improve current structures for cross-border payments. The remaining three have been grouped under the working group [Future of Payments](#).

These are more forward-looking and focus on entirely new solutions. They look at how central bank digital currencies, the type of cryptocurrency known as stablecoins, and multilateral payment platforms can be used to improve cross-border payments. As a member of the CPMI, the Riksbank was given the responsibility of leading these working groups.

Central bank digital currencies

In July 2022, a [report](#) was published that looks more closely at how different countries' central bank digital currency systems can be linked and communicate with each other to simplify cross-border payments. The report also investigates different models for how the public and payment service providers can gain access to central bank digital currency from a cross-border perspective. A key conclusion is that central banks around the world should cooperate and take cross-border payments into account as soon as they start to develop a central bank digital currency.

Multilateral platforms

One of the working groups is examining whether multilateral platforms could improve cross-border payments. Multilateral platforms are payment systems that involve several countries, such as the planned Nordic cooperation [P27](#) and the Eurosystem's instant payment settlement system, TIPS. In an [article](#) published in July 2022, the working group concluded that multilateral platforms could alleviate some of the problems that exist with cross-border payments today, such as long transaction chains, but that further analysis is needed. The working group's final report is expected to be published in January 2023.

Stablecoins

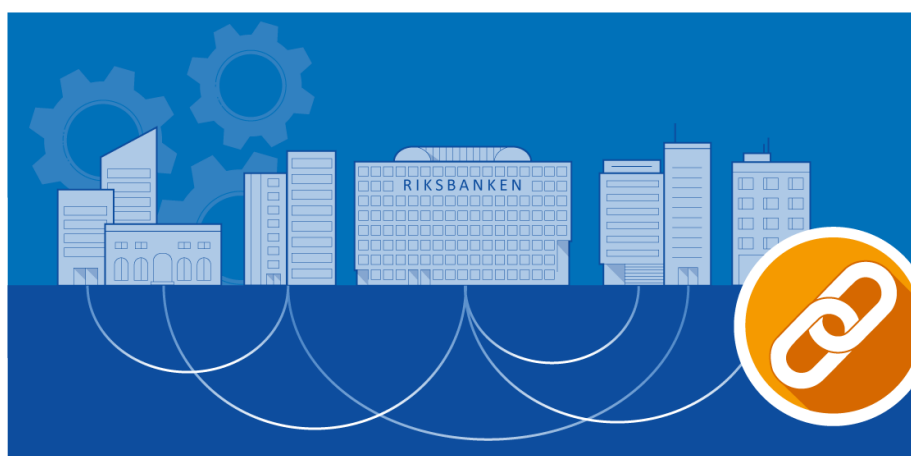
The working group on stablecoins has focused on whether stablecoins can help improve foreign payments. One condition of the analysis has been that stablecoins comply with all relevant laws and requirements.

The Riksbank tests cross-border payments with e-krona

Together with the central banks of Israel and Norway, and the Bank for International Settlements (BIS), the Riksbank has launched a joint [project](#) to investigate how central bank digital currencies can be used for international payments and transfers. The aim of the project is to test whether it is technically feasible to link the countries' various central bank digital currency systems. The project could give a better understanding of how central bank digital currency should be designed to be used for cross-border payments. The Riksbank is participating as part of the e-krona project and is testing the link with the current test environment for the e-krona.

3.5 The Riksbank contributes to increased resilience

It is important that the actors in the payment system work together, both in prevention work and in dealing with various situations. The new Sveriges Riksbank Act gives the Riksbank a new responsibility for civil contingency planning for payments. This means that the Riksbank is responsible for ensuring that the general public can make the necessary payments in peacetime crisis situations and in the event of heightened alert, such as in the event of a war or threat of war.



The Riksbank is given new responsibility for civil contingency planning for payments

The new Sveriges Riksbank Act gives the Riksbank new responsibility for civil contingency planning for payments, with the aim of enabling the general public to make payments in peacetime crisis situations and in the event of heightened alert.

The new act means that the Riksbank will have a responsibility in relation to companies that are of particular importance for the execution of payments. Through regulations, the Riksbank may define which companies that are included and which joint activities they will participate. The companies will be obliged to have internal planning for how they will be able to continue their operations in peacetime crisis situations and in the event of heightened alert, and to organise training and exercises for their staff. They must also participate in the Riksbank's planning for peacetime crisis situations and increased readiness, as well as in joint training and exercises. If necessary, the Riksbank will be able to immediately set up a coordination and information-sharing management function in which the companies take part. The Riksbank shall also monitor that the companies meet their obligations.

New structure for civil contingency planning

As the geopolitical situation in Europe has deteriorated, the Government and other public authorities have been working to strengthen civil defence. On 18 May, the Government presented a [reform](#) for civil contingency planning that will strengthen Sweden's resilience. Among other things, government agencies under the government will be divided into ten civil contingency sectors. As an authority under the Riksdag, the Riksbank is not covered by the new structure.

Finansinspektionen is the authority with sectoral responsibility for the contingency planning sector Financial services, which includes payment intermediation, financing and savings, financial stability and insurance. The contingency planning sector must have coherent plans for peacetime crisis situations and heightened alert. This could mean that a financial company is affected by measures taken by both the Riksbank and Finansinspektionen. The Riksbank is working to clarify how the Riksbank will relate to both the new structure for civil contingency planning and the division of responsibilities between the Riksbank and Finansinspektionen in the area of payments.

Private-public collaboration strengthens the resilience of the payment system

The payment system consists of several agents from both the private and the public sector. Disruptions in one part of the payment system can have consequences that affect other parts. For resilience to be strong, payment system participants need to work together to prevent threats and minimise risks. It is also important that they know how to act once a disruption occurs. For this reason, the Riksbank works together with other authorities and companies in various constellations to safeguard and develop the resilience of the Swedish payment system.

Exercises improve ability to cope with disturbances

To ensure that payments can be settled even in the event of disruptions or operational breakdowns, the Riksbank conducts regular exercises together with the RIX participants. An example scenario for an exercise could be a total breakdown of the RIX system. There are well-developed procedures for settlement in different types of scenarios. In this particular case, payments have to be settled according to RIX contingency procedures. The aim of joint exercises is to give everyone a good understanding of the contingency procedures and the ability to limit any negative consequences and make the right decisions in the event of a crisis.

Glossary

Barriers to entry: Obstacles to establishing oneself in a new market. These may, for instance, be financial barriers such as establishment costs, or legal barriers such as licensing requirements.

Basic payment services: Services that allow you to pay bills, withdraw cash and deposit daily takings into your account.

Card system: A set of regulations, payment procedures, payment instruments and related infrastructure for card payments.

Cash-in-transit company: A company that transports cash, particularly to banks and the trade sector. They may also carry out the counting, sorting and authentication of cash at so-called counting centres.

Central bank digital currencies (CBDC): Digital money created by central banks. 'Retail CBDC' are intended for the general public while 'wholesale CBDC' are intended for financial institutions. See also *central bank money*.

Central bank money: Money issued by a central bank. Swedish central bank money is Swedish kronor in the form of banknotes and coins as well as money in accounts in the Riksbank's settlement system, RIX.

Clearing: Compilation and processing of payment instructions. In general, many transactions are processed at the same time (a so-called batch), which means that they can sometimes be offset against one another.

Clearing organisation: A company authorised by the supervisory authority (in Sweden, Finansinspektionen) to carry out clearing. In Sweden, Bankgirot is authorised to carry out clearing of retail payments.

Credit card: A card that allows the cardholder to obtain credit. The card allows the holder to make payments up to a certain total maximum amount during a certain period. Payments are aggregated and billed to the cardholder at the end of the period, but the cardholder does not have to pay the full amount billed on the payment date. The part that the cardholder chooses not to pay is rolled over to the next period as a loan (credit) and usually the person has to pay interest.

Cryptocurrency/crypto asset: Digital currencies created in the private sector that are not backed by a government or central bank. Central banks generally refer to cryptocurrencies as crypto-assets because they do not usually fulfil the basic functions of money.

Debit card: A card connected to the cardholder's account at a bank where the amount paid is debited directly when a payment is made. Debit cards are also called bank cards in Sweden.

Deposits: Money that individuals, for example, have deposited in a bank account. Deposits constitute an important part of the banks' funding.

Direct debit: A pre-authorised transfer from the paying party's account to the recipient's account. The transfer is initiated by the recipient.

E-commerce: The purchase of goods or services online.

Economies of scale: Economic term for production where the average cost decreases as production increases. Economies of scale usually arise when production is associated with large fixed costs.

E-krona: Central bank digital currency that may be issued by the Riksbank and would be available to the general public (a so-called retail CBDC). The Riksbank has not taken any decision on issuing an e-krona. See also *central bank digital currency*.

Electronic money (e-money): An electronically stored monetary value that is used to make payments. E-money is issued by electronic money institutions or companies registered as electronic money issuers. Like private bank money, electronic money represents a claim on the issuer (private institution).

EU/EEA: European Union and European Economic Area. The European Economic Area (EEA) is based on an agreement between all EU Member States plus Iceland, Liechtenstein and Norway, which mainly concerns free trade and legislative alignment. Switzerland is not part of the EEA, but has a similar agreement with the EU.

Financial infrastructure: The systems that, among other things, enable financial flows between different agents. The financial infrastructure also includes the regulations and procedures that govern the use of these systems.

Finality Directive (Directive 1998/26/EC of the European Parliament and the European Council concerning payment and securities settlement systems): Aims to prevent or minimise legal risks in financial market settlement. The Directive ensures that transactions are executed in the order in which they are submitted to the system and also that they are finally settled regardless of whether any agent has become insolvent in the meantime. The Directive governs, among other things, which participants can access notified settlement systems, including central banks' RTGS systems such as RIX in Sweden.

FinTech: A collective term for innovative companies working in financial technology. This type of company provides or enables financial services, for example by acting as an intermediary in some part of the payment chain and by creating new services. They may also simplify or otherwise improve ways of making payments.

Initiation: Starting a payment process. Initiating a payment often involves verifying the identity of the person initiating the payment, for example by a PIN or Bank ID. It is then checked whether the person is authorised to initiate the payment and whether there are sufficient funds in the account to make the payment.

Internet banking: A service provided by banks that allows their customers to carry out banking transactions online.

Instant payments: A payment where the recipient's account receives the payment almost at the same time as the sender makes the payment. Swish is currently the only service offering instant payments in Sweden, but RIX-INST will enable banks and other payment service providers to offer more types of service where the payment is made instantly.

ISO 20022: New standard for payment messages that can help make international payments faster, more efficient and more transparent.

Large-value payment: A payment, usually of very high value, made mainly between banks or other financial market participants and usually requiring rapid settlement.

List prices: The official price displayed for a service or product, for example on a company's website.

LMA card: Proof of being an asylum seeker in Sweden. LMA refers to the law on the reception of asylum seekers.

Manual cash services: The opportunity to receive help paying bills and depositing or withdrawing cash over the counter at a bank branch, for example.

Money laundering: When someone tries to make money obtained illegally appear to be legally earned.

Multilateral platform: A system for the clearing and/or settlement of cross-border payments in one or more currencies.

Network effects: When the benefits of a product or service increase with the number of users. For example, a payment service is usually more attractive the more sellers that accept payments through the service.

Obligation for certain major credit institutions to provide cash services: Pursuant to Chapter 9 of the Payment Services Act, credit institutions and branches of foreign credit institutions that provide payment accounts and have more than SEK 70 billion in deposits from the general public must provide cash withdrawal and facilities to deposit daily takings to a satisfactory extent throughout the country.

Online card: a card that only works if all agents in the card network can communicate with each other to perform the necessary checks.

P27: Nordic initiative to create a joint clearing platform for national and cross-border payments in Nordic currencies and euros. The project is being run by a number of the Nordic area's largest banks.

Payment: The transfer of money or value in another form from one party to another.

Payment institution: A Swedish limited liability company or an economic association that is authorised under the Payment Services Act to provide payment services. It may also be a legal entity with its registered office in another EU/EEA country that is authorised to provide payment services under that country's legislation. See also *Payment Services Directive* and *Payment Service Provider*.

Payment instrument: The instrument or procedure used to initiate a payment, such as a card.

Payment process: All the steps a payment has to go through to be executed, such as initiation, clearing and settlement.

Payment service: A service offered by a payment service provider to its customers to enable them to make payments, for example. See also *payment service provider*.

Payment Services Directive (PSD): The Payment Services Directive is a European directive that regulates payment services and payment service providers in the EU/EEA. The Payment Services Directive has been replaced by the second EU Payment Services Directive (PSD2). See also *PSD2*.

Payment service provider: A collective term for banks, credit market companies, payment institutions, registered payment service providers, electronic money institutions, state and local authorities, central banks and the foreign counterparts of these categories that provide payment services in Sweden.

PIN (Personal identification number): A personal number that must be kept secret and that allows users to identify themselves, for example when making a purchase by card.

PSD2 (revised EU Payment Services Directive): PSD2 has replaced the PSD (Payment Services Directive). The aim of the Directive is to develop the market for electronic payments and create better conditions for secure and efficient payments. PSD2 has been incorporated into Swedish law through amendments to the Payment Services Act. This extended the scope of the Act so that it now also covers so-called third-party providers of payment services.

Retail payment: A payment of small value usually made between individuals, companies and public authorities. Traditionally, retail payments are defined as all payments that are not large-value payments. See also *large-value payment*.

RIX: The Riksbank's central payment system that handles large-value payments to and from the banks' accounts with the Riksbank. The Riksbank functions as the banks' bank for payments in Swedish kronor. In spring 2022, a service for immediate payments was added (see *RIX-INST*).

RIX-INST: The Riksbank's instant payment service, which was launched in May 2022 and is part of the RIX system.

RIX-RTGS: The Riksbank's central payment system that handles large-value payments to and from the banks' accounts with the Riksbank

Settlement: When a payment is finally executed, it is settled. In the case of payments within a bank, for example, this is when the transfer between accounts is made. For payments between banks, for example, it is when the money has reached the recipient bank.

Social cost: The value of the negative benefits that an activity or measure generates for society as a whole.

SEPA (Single Euro Payment Area): A common euro payment area consisting of the whole EEA. The basic principle is that within the SEPA there should be no borders when making a euro payment; it should be no more complicated or costly to make a payment from Berlin to Hamburg than from Berlin to Paris.

Stablecoin: A form of crypto-asset whose value is usually linked to the value of other assets, such as one or more national currencies or other financial assets. Stablecoins have mainly been used as a bridge between national currencies and investments in other cryptocurrencies.

SWIFT: A global financial messaging network that follows certain standards. Central banks, banks and financial infrastructures use the SWIFT network and its format and standards to make payments.

Swish: A payment service that allows users to send and receive money to their bank accounts via their mobile phone. To send money by Swish to others, both the payer and the recipient need to be connected to the service provided by their banks.

TIPS (Target Instant Payment Settlement): The Eurosystem's instant payment platform that the Riksbank will use to offer instant payments through RIX-INST.



SVERIGES RIKSBANK

Tel +46 8 - 787 00 00

registratorn@riksbank.se

www.riksbank.se

PRODUCTION SVERIGES RIKSBANK