



The state's role on the payment market

Summary

Cash use has decreased rapidly in Sweden and a scenario within the not-too-distant future, in which cash is irrelevant due to the trade sector no longer accepting it as payment, cannot be ruled out. Even if cash does not completely disappear, a situation in which cash is no longer generally accepted as a means of payment would be tantamount to a cashless society. The Riksbank has expressed concern over this development in a consultation response to the Riksbank inquiry.¹

Sweden is one of the countries in the world in which cash has become most marginalised, but the technological shift caused by digitalisation is affecting all countries. Digital central bank money or a central bank digital currency (CBDC) is therefore something that is being investigated by the majority of central banks around the world. Many have also started pilot studies and tests to learn more about how a CBDC might work in practice.

For 350 years, Swedish society has relied on the Riksbank to provide the general public with various forms of the country's currency, the Swedish krona. In addition, banknotes and coins issued by the Riksbank have been legal tender since the 1850s. Technological development and the digitalisation of payments have brought the issue of the state's future role on the payment market to a head as this development, if nothing is done, will in all likelihood lead to the general public no longer having access to generally accepted central bank money. In turn, this effect may make it more difficult for the Riksbank to promote a safe and efficient payment system in Sweden, not just in times of crisis and war but also in peacetime.

A committee should therefore be tasked with performing a review of the concept of legal tender, the state's role with regard to means of payment in a

¹In short, the Riksbank takes the view that all banks with payment accounts shall offer cash services and that clarification of the concept of 'legal tender' is a matter of the utmost urgency. For example, it needs to be clear which services, in addition to public medical care, shall be obliged to accept cash. For further information, see <https://www.riksbank.se/globalassets/media/remisser/riksbankens-remissvar/svenska/2018/yttrande-over-remiss-om-tryggad-tillgang-till-kontanter.pdf>.

digitalised economy and the role and responsibility of both the state and the private sector on the payment market.

The committee should have all-round expertise covering areas such as the law, economics, political science, history and EU issues. A good example of such a committee of experts is the EMU inquiry of the 1990s which provided guidance prior to Sweden's decision on whether or not to introduce the euro.

The committee's remit should prescribe a broad conceptual approach. Furthermore, the committee should perform a comprehensive analysis of different feasible solutions to problems and risks. As part of this work, the committee should examine both the need for new regulations for the private sector and the implications of introducing a CBDC. Finally, the smooth functioning of the payment market even in times of crisis and war should be the committee's starting-point.

The committee should furthermore assess and propose the legislative amendments that it considers necessary for Sweden to continue to have a stable and efficient payment market. The committee should also consider the need for any legal amendments as regards, for example, the concept of legal tender.

As time is of the essence regarding this issue, the time frame for the assignment should not be too long.

Table of contents

Summary.....	1
Proposal for decision by the Riksdag.....	4
The payment market in a digital economy – summary	5
Background	5
What is money?.....	5
Different types of money	8
Money and central government’s role on the payment market	9
Central bank money as legal tender	11
The need for a review	12
Proposal for the committee’s task	12
Other issues.....	13
Impact assessments	13
Delimitations.....	14
Consultation/Implementation of the assignment	14
Annex 1: The state’s role on the payment market in the digital era.....	15
Money and central government’s role on the payment market – a historical description	15
Defining the problem – How can confidence in money, resilience and competition on the payment market be maintained in the digital era?.....	20
The Swedish payment market today	25
Tools of the state, including the e-krona	28
International work on a central bank digital currency.....	34
Annex 2: Consultation response – The Riksbank’s e-krona project, report 2.....	37

Proposal for decision by the Riksdag

The Riksbank proposes that the Riksdag supports the Riksbank's request regarding an inquiry into the payment market in a cashless digital economy and the roles of central government and the private sector in such a market.

Stockholm, 16 April 2019

On behalf of the Executive Board

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/Emelie Nilsson

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The rapporteur was Gabriela Guibourg.

The payment market in a digital economy – summary

Background

Cash usage is continuing to decline in Sweden and more and more business operators are refusing to accept cash. The Riksbank Committee has compiled a number of proposals aimed at securing access to cash throughout the entire country. However, this development is largely being driven by a fundamental technological shift and changed consumption patterns and will probably continue. Sweden could thus be moving towards being a cashless society. This does not mean that cash will disappear. Instead, cashless is defined as a situation in which cash is used and is accepted to such a limited extent that, in principle, it has ceased to function as a means of payment. When this happens, it will also undermine cash's function as a store of value.

There follows a summary of the in-depth analyses presented in Annex 1 that address the basic conditions and issues relevant to the submission.

What is money?

Economic aspects

Money is a precondition for a functioning economy and is thus a central part of a country's infrastructure. Money is ultimately a social convention based on the agreement by every member of a society to define something as money. Just what is defined as money has varied over time and taken different forms in different regions. The technology used to produce money and the material of which it consists has also changed throughout the ages. Above all, a historical trend towards the dematerialisation of money can be discerned: from coins of precious metal to paper money and now digital money. Historical changes in the design of money show that the actual form plays a subservient role. Instead, the most important thing is confidence that the object defined as money will be accepted as money. Confidence in money cannot be taken for granted and is based on money fulfilling three important functions. It must function as a *unit of account* that makes it possible to express all prices using a standardised measure. It must be a good *store of value*, which is to say that the value of money must remain stable over time. In addition, all parties must accept it in exchange for goods or services, which is to say money must act as a *means of payment*.

Furthermore, an efficient monetary system is a public good like a country's defence and justice system. Central government has long had overall responsibility for providing this. To maintain confidence in money, central governments around the world have delegated certain core tasks to the central

banks, such as issuing money in standardised formats, keeping the value of money stable through monetary policy and ensuring that the payment system functions in a secure and efficient manner.

Legal aspects

In accordance with the above, money is usually defined with the assistance of three different functions that must be present if something is to be defined as money: *unit of account*, *store of value* and *means of payment*. In some respects, these functions have been reflected in Swedish legislation to create substance and confidence in the concept of money.

As regards firstly the function *unit of account*, this is mentioned in Chapter 5, Section 1, third paragraph of the Sveriges Riksbank Act (1988:1385), which specifies that the monetary unit in Sweden is called the krona and that the krona is divided into 100 öre. For money to act as a unit of account, it must also simultaneously be a measure of value. However, even though the value of money is the fundamental condition for the national economy to function, no actual measure of value for the krona is directly legislated, unlike its physical dimensions. Length and weight are regulated through what is known as the SI system in an EU directive that ultimately specifies physical references. Time indication in Sweden is regulated by the Ordinance on Swedish standard time (1979:988), which refers to Coordinated Universal Time (UTC) as determined by the International Time Bureau, which itself can be said to have an astronomical basis. Unlike these measurements, the Swedish monetary unit lacks a direct legal connection to anything that can be physically defined. From time to time, Sweden has had a metal standard; as recently as the 1930s, we had a gold standard. In addition, the krona was tied to the pound sterling for a time in the 1930s and again, after the Second World War, to the US dollar, which, in turn, was tied to gold. After the dollar's link to gold was abandoned in 1971, the Swedish krona was tied to various baskets of foreign currency. Since 1992, the Swedish monetary unit has lacked a link to either metal or foreign currencies. Despite this, it is able to function as a unit of account. Even if the krona is not tied to any underlying asset, it can, through the Riksbank's monetary policy, be said to be linked to Statistics Sweden's consumer price index with a fixed interest rate, the CPIF, which is based on a representative basket of selected goods weighted in relation to their value share of total private domestic consumption. However, there is no statute linking the krona to the CPIF. The relationship between the krona and the CPIF has been created by a decision by the Riksbank in which the bank interprets the provision of the Sveriges Riksbank Act that says that the objective for the Riksbank's operations shall be to maintain price stability (Chapter 1, Section 2, second paragraph, Sveriges Riksbank Act).

So far, only money's function as a unit of account has been considered. The function *store of value* could be said to have a certain connection to the unit of account, but, when it comes to storing value, the quality and value stability of

that which is to be designated as money is significant. Money often has the legal character of a *claim* on the issuer. This applies in particular to assets in the form of deposits in banks and other credit institutions. Such deposits are sometimes designated as private bank money. The exact manner in which a bank must pay a claim on private bank money is another question. Creditors are normally happy to accept payment in the form of a claim on another bank, which is to say other private bank money. The main rule in Swedish law should be that the payer has the right to pay with private bank money (see Lindskog, Stefan, *Betalning* 2014, p. 411 f). The extent to which this private bank money can be considered to be a store of value depends partly upon how well the Riksbank succeeds in its task of maintaining price stability. In addition, it is of considerable significance whether the bank is solvent and can pay its debts. Holding banknotes and coins issued by the Riksbank is not considered to be compatible with credit risk. Even if it was possible to consider a Riksbank banknote as a claim on the Riksbank from a purely bookkeeping standpoint, the law no longer specifies how such a claim should be paid. The same thing applies to the Riksbank's supply of electronic money, which takes place through the creation by the Riksbank of deposit accounts for those companies, mainly banks that participate in the Riksbank's payment system, RIX. The Riksbank's right to provide the RIX payment system is regulated by Chapter 6, Section 7 of the Sveriges Riksbank Act. In the legislative history, this role was justified by the Riksbank's responsibility for a stable payment system (Government Bill 1997/98:164 p. 26). RIX is used for the settlement of the claims that the private banks have against each other.

Finally, as regards the function of *means of payment*, it can be noted that this is only partially regulated by Swedish legislation. One central provision in this context is Chapter 5, Section 1, second paragraph of the Sveriges Riksbank Act, which states that banknotes and coins issued by the Riksbank are legal tender. The legislative history specifies that this means that all parties are obliged to accept banknotes and coins as payment (Government Bill 1986/87:143 p. 64). However, the Supreme Administrative Court has ruled that this provision can be waived in contracts and agreements under civil law and is thus of only limited significance as regards the function of cash as means of payment. However, under certain civil law conditions, for example the provision of care services by county councils, the party making the payment can demand to pay using banknotes and coins (see HFD 2015 ref. 49). For payments of tax claims, there is a provision in Chapter 62, Section 2 of the Tax Procedure Act (2011:1244) which stipulates that taxes and charges must be paid into the Swedish Tax Agency's special account for tax payments. Consequently, taxes and charges may not be paid using banknotes and coins issued by the Riksbank; instead, payments from those liable to pay tax must be made using private bank money. However, the final settlement of these payments takes place using the Riksbank's payment system RIX. Payments in Sweden otherwise seem to be regulated without special support in civil law but with the support of established conventions which, despite the lack of legal

regulations, currently seem to have a strong position on the payment market. As mentioned above, one such convention is that a payment recipient, under the main rule, must accept private bank money as payment for a debt in the absence of a specific agreement to the contrary. Nonetheless, there may be reason to consider the legal regulation of these conventions and their relationship to the Riksbank's role as issuer of central bank money when issue takes place via banknotes and coins, as well as in electronic form. Considering the Riksbank's function as liquidity provider, both in times of crisis and in normal times, this activity must be considered to be the anchor of the Swedish payment system.

Different types of money

Since antiquity, central governments have played an important role in issuing money. Even today, central governments play a fundamental role in the monetary system – by providing cash to the general public and reserves to the banking system – and in the preservation of the function of money. Both cash, which is available to the general public, and the bank reserves, which are available to the banks, are therefore jointly known as central bank money. However, this is not the only money existing in the economy. Throughout history, the banks have also complemented the role of the central bank by providing private money, primarily as a means of payment consisting of deposits in bank accounts. It is therefore possible to talk about a division of labour in the economy between government central bank money and private bank money.

There is, however, an important difference between central bank money and private bank money. Central bank money is issued by, and forms a claim on, the central bank, that is ultimately the central government, while private bank money is a claim on the banks, which are private companies. Central banks can always create money and can, by definition, not become bankrupt, while the banks can and actually do sometimes go bankrupt.

However, central government has tools to make private bank money safer for the general public: bank regulations that make the banks more secure and deposit guarantees that guarantee depositors' money up to a certain maximum amount (corresponding to EUR 100,000 in Sweden and the rest of the EU). The deposit guarantee was introduced to maintain confidence in deposits. Following the financial crisis of 2007–2008, the regulations for the financial sector were tightened, but historically it has turned out to be very difficult to eliminate the risk of financial crises completely. Consequently, it cannot be ruled out that financial crises or other crisis situations may arise in the future. In a cashless society, such a financial crisis could arise in a situation where only private money exists. As yet, such a system has never been attempted in Sweden or abroad. It cannot be ruled out that a situation with insufficient confidence in the banking sector could lead to insufficient confidence in the

entire monetary system. This could considerably exacerbate the effects of a financial crisis.

In a cashless society, a restricted group of financial corporations has access to risk-free central bank money. The general public, in contrast, does not. Consequently, it is ultimately a political issue whether central government should only offer the security provided by access to central bank money to a restricted group of financial corporations or whether the general public should also have this. Another way of formulating the question would be to ask to which extent the current arrangement should continue to apply even after the technology has changed.

Money and central government's role on the payment market

The Swedish state has played a central role on the payment market for over 350 years, among other things by ensuring that the general public, via the Riksbank, has had access to state money – cash. In the 19th century, private banks were also allowed to issue banknotes. The relationship between these private banknotes and the banknotes issued by the central bank was not entirely clear, either in Sweden or abroad. Most countries decided, at various points in time, to give their central banks the sole right to issue banknotes, known as a banknote monopoly. The reasons for this varied, depending on the national and historical context.

In Sweden, the question of a banknote monopoly for the Riksbank was raised repeatedly from the 1840s on. One important aspect in Sweden's case was the matter of profits deriving from the issue of banknotes. Should these profits go to the public or to the banks' owners? A series of government inquiries were conducted to investigate the matter, before a final decision was taken in 1897 to grant the Riksbank the sole right to issue banknotes. The most comprehensive of these, whose considerations formed the practical basis of the final decision, was the committee of inquiry of 1881.² The inquiry's three main reasons for a banknote monopoly were: 1) banknotes should be entirely free of risk, 2) banknotes must be issued without a short-term profit motive, and 3) revenues from the issue of banknotes are necessary to fund a central bank's function in society so that it does not have to act according to a profit motive.³

Since then, the role of cash in the economy has been marginalised, while money in the form of deposits in private banks has grown in significance. As mentioned above, most of the money used today by the general public, for

² Brisman, S. (1931), "Den stora reformperioden 1860–1904" (The great reform period 1860–1904) in *Sveriges Riksbank 1668–1924: Bankens tillkomst och verksamhet* (Sveriges Riksbank 1668–1924: The bank's origin and activities), volume 4, P. A. Norstedt & Söner: Stockholm, p. 204

³ See *Bankkommitténs underdåniga förslag till förändrad organisation af bankanstalterna* (Special Committee on Banking – Proposed Changes in Bank Organisation), 1883, Stockholm: P. A. Norstedt & Söner. pp. 235-237.

example via card payments, is therefore private bank money rather than government money.

The division of labour we have had since central banks were set up, involving the coexistence of central bank money and private bank money, has turned out to have worked well historically. As cash is presently the only form of state money available to the general public, a cashless society would entail the end of this coexistence. One way of continuing to give the general public the possibility of continuing to use entirely risk-free money in a digital future would be to allow the Riksbank to issue a central bank digital currency or e-krona. With an e-krona, the distribution of private bank money and state money would become more like it is in other countries or like it was in Sweden before cash usage started to decline significantly. It could therefore be said that the e-krona would be a modern form of dematerialised state money. A close parallel is the dematerialisation of securities that took place in the 1980s: a transition took place then from securities in the form of physical documents to a system in which ownership of securities was registered in digital form with no physical documentation.⁴ The question of the dematerialisation of banknotes could be said to have been postponed by about 30 years in relation to the dematerialisation of securities, which has already taken place.

Alongside its role as the issuer of state legal tender, central government also plays other roles on the payment market, both as supplier of basic infrastructure for payments and as consumer of payments. On the infrastructure side, the Riksbank provides the central payment system RIX for settlement of payments between financial institutions in central bank money. The central government also has major incoming and outgoing payments of tax receipts and social insurance and is thus also a frequent user of the payment system.

However, the infrastructure for payments is now also undergoing a rapid transformation due to both the digitalisation and the internationalisation of the market. One substantial trend is to search for economies of scale through the creation of major, cross-border platforms. For example, the European Central Bank (ECB) has created a joint European platform, TARGET Instant Payment Settlement (TIPS) for what are known as instant payments. It is also possible to make payments via TIPS in currencies other than euros, which means that Sweden must take a stance on whether or not it will be possible to make payments in Swedish kronor via TIPS.⁵ On one hand, the trend towards larger international solutions is positive, as economies of scale allow the costs of payments to be cut, at the same time as it contributes towards financial integration across borders. However, at the same time, these cross-border platforms also involve potentially systemically important parts of the financial infrastructure being moved beyond Sweden's borders. This raises questions

⁴ See Government Bill 1987/88:108 on an account-based system for the registration of equities etc. and Government Bill 1988/89:152 on an account-based equity system.

⁵ The Nordic banks are also investigating the creation of a new Nordic payment infrastructure, to be called P27.

concerning the possible weakening of Sweden's preparedness in the event of war or other crises. This therefore requires a trade-off to be made between the potential advantages entailed by these changes and the potentially negative effects from the perspective of security and preparedness. An e-krona designed to take the preparedness aspects into account could therefore be one way of ensuring that there will continue to be an infrastructure for payments within the country's borders going forward.

Central bank money as legal tender

Both in Sweden and abroad, it has been considered important to give central bank money special legal protection as legal tender. In Sweden too, banknotes and coins issued by the Riksbank are legal tender. In legal terms, this means that it must be possible to use them anywhere in the country. However, freedom of contract makes it simple to get round this, for example by retailers displaying signs saying that cash cannot be accepted. The protection granted by the legislation covering legal tender in Sweden is relatively weak from an international perspective.⁶ For example, in Norway and Denmark, there exists consumer legislation restricting the possibility of waiving the obligation to accept cash. If cash were to be marginalised as a means of payment, the current legislation would mean that Sweden would have no legal tender. There may therefore be reason to review the possibility of making the legislation technically neutral so that electronic means of payment issued by the Riksbank can also become legal tender.

⁶ Compare, however, with Section 3, first paragraph of the Consumer Contracts Act (1994:1512), which means that contractual conditions that are unreasonable can be modified or set aside.

The need for a review

For 350 years, Swedish society has relied on the Riksbank providing the general public with money in Swedish krona in various forms. In addition, banknotes and coins issued by the Riksbank have been legal tender since the 1850s. However, technological advances and digitalisation of payments have brought to a head the question of the future role of the state in the payment market.

At present, the general public only has access to physical central bank money, not a digital version. This can make it more difficult for the Riksbank to promote a safe and efficient payment system in the future, not just in times of crisis and war but also in peacetime.

A committee should therefore be tasked with performing a review of the significance of the state means of payment in a digitalised economy and the role and responsibility of both the state and the private sector on the payment market.

Proposal for the committee's task

The committee should analyse and chart the content of a digitalised payment market. The committee should therefore

- investigate how the concept of legal tender functions in a digital economy
- describe the current status and possible future for the payment market in Sweden and abroad
- chart the problems and risks that would arise if the state no longer had the task of providing the general public with money
- analyse the anonymity and integrity questions versus questions regarding money laundering and other criminal activities with regard to digital payments
- analyse the problems that could arise when cash is no longer viable, for instance the risks of economic exclusion
- investigate the consequences of payments, above all national payment systems and the opportunities for an offline function, in the event of crises and wars.

The committee should also adopt a stance on the roles and responsibilities of the state (including the Riksbank) and the private sector on a digitalised payment market. The committee should therefore

- investigate the general public's need of access to central bank money to make safe and efficient payments in a digital economy
- provide suggestions for how the state can ensure that the payment market remains safe, robust, efficient and inclusive in particular in times of crisis and war

- provide suggestions for possible requirements to be made of banks and other credit institutions if there is only access to private money and payments
- propose conceivable alternative solutions to the problems and risks that have arisen and specify the advantages and disadvantages of these solutions
- investigate the consequences of the various choices the state faces regarding preparedness, digital inclusion of the general public, and the stability and efficiency of the payment system
- take a stance on the concept of legal tender and whether/how this can be adapted to today's digital society
- identify any other need for civil law and other legislation that could conceivably be entailed by the digital payment market and the introduction of an e-krona
- investigate the consequences of introducing a central bank digital currency for the general public. In conjunction with this, the committee should take a stance on whether such money could be a solution to the problems and risks a cashless economy may entail.

As regards a central bank digital currency, the committee should

- analyse whether these can be designed in a manner that solves the problems arising when cash no longer functions in a broader sense
- take a stance on whether a central bank digital currency, alongside cash, can and should be given the status of legal tender or whether there is a need to strengthen its position by other means
- survey the consequences of a central bank digital currency for the banking system and the rest of the financial market, as well as for the activities of the Riksbank and other public authorities
- investigate which questions will arise concerning a central bank digital currency in relation to EU institutions (the ECB, for example), other member states and relevant EU legislation
- analyse and, if necessary, submit legislative proposals concerning the Riksbank's mandate to provide a central bank digital currency.

Other issues

Under the framework set for the assignment, the committee should not be prevented from also addressing and clarifying other issues relevant to the assignment. The committee should be able to propose complementary or amended provisions in other areas than those specifically covered by the inquiry if the committee finds this necessary or appropriate.

Impact assessments

The impact analysis should focus, in particular, on the proposal's consequences for the general public, including older people, disabled people

and people who are financially or digitally excluded. The analysis should also include the consequences for the financial sector, including credit institutions, and for the general public. Furthermore, the committee should assess whether the proposals and legislative amendments proposed are compatible with the consequences of Sweden's membership of the European Union, taking into account both the fact that Sweden has not adopted the euro and the possibility that Sweden may choose to adopt the euro in the future. The committee should apply the guidelines in the Committees Ordinance (1998:1474) and the Ordinance on Impact Assessment (2007:1244) to specify cost calculations and other impact assessments.

Delimitations

The assignment does not include reviewing areas managed under the framework of other inquiries, such as the Riksbank Committee's assignment concerning cash handling, unless the assignment itself entails a new position in a matter relevant to the issue, such as the question of the concept of legal tender.

Consultation/Implementation of the assignment

The committee should stay informed of, and take account of, relevant work in progress within the Government Offices, the Riksbank and other relevant public authorities and organisations (such as the ongoing preparedness inquiries and the Riksbank Committee). This also applies to relevant work being conducted on the international level (International Monetary Fund (IMF), Bank for International Settlements (BIS) and other central banks). The committee should also consider relevant research and international experiences concerning central bank digital currencies (CBDCs).

Furthermore, during the implementation of the assignment, the committee should consult with authorities and organisations, inside and outside Sweden, which may be affected by the various issues.

The inquiry should also monitor the Riksbank's work on the e-krona pilot.

Annex 1: The state's role on the payment market in the digital era

This annex contains an in-depth examination of the submission section *The payment market in a cashless economy*. The annex is structured as follows: Initially, in section 1, we describe what money is and the different types of money that exist, as well as how money and the state's role in the payment market have developed historically. Following this, section 2 describes how the state's role on the payment market has been marginalised in conjunction with digital development and the risks this entails. Section 3 presents the current state of the Swedish payment market. Section 4 goes on to describe the tools the state has to counteract a high concentration on the payment market due to digital development. This section also includes an examination of how the various tools could affect the Riksbank's balance sheet and allocation of profits to the state, as well as how an e-krona could affect monetary policy and financial stability. Finally, the question of a central bank digital currency is put in an international perspective in section 5, which includes a description of the work of other central banks and the IMF in this area.

Money and central government's role on the payment market – a historical description

Money has a long history and has existed in many different forms. New technology has often led to new forms of money, from more advanced metallurgical techniques and the printing press to digitalisation. However, social institutions, the central government in particular, have also been important for the evolution of money. The main challenge throughout history has been maintaining confidence in the value of money while also creating enough money for society's needs.⁷ This section briefly describes the history of money, as well as how the role of central government on the payment market changed during the 20th century.

Confidence in money

The very earliest forms of money were so-called commodity money, such as axes, standardised volumes of grain or pieces of precious metal. Coins were first minted in what is now eastern Turkey around 2,500 years ago. This was made possible through gradual innovations in metallurgy. However, the coins also clearly show the early states' influence on the development of money. A coin, of course, is actually a standardised amount of precious metal that has

⁷ For more about this, see Söderberg, G. (2018), "What is money and what type of money would an e-krona be?". Sveriges Riksbank Economic Review, No. 3. Sveriges Riksbank.

been worked into a form that is easier to transport, stack and count – and which has been marked with a symbol for the political power as a guarantee of the authenticity of the metal.⁸

A constant challenge throughout history has been to preserve confidence in money and its worth. There are no types of money that are entirely immune to the threat of a change in worth. Commodity money is not free from fluctuations in value either, as its purchasing power also depends on how easy it is to find.⁹ Central Europe experienced hyperinflation during the 17th century, for instance, despite its money largely consisting of metal coins.¹⁰ Inflation is primarily linked to paper money, however. This could be produced on a larger scale using a further example of technological advances: the printing press. Early paper banknotes in China resulted in hyperinflation and a return to coins.¹¹

The Riksbank is granted a banknote monopoly to create confidence in money

The Riksbank's predecessor, Stockholms Banco, was started as a private bank in 1657 and quickly also started to issue banknotes. However, there were no restrictions on how many banknotes could be issued. The result was an excess of money issuing, severe inflation and a financial crisis. The bank was closed down and the Riksbank was instead started up by the state in 1668. In England, goldsmiths also began to create banknotes that they issued as loans in the 1660s. Dissatisfaction with these early bankers, both with the state and the London merchants, and their monopoly on granting loans and issuing banknotes was one of the motives behind the establishment of the United Kingdom's central bank, the Bank of England, in 1694.¹²

This development continued during the 18th and 19th centuries. Private banks, in a more modern sense, were founded in more and more countries. In Sweden, the first private bank after Stockholms Banco was established in the 1830s and started to issue private banknotes. Central banks were also established in several countries, sometimes as the first bank in the country, sometimes to complement and stabilise an already established banking sector.

The relationship between these private banknotes and the banknotes issued by central banks were not entirely clear. All countries decided, at various points in time, to give their central banks the sole right to issue banknotes. The reasons for this differed, depending on the national and historical context. In some cases, for example the United Kingdom, this was a matter of counteracting the inflationary effects of the private banks. However, the

⁸ Davies, G. (1994), *A History of Money*, University of Wales Press: Cardiff.

⁹ So-called kauri shells, for instance, which were used as money in large parts of Africa, had declined in value considerably towards the 1920s because of increased imports of shells. See Davies (1994), p. 37.

¹⁰ See Schnabel, I. and H. S. Shin (2018), "Money and trust: lessons from the 1620s for money in the digital age", Working Paper no. 698, Bank for International Settlements.

¹¹ See von Glahn, R. 1996, *Fountains of Fortune: Money and Monetary Policy in China, 1000-1700*, Berkely: University of California Press.

¹² See Davies, G. (1994).

system of private banknotes in Sweden, which started in 1831, was unique, above all because the private banks' banknotes could be redeemed for Riksbank banknotes. In this way, the Riksbank, and ultimately the Swedish state, became the guarantor of confidence in the private banknotes, as the private banknotes could not be issued without being covered by Riksbank banknotes. This was probably the fundamental reason for the relative stability of the Swedish system in comparison with other countries' issuance of private banknotes. However, the question of a banknote monopoly for the Riksbank was raised repeatedly from the 1840s on. The driving factor in Sweden's case was the matter of profits deriving from the issue of banknotes. Should these profits go to the public or to the banks' owners? A series of government inquiries were conducted to investigate the matter, before a final decision was taken in 1897 to grant the Riksbank the sole right to issue banknotes. The most comprehensive of these, whose considerations formed the practical basis of the final decision, was the committee of inquiry of 1881.¹³ The inquiry's three main reasons for a banknote monopoly were: 1) banknotes should be entirely free of risk; 2) banknotes must be issued without a short-term profit motive; and 3) revenues from the issue of banknotes are necessary to fund a central bank's function in society so that it does not have to act according to a profit motive.¹⁴

The background to the present situation, with falling cash use, can be found in two historical trends. The first of these is that large-scale deposits became more common after the so-called 'deposit market revolution' that gradually took place in the second half of the 19th century.¹⁵ The second is technological changes that enabled increasingly efficient ways of using deposits to make payments in that physical paper cheques became replaced by cards and mobile telephones.¹⁶ The importance of the state monopoly on issuing banknotes has therefore gradually been undermined.

The historical background of legal tender

The concept of legal tender means that one means of payment is given a special position against other potential means of payment. Above all, this special position consists of all recipients of payment being obliged to accept this means of payment. The discussion of legal tender arose in the 19th century, probably as a result of an unclear situation in which coins and banknotes issued by the Riksbank circulated together with banknotes issued by private banks. In 1850, nineteen years after the first private bank started to issue banknotes,

¹³ Brisman (1931), p. 204.

¹⁴ See *Bankkommitténs underdåniga förslag till förändrad organisation af bankanstalterna* (Special Committee on Banking – Proposed Changes in Bank Organisation), 1883, Stockholm: P. A. Norstedt & Söner. pp. 235-237.

¹⁵ See Lilja, K. (2010), "The deposit market revolution in Sweden", Chapter 2 in *The Swedish Financial Revolution*, ed. Ögren, Anders, Palgrave: Basingstoke.

¹⁶ For more information on digitalisation in the banking sector, see Bátiz-Lazo, B. and D. Wood "A Historical Appraisal of Information Technology in Commercial Banking", *Electronic Markets* 12:3.

a paragraph was added to the Instrument of Government of the time stipulating that only the Riksbank could issue banknotes and coins, which would have to be accepted across the entire country.¹⁷ In the modern era, this stipulation was transferred to the Sveriges Riksbank Act. Consequently, the Sveriges Riksbank Act that entered into force in 1989 states that “banknotes and coins issued by the Riksbank are legal tender”.¹⁸ However, the Act does not describe the meaning of ‘legal tender’ in any depth. On the other hand, the legislative history of the Act includes a definition, which states “that the status of banknotes and coins as legal tender means that everyone is obliged to accept banknotes and coins as payment”.¹⁹

In practice, however, the statutory obligation to accept cash is of very little significance. The reason for this is the prevailing freedom of contract, which means that two parties are free to reach an agreement under those terms they consider reasonable (see also section 5). It should be considered whether the statutory protection that central bank money has as legal tender needs to be strengthened and made technology-neutral. One minimum requirement could be that government agencies, at least, must accept some form of central bank money.

The role of central government on the payment market in the 20th century

The state has traditionally been active on the supply side of the payment market through Postgirot, Posten, Svensk Kassaservice (Swedish Cashier Service) and others. This role has now been reshaped through the assignments received by the Swedish Post and Telecom Authority (PTS) and county administrative boards. The Riksbank has also reduced its operational involvement in the distribution of cash. Overall, the picture that emerges is that the state has never, over the last hundred years, had as little involvement in the payment market's supply side as now. This development is briefly described below.

Postgirot

Postgirot was established in the mid-1920s after an investigation of the need for a postal cheque system (Swedish Government Official Reports, 1922). The investigation identified the advantages of account-based payments and the purpose of a postgiro system was to simplify payments, make the state's payments more efficient and reduce the use of cash. At that time, not all households had access to bank accounts and nor were there bank branches in all parts of Sweden. Postgirot expanded gradually and over time became the dominant payment system for credit transfers and direct debit payments.

¹⁷ Amendment to the 1809 Instrument of Government, section 72.

¹⁸ Chapter 5, Section 1, Sveriges Riksbank Act.

¹⁹ Government Bill 1986/1987: 143 on a new Sveriges Riksbank Act and amended responsibility for the Swedish National Debt Office, p. 60.

Towards the end of the 1990s, Postgirot's dominant position was gradually weakened.

In 1998, when Postgirot's market share had already begun to decline, 430,000 companies and one million households had accounts there. The number of payments was 400 million and the total turnover was SEK 5,000 billion. The Swedish population was then 8.85 million, GDP was SEK 1,873 billion and the total value of payments in the economy was SEK 7,899 billion.²⁰ Postgirot thus had in turnover terms a market share of around two thirds of the payments market and a large share of private and corporate customers. Postgirot itself claimed a market share of just over 46 per cent of the payments market.

In 2001, Postgirot was sold to Nordea, a private commercial bank, and changed its name to Plusgirot in 2005. Today, Plusgirot focuses on corporate clients alone.

Svensk Kassaservice, PTS and the county administrative boards

Until 2001, the state used Posten AB and its network of post offices and rural postal workers to provide payment services. In 2001, Svensk Kassaservice AB (Swedish Cashier Service) was formed as a subsidiary of Posten with the task of offering manual payment services through a nationwide network of offices. Svensk Kassaservice received annual appropriation funding but the operation never made a profit. In light of the increased use of digital payment services, the Riksdag decided, in 2007, that the Basic Counter Service Act would be revoked at the end of 2008, whereby Svensk Kassaservice would also discontinue its operations.

The PTS and the county administrative boards have the joint responsibility of securing access to basic payment services in those areas, particularly rural, where the market is not meeting these needs. In 2008, following the closure of Svensk Kassaservice, the PTS was assigned to procure basic payment services in those areas where the market was not deemed to be meeting needs. These services were provided until 31 August 2012. The PTS had made the assessment that, in the future, it would not be through national procurement that the state could best safeguard the political goal of basic payment services. Instead, state responsibility should be regionalised so that the counties, using their knowledge of regional needs and conditions for service, could secure access to services via regional support and development measures.

The county administrative boards had already been assigned to monitor the presence of basic payment services corresponding to society's needs. Since 2013, they have also been assigned to work for the implementation of any necessary regional support and development measures to secure access to basic payment services in those areas, urban and rural, where society's needs were not being met by the market. The Dalarna County Administrative Board has coordination responsibility for the county administrative boards and also

²⁰ Committee on Payments and Market Infrastructure (2001).

the special task, together with the PTS, the Swedish Agency for Economic and Regional Growth and the Swedish Agency for Growth Policy Analysis, of designing and implementing regional support and development measures.

The Riksbank

Until the mid-1980s, the Riksbank had regional offices in almost every county, at which banknotes and coins were issued and received. The offices also provided certain commercial services such as the counting of daily takings. The Riksbank embarked on a programme of rationalisation and the number of regional offices gradually decreased. At the end of the 1990s, the Riksbank decided to transfer its operational activities to a company, PSAB (Pengar i Sverige AB), and, in 2002, a cash-in-transit company (Pengar i Sverige Värdetransport AB) was also created. These operations were soon restructured and authority-related cash handling was assigned to a new company, SKAB (Svensk Kontantförsörjning AB), which was later incorporated in the Riksbank. The non-authority related operations were closed down. The Riksbank then decided on the cash-handling model that applies today. Between 2006 and 2013, the Riksbank had two offices (Tumba and Mölndal), which were replaced by a single, newly constructed office at the start of 2014 (Broby). In 2001, the Riksbank also sold its banknote printing works (Tumba Bruk) and mint (Myntverket).

Defining the problem – How can confidence in money, resilience and competition on the payment market be maintained in the digital era?

The rapid digitalisation of society has brought strong pressure for adjustment on the payment market. Recent technological innovations and changed consumption patterns have led, among other things, to cash becoming marginalised as a means of payment. Even if the trend towards digitalisation is fundamentally positive, problems that require investigation have arisen. One problem is that the Swedish public is finding it increasingly difficult to gain access to central bank money, which could be an important ingredient for confidence in the monetary system as a whole. Furthermore, resilience and competition on the payment market could suffer from the wholesale privatisation of a highly concentrated market. Finally, some groups in society could have impaired access to central payment functions. These arguments are developed in more detail below.

Digitalisation means that the function of cash as a means of payment declines in significance

A technological shift from paper-based to digital services is under way across the entire world. Sweden, like the other Nordic countries, is currently a pioneer

with regard to these digital developments.²¹ The transformation concerns many parts of society and also includes payments. From this perspective, it is perhaps not so strange that Sweden is also in the forefront with regard to making use of innovations in the payment market. However, this development means, at the same time, that the use of cash has declined rapidly. The result of this development is that Sweden has to plan for a cashless society. This does not mean that cash will disappear. Instead, cashless is defined as a situation in which cash is used and is accepted to such a limited extent that, in principle, it has ceased to function as a means of payment. When this happens, it will also undermine cash's function as a store of value.

There has been a lively debate over why cash is on the way out. The matter has also been analysed under the framework of the Riksbank Committee's inquiry, which resulted in a legislative proposal to regulate the banks' supply of cash services.²² This will probably mean that the banks will not be able to reduce the supply of cash services too rapidly. It is difficult to work out how large a role is being played by the supply of and demand for cash in the decline of cash usage. The rapid emergence of new digital payment services such as iZettle, Paypal and Swish has been a strong contributory factor.²³ However, there are statistics that suggest that the trend towards an increasingly digitalised payment market also comes from the demand side to a great extent.²⁴ In turn, changes in demand are also being caused by changes in consumption habits due to increased eCommerce and demographic factors, where younger generations are increasingly rejecting cash.²⁵

In light of this, it is difficult to believe that development into a cashless society can be reversed. In addition, digitalisation is a structural transformation entailing efficiency gains, which is fundamentally positive. However, it also creates problems that need to be analysed and managed in a positive way.

The state's role on the payment market is being marginalised

As was described in section 1, Swedish central government has always played a central role in the payment market, among other things by ensuring that the general public, via the Riksbank, has had access to state money – cash – for over 350 years. Furthermore, the central government has given the Riksbank the legal responsibility of promoting a safe and efficient payment system. The important role played by the Riksbank in the payment system is not unique for Sweden; central banks around the world have always played this role.

²¹ See, for instance, the EU's Digital Economy and Society Index (DESI). In 2017, Sweden was in third place behind Denmark and Finland.

²² Secure access to cash, SOU 2018:42

²³ See, for example, Arvidsson N., "Framväxten av mobila, elektroniska betalningstjänster i Sverige – en studie av förändring inom betalsystemet" (The emergence of mobile, electronic payment services in Sweden – a study of changes in the payment system), commissioned research report 2016:14, Swedish Competition Authority.

²⁴ See, for example, Erlandsson, F. and G. Guibourg, (2018), "Times are changing and so are payment patterns", Economic Commentary No. 6. 2018, Sveriges Riksbank.

²⁵ Ibid.

The reason for this is that confidence in money is a precondition for the monetary system as a whole to function well. As was mentioned earlier, it was actually this central function for the creation and maintenance of confidence in money that originally led to the emergence of central banks (see section 1 for a more detailed description).²⁶

Money is a precondition for a functioning economy and is thus a central part of a country's infrastructure. Even so, it is difficult to define exactly what money is. This is because money is ultimately a social convention based on the agreement by every member of a society to define something as money. Historically, just what is defined as money has varied over time and taken different forms in different geographical regions. The technology used to produce money and the material of which it consists has also changed throughout the ages – metal, paper or digital units. The great variation in the design of money shows that the actual form plays a subservient role. Instead, the most important thing is confidence that the object defined as money can be accepted as money.

Furthermore, an efficient monetary system is a public good like a country's defence and justice system. Central government has long had overall responsibility for providing this. To maintain confidence in money, central governments around the world have delegated certain core tasks to state-run central banks, such as issuing money in standardised formats (providing numbers), keeping the value of money stable through monetary policy, and ensuring that the payment system functions in a secure and efficient manner.

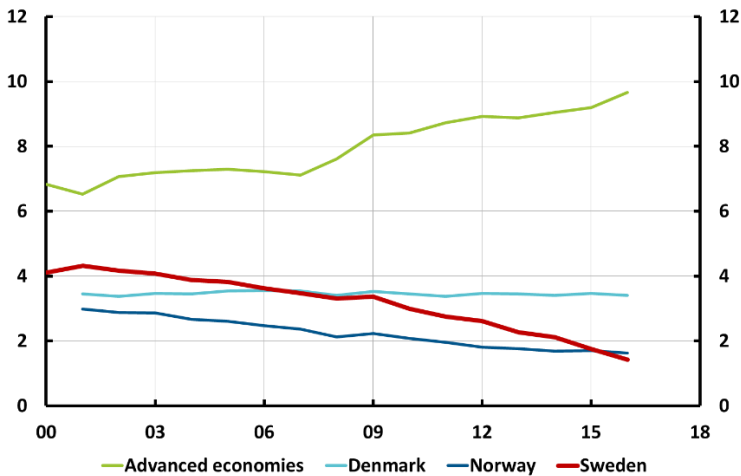
The state or central bank's money consists of cash, to which the general public has access, and the banks' reserves in central bank accounts, with the help of which the banks make payments to each other. Cash has long existed in parallel with private bank money, the money and payment services the banks provide via the general public's deposit accounts. At present, most of the money in circulation is private bank money.

There is an important difference between central bank money and private bank money. Central bank money is issued by, and forms a claim on, the central bank, that is ultimately the central government, while private bank money is a claim on the banks, which are private companies. Central banks can always create money and can, by definition, not become bankrupt, while the banks can and actually do sometimes go bankrupt.²⁷ This is why the general public often prefers cash when confidence in the banking system is questionable. This happened most recently following the global financial crisis, when demand for cash increased around the world (although not in Sweden) – see Figure 1.

Figure 1. Cash in circulation as a percentage of GDP in various regions

²⁶ See also Söderberg, G. (2018).

²⁷ Central banks can even function with negative equity.



Source: Bech et al., 2018. “Payments are a-changin’ but cash still rules”, BIS Quarterly Review, March 2018.

There have been periods in history when either only central bank money or only private bank money has been available. However, these systems have turned out to be insufficiently robust over time. Many economists therefore claim that access by the general public to central bank money, the coexistence of central bank money and private bank money and one-to-one convertibility between both forms of money form central preconditions for a safe and efficient payment system.²⁸

However, there are also those who do not consider that a cashless society would pose a problem for confidence in the monetary system. Despite everything, central government has other tools to make private bank money safe for the general public: bank regulations that make the banks safer and deposit guarantees that have been set up to make sure that the general public can feel that their deposits are safe. However, no matter how good regulatory frameworks and supervision may be, it has so far turned out to be impossible to eliminate all risk of recurrent financial crises. Likewise, it is not beyond all doubt that, in a crisis situation, the general public would not consider private bank money covered by the deposit guarantee to be as safe as central bank money. As yet, a system with only private bank money supported by the deposit guarantee has not been tested, either in Sweden or abroad. Ultimately, it is a political issue whether central government wishes to offer the security provided by access to central bank money to a restricted group of financial corporations or to the general public at large.

²⁸ BIS (2003), “The role of central bank money in payment systems,” Committee on Payment and Settlement Systems, August. <https://www.bis.org>.

Digital exclusion

Even if the increased trend towards digitalisation in general is positive, it is difficult for certain groups to manage. According to the PTS, at least half a million Swedes are in what is known as a digital exclusion. As this group does not have access to, or is able to use, the technology required to make digital payments, it is not assessed as having access to basic payment services to a sufficient degree.²⁹ Payments are a part of this, but the problems for those outside of the digital society are of course much greater than this and here both the state and the private sector need to take some responsibility. Solving this problem in an increasingly digitalised society is a major challenge in which several parties need to cooperate. Technological solutions that are also simple and user-friendly for vulnerable groups need to be developed.

Resilience and competition on the payment market are deteriorating

Even though many new actors have emerged recently, the payment market is still heavily concentrated and dominated by the major banks. The banks' dominance is because central parts of the payment system and payment services – Bankgiro, Bankomat and Swish et al. – are jointly owned.³⁰ When it comes to card payments, the market is entirely dominated by two US companies. This heavy concentration is not unique for the Swedish market but is, instead, a consequence of the special characteristics of the payment market. Economies of scale in combination with network effects create a combination that often results in a single system being able to serve an entire market. The payment market is thus often described as a 'natural monopoly' (see section 4 for a more detailed description of the payment market).

This gives rise to important questions concerning resilience and competition on the market. On one hand, it is efficient to utilise economies of scale and network effects by having individual systems that serve the entire market. However, on the other hand, this leads to vulnerabilities regarding resilience to shocks and crisis preparedness of a very central part of the country's infrastructure, not least when parts of this infrastructure are located beyond the country's borders. The preparedness aspect raises issues concerning the need for alternative systems. Historically, this is a function that cash has always had: when banking systems have not been accessible due to shocks, it has been possible to pay with cash. Now, however, cash has become marginalised as a means of payment and can no longer fulfil this function. Furthermore, cash withdrawals are highly dependent on access to electricity and a functioning banking system.

As cash has historically been an alternative means of payment, albeit to an ever-decreasing extent recently, it has been able to function as competition to

29 Swedish Post and Telecom Authority (2017). Grundläggande betaltjänster i en digitaliserad framtid (Essential payment services in a digitalised future), report no.

30 See, for example, Stefan Åkerblom, "Payment services market in Sweden", Swedish Competition Authority's report series 2017:7.

the banks' payment services. This may have contributed towards limiting the banks' ability to use their dominant position to charge excess profits, above all from the trade sector. Recently, new European legislation³¹ has been passed to promote competition on the market, at the same time as new actors within the FinTech sector in particular have started to gain market share. However, the underlying systems that handle the payments and to which actors on the market need access are still owned by a small number of banks.

The Swedish payment market today

The payment market is undergoing rapid transformation. Card payments and the use of Swish are increasing over time, as is use of the Internet and mobile telephones. At the same time, new innovative payment services are emerging, such as iZettle and Trustly. Despite this development, the Swedish payment market remains concentrated on a small number of technical infrastructures and the major banks. This section gives a brief overview of the Swedish payment market, with its trends and driving forces.

A payment is a transfer of a monetary value from one party to another, often as compensation for goods or services, and a payment service is a product or service that enables such a transfer. For a modern economy to work well, appropriate and cost-effective payment services are needed. The most important payment services in the Swedish market are debit and credit cards, credit transfers, direct debits and instant payments (Swish). These payment services are account-based, which is to say that money is transferred between accounts that are normally held in the banks. Cash is not a payment service but a *means of payment* in which the monetary value lies in the banknote or coin and the transfer takes place in conjunction with the delivery of the means of payment.

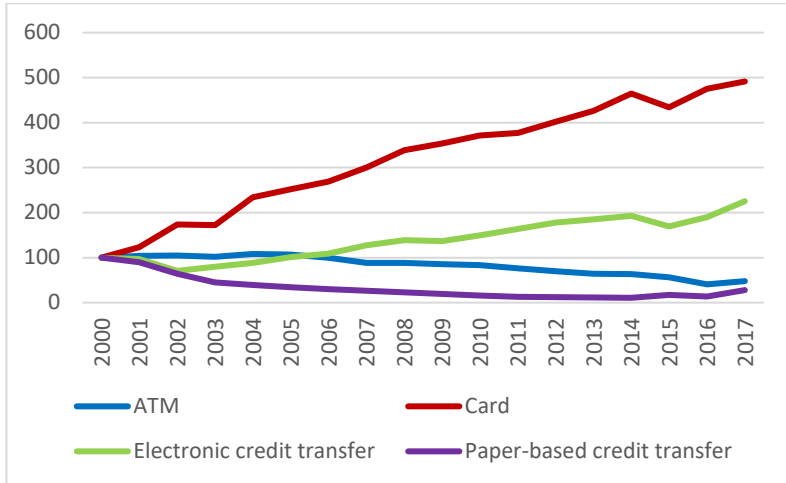
The payment market is transforming rapidly. Below, we briefly describe the most important trends and their interaction. Possibly the most important pair of trends is the long-term increase of card payments and Swish in combination with declining cash use, particularly considering that cards and Swish are substitutes for cash when making payments at points of sale and between private persons. There now also exist what are known as contactless smart cards, which only need to be held against a card terminal when making a smaller purchase (under SEK 200–250), with no need to enter a code. This speeds up card payments and will provide further competition with cash, which is generally used for lower value payments.

The second pair of trends is the long-term increase of internet and, perhaps above all, mobile bank use combined with the long-term decline in the use of paper-based direct debits, as these are close substitutes for each other. This

³¹ Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC (PSD2).

trend is partly a consequence of demographic changes (it is primarily older people who use paper-based direct debits) and increased access to smartphones, tablet computers and other computers that can be used to access internet and mobile banking. E-invoices are also a service that can be assumed to have contributed to a reduction in paper-based direct debits by making it much more convenient to pay via internet or mobile banking.

The trends above are shown in Figure 2 for the most common payment services in terms of the number of payments and the value mediated with the year 2000 as base year. In general terms, the figure shows that cash withdrawals from ATMs have halved in absolute figures, while paper-based direct debits have more than halved, electronic credit transfers have almost doubled and card usage has increased many times over since the year 2000. Swish is not included as its rapid development makes it difficult to illustrate in the same figure as the other services. Today, around 70 per cent of Swedish consumers have access to Swish. In value terms, Swish overtook cash withdrawals in 2017. When asked which means of payment they used to make their most recent payment, the percentage responding cash has fallen from about 39 per cent in 2010 to about 13 per cent in 2018.

Figure 2. Development of the most common payment services 2000–2017

Source: The Riksbank

Note. Transaction value. Index, base year = 2000.

One further trend is that new payment service suppliers that are not banks are starting to become established on the payment market. The foremost examples are Klarna and iZettle, but there are also a number of others, such as Trustly, for example. These actors compete with the banks on the payment market but they also often cooperate with the banks. For example, it is not unusual for small business owners to have access to iZettle's services through their ordinary banks. On the other hand, some actors, such as Klarna, will choose to become banks when their operations become large enough.

In other words, there is functioning competition in prices and new services in the Swedish payment market. Nonetheless, it remains highly concentrated and is dominated by the major banks. The concentration in the technical infrastructure that enables payments is even higher, for example the technical systems of Bankgirot, Visa and Mastercard. Innovative payment services, such as Apple Pay and Samsung Pay for example, are usually only a new way of initiating a payment through the existing infrastructure and thus do not reduce the underlying dominance.

It is not just the Swedish payment market that has such a high concentration among banks and technical infrastructure; instead, this is the normal situation in most countries. There is a reason for this, as the payment market has three characteristics that lead to concentration: (a) economies of scale, (b) synergies and (c) network effects.

Economies of scale and synergies arise when there are high fixed costs and the cost for producing an extra unit of a commodity or service is low. For electronic payment services, this is due to investments in central IT systems, among other things. Network effects arise when the value of having access to a service or commodity increases with the number of other actors having

access to the same service or commodity. The telephone is the most common example as the value of owning a telephone increases in proportion to the number of other people that can be reached with it. The same reasoning also applies to cash and electronic payment services. A special version of network effect arises on so-called two-sided markets, which consist of two distinct categories of actor and in which the value of being connected to a service depends on how many members of the other group use the service. For example, if many consumers have cards, it becomes attractive for traders to be able to accept card payments, and vice versa. Together, these forces lead to a concentrated market. In economics, such markets are usually known as *natural monopolies*.

Tools of the state, including the e-krona

The payment market is highly concentrated due to its basic characteristics: economies of scale, synergies and network effects. There are two main alternatives for such markets: either the state itself can own and run operations or it can regulate and oversee them. Historically, both Sweden and other countries have chosen a combination of both approaches – the state runs part of the operations, while it also monitors and regulates the part run by the private sector. This section also describes possible consequences of the various tools for the Riksbank's balance sheet and allocation of profits to the state. Finally, it describes how monetary policy and financial stability could be affected by the introduction of an e-krona.

Possible tools to counteract high concentration in the payment market

The concentration that markets with the characteristics of a natural monopoly (as described in section 3) risk developing can lead to competition problems and create what are known as single points of failure, whose functions are critical for the functioning of the entire market. Private actors are expected to act according to a profit motive, which means that they do not necessarily take account of all consequences their decisions may have for consumers and other participants. The state can use various tools to ensure healthy competition and a robust payment system, as well as universal access to basic payment services. In brief, the state can regulate or run/own operations.

The state has long played an active role on the supply side of the payment market

Cash provides one example of the state's role as direct participant in the market. Previously, the state also played an active role via Postgirot, Posten, Svensk Kassaservice (Swedish Cashier Service) and also, at times, the Riksbank's cash counting and small change services (see section 3 for a more detailed description). Indirect participation also exists via the procurement of

payment services when the market is unable to supply them (county administrative boards, PTS and Swedish National Debt Office). The state has also had indirect participation through its owner shares in certain banks.

Outside the payment market, the state has also played an active role to promote competition – SBAB, on the mortgage market, is one example. The state also has ownership on the media market, via SVT and Sveriges Radio, where the state supplies news and entertainment to ensure that everybody has access to important information from an independent source. State involvement in the payment market can also be made with the aim of increasing robustness. In its day, Postgirot was an independent payment system that could be used as an alternative in the event of disruptions to the privately owned Bankgirot. A state supply can also contribute towards safeguarding public access to basic payment services, which was one of the arguments behind the formation of Svensk Kassaservice.

An e-krona would involve the state maintaining the role as active participant in the payment market that it has had, via cash, for several centuries. This is because it would function approximately as cash.

Regulations are an alternative, or complement, to direct state participation on the market

Offering payment services to the general public or providing clearing and settlement services requires a license from the Swedish financial supervisory authority, Finansinspektionen (FI). Such licenses are based on various laws (the Payment Services Act, the Banking and Financing Act, the Securities Market Act and so on) which specify the demands with which these institutes must comply, for example in terms of capital, to ensure fundamental robustness. Other laws regulate the supply of services. For example, banks are obliged to provide transaction accounts with basic payment services to EU citizens. Other statutes yet regulate the pricing of certain services (the EU regulation on cross-border payments in euro and the EU regulation on interchange fees for card-based payment transactions). Regulations also specify information requirements and consumer protection. In addition, there is more general legislation surrounding competition protection that is not directly tied to payment services and the payment market. The robustness of the underlying infrastructure is regulated, for example through requirements for redundancy in certain functions. The state has also created a number of authorities with specific mandates to ensure compliance with regulations.

As regards cash and its function in society, the state has adopted, or will adopt, a number of regulations. Firstly, cash has a special legal status – legal tender – that decrees the universal obligation to accept cash. In practice, however, this provision is not binding but can be waived by mutual agreement, which is why some shops and businesses have chosen no longer to accept

cash.³² As the trade sector can increasingly be expected to stop accepting cash, the function of cash as a generally accepted means of payment will be lost. In an interim report³³, the Riksbank Committee has proposed that certain banks should be obliged to provide cash services in the form of possibilities for the withdrawal and deposit of daily takings. It is thus possible to regulate the obligations to accept cash and provide cash services, but it is not possible to regulate an obligation for consumers to pay in cash in certain situations or at certain places. Consequently, regulation alone cannot ensure the presence of state money on the payment market as it is likely that consumers will continue their transition to digital payment services and that shops may cease to accept cash. The cash market is a two-sided market (see section 3) and, when one part of the market, in this case consumers, stops using the service, the other part (the trade sector and banks) will also stop accepting or supplying the service.

Similarly, state involvement in the market's supply side is not always enough to achieve the desired effect. For example, the Riksdag chose to abolish the legal support for Svensk Kassaservice and sold Postgirot.³⁴ Direct involvement could give rise to subsidies and distorted competition and to conflicts of interest arising in cases where the state regulates an operation it runs itself.

Like state ownership, regulation can also result in distortions. For example, the state has introduced a deposit guarantee to create confidence in bank deposits and to protect consumers. However, this type of protection could provide an incentive for consumers and/or banks to take greater risks than they otherwise would have. For example, consumers do not have as strong an incentive to examine their bank's financial position when they know that their money is protected by the state. For this reason, the banks' incentive to manage their risks to a sufficient extent also decreases.

Possible consequences of the various tools for the Riksbank's balance sheet and allocation of profits to the state

The possible tools that the state has to attain an efficient and safe payment market have various consequences for central government finances. The increased regulation and oversight of the payment market could entail a certain increase of the costs for this. Like cash, an e-krona could involve increased seigniorage revenues for the Riksbank, which would then be transferred via dividend payments to the state. This section examines how the state's revenues would be affected by the various alternatives to counteract the concentration on the payment market.

³² The principle of freedom of contract also applies in the euro area. However, the European Commission issued a recommendation in 2010 to clarify the extent of the position of the euro as legal tender. This states that payments in euro banknotes and euro coins should be the rule in retail transactions and that it should only be possible to refuse cash for special reasons, such as the retailer having no change.

³³ SOU 2018:42 on ensuring access to cash.

³⁴ However, Postgirot was a well-functioning operation for several decades and probably played a key role in the creation of today's efficient payment market.

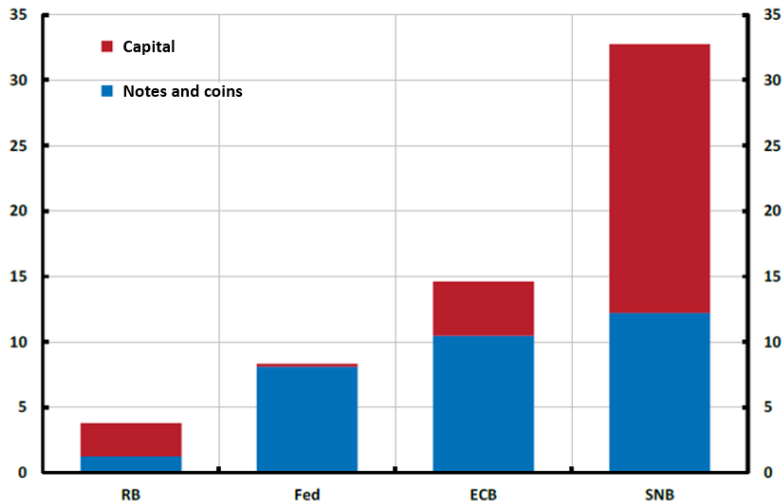
Increased regulation and oversight

In general, it is difficult to achieve cost-effectiveness and innovation on a market with a natural monopoly. On the payment market, this would require major investments in infrastructure in the wholesale channel, after which the cost of connecting another user would be very low – so there would be economies of scale. This means that, if the price were to reflect the marginal cost, that is the cost of producing a further unit, a company active on this market would make a loss, as the major investments required initially would, quite simply, not be worth it. On the other hand, if the company, as a lone participant, were allowed to set the price itself, excess profits would arise, in addition to which quantities would be too small, as in all monopoly situations.

If the market is to be run by a private company, the best solution, in theory, is for the state to ensure that the monopolising company is limited to charging a price that corresponds to the average cost. However, it can be difficult to know what the exact average cost actually is, particularly as there lacks motivation in the form of competition to streamline productivity. As long as cash exists as an alternative, the monopoly situation on the payment market can be limited. If cash disappears and is not replaced by an electronic state alternative, it is possible that the increased regulation and oversight of the payment system would require increased efforts to ensure that pricing on the market is correct and that the companies are taking responsibility in areas such as crisis preparedness.

The e-krona

Issuing money generates revenues. For cash, this is because the Riksbank can issue banknotes and coins for a very low cost. The Riksbank does not pay any interest on this cash, but the revenues can be used to fund investments in bonds and other interest-bearing assets. In normal times, when interest rates are positive, this means that cash generates a profit for the Riksbank, which is normally called seigniorage. As cash usage has declined in Sweden, so too has seigniorage. In Figure 3, it can be seen that the central banks in the euro area, United States and Switzerland have outstanding cash in their balance sheets in an amount corresponding to around 10 per cent of GDP, while, for the Riksbank, this is about 1 per cent of GDP.

Figure 3. Equity and cash on various central banks' balance sheets (2018)

Note. Per cent of GDP/

Sources: The respective central banks and national statistical sources.

When the Riksbank makes a profit, the surplus is transferred to the state. Seigniorage thus becomes a kind of tax on cash.³⁵ In Sweden, the Riksbank's ordinary dividend payments to the state have averaged about SEK 5 billion per year since 1988.³⁶ This amount has thereby remained approximately the same as GDP has increased, which shows that dividend payments as a share of GDP have continually decreased over time. A non-interest bearing e-krona would fulfil the same function as cash in the Riksbank's balance sheet. Seigniorage revenues would thus increase in line with the amount of e-kronas circulating in the economy (and would become higher as the level of interest rates in the economy rises).

Issuing interest-bearing money also normally generates a profit. If the money is kept in private bank accounts instead of in cash, interest is normally received from the bank. However, this interest is lower than the interest paid for money borrowed from the bank. The banks thus earn money on the interest rate differential between lending and deposit rates. Similarly, an interest-bearing e-krona would also generate interest income for the Riksbank and, ultimately, the state. The interest on the e-krona, which would correspond to

³⁵ In theory, it would be better for welfare to use this kind of tax instead of tax on income from employment, for example, which creates a negative incentive for the labour supply (see, for example, Fischer, Stanley "Seigniorage and Fixed Exchange Rates: An Optimal Inflation Tax Analysis." *Financial Policies and the World Capital Market: The Problem of Latin American Countries*, edited by Rudiger Dornbusch and Maurice Obstfeld. Chicago: University of Chicago Press, (1983), pp.

³⁶ See "Does the Riksbank have to make a profit? Challenges for the funding of the Riksbank." Speech to Swedish House of Finance (SHoF), Stockholm. Kerstin af Jochnick. January 2015.

cash on the Riksbank's balance sheet, would be lower than the yields from the other assets in which the Riksbank would be able to invest this money.

Possible consequences for monetary policy and financial stability of the introduction of an e-krona.

The consequences of the e-krona for monetary policy and financial stability depend on how great the demand will be for it. The demand depends, in turn, on how the e-krona is designed. An e-krona with little demand can be expected to have a marginal impact on monetary policy and financial stability, while a more attractive e-krona would have slightly greater effects. This is described in a little more detail below.

For **monetary policy**, the greatest consequence of introducing an e-krona would be that it would no longer be possible to cut the repo rate below zero if an interest-free e-krona was introduced without restriction. With an interest-bearing e-krona, the repo rate's lower bound would not be affected. Other consequences for monetary policy would be very limited, regardless of whether or not the e-krona bears interest.

The introduction of an e-krona may lead to certain changes in the **financial system**, both in normal times and in times of economic and financial unease. How great the impact will be depends on the extent to which the e-krona is used as a means of payment and for saving. Banks fulfil an important function in society in that they allow households and companies to save and borrow money. They use short-term deposits, into salary accounts for example, to fund their long-term lending to households and companies. This is largely considered positive for society as it contributes to the efficient use of capital. The introduction of an e-krona could lead to a reduction in bank deposits as bank customers would be able to choose to move some of their deposits to e-krona in the same way as they can move their money between bank deposits and cash today. If the e-krona were to take over a certain share of deposits, banks could compensate for this by using wholesale funding. This could lead to higher funding costs for the banking system.³⁷ This could, in turn, either reduce banks' profitability or result in them raising their lending rates slightly to retain their deposits.

Here, however, it should be remembered that cash usage has fallen to a low level in Sweden, from an international perspective. As the e-krona would be competing for bank deposits in the same way as cash, this means that a certain transition to e-kronas from bank deposits would make the allocation between private bank money and state money more like the situation in other countries or the situation in Sweden a few decades ago, when cash usage was higher. It therefore seems reasonable to believe that the banking system would be largely unaffected by an e-krona in normal times, even if funding were to become a little more expensive, as discussed above.

³⁷ Historically speaking, wholesale funding has been more expensive than deposits.

In times of financial unease, demand for e-kronas could increase heavily, as it would then be perceived as more attractive than other alternatives. Even if there may be economic reasons for giving the general public access to safe central bank money in such a situation, a sudden run to e-krona may lead to greater problems for banks. Situations in which there is an outflow of deposits from one or more banks can already arise today. In the current system, investors try to leave a bank that is perceived to be risky by moving their assets to a safer bank or acquiring safer assets such as government securities. The same thing can happen to the general public's deposits, most of which are only short-term and can be easily moved. A major outflow of bank deposits is normally referred to as a bank run. The expression was originally used to describe a situation in which bank customers 'ran' to a bank that was considered unsafe in order to withdraw their money in cash. Nowadays, money can be moved digitally, for example to another bank. Regardless of where customers run to, the bank they run from will probably find it difficult to find wholesale funding, for example on the interbank market, and will probably turn to the central bank and ask to borrow money in order to tackle the outflow.

A bank run on the entire banking sector is less likely than one that affects a number of individual banks, but it can happen. If the general public were to want to exchange their bank deposits for cash, the Riksbank can take action by lending new reserves to banks and then letting them exchange the reserves for cash. This would also apply to the e-krona. The general public may also choose to move their deposits to other risk-free investments offered by the state, such as tax accounts at the Swedish Tax Agency. However, it is possible that the e-krona would appear to be more attractive than the state alternative that exists today, as it would be easily accessible and would have a payment function. A rapid outflow of the banks' deposits to e-kronas would be problematic, in exactly the same way as major outflows into cash have historically been. This is something that states have always tried to avoid, among other means by introducing a deposit guarantee. It is therefore important that any e-krona be designed in such a way as to minimise the risk of this type of run. One way of avoiding major flows to the e-krona could be to allow it to bear interest, which could be set on an unattractive level, or to introduce the possibility of having restrictions on the number or value per day that can be converted to e-kronas.

International work on a central bank digital currency

Most central banks are investigating whether central bank money should be issued in digital form. This work was initially purely theoretical but today about half of central banks have started experiments and tests to learn more about how it could work in practice. Starting points for this work differ from country to country. Advanced economies cite potential efficiency gains from new technology and reduced cash usage, and thereby the need to modernise central bank money to current technology, as an incentive. Emerging market

economies often emphasise increased financial inclusion as the main incentive. This section presents the work of other central banks and the IMF on central bank digital currencies.

The Riksbank is not alone in analysing the possibility of issuing a central bank digital currency (CBDC). 70 per cent of the world's central banks are conducting research in this area according to a recently completed survey by the BIS.³⁸ This work was initially theoretical and the central banks have chosen to share their studies with the aim of developing a common understanding of the subject. For example, Canada and the United Kingdom have published a number of research articles in the area. To learn more, about half of central banks have now taken the step of starting to experiment and develop technological solutions for a CBDC. It is important to remember that the aim of the current experiments and pilot tests is primarily exploratory and that the work does not necessarily mean that there are plans to issue central bank digital currency in the near term. For example, Uruguay has recently conducted pilot tests of a digital peso (see the box below) and the Bahamas and countries in the eastern Caribbean have announced their own pilot tests to be started in 2019. Other central banks such as the ECB, Bank of Japan and South African Reserve Bank, for example, have focused on recreating payment systems for large-value payments between banks that are based on blockchain technology (cf. the Riksbank's RIX system where banks make payments to one other). Central banks have also created joint projects aimed at streamlining cross-border payments with the help of blockchain technology.

Uruguay's e-peso pilot³⁹

Uruguay has conducted pilot tests of a digital peso (an e-peso), which were made available to households and companies via digital wallets in mobile telephones. The pilot tests were part of a state programme initiated in 2011 whose aim was to increase financial inclusion in the country. November 2017 saw the launch of the pilot, which was aimed at issuing, distributing and testing an e-peso. Unique digital banknotes were issued in several denominations and distributed by a technical platform that acted as a register for ownership of the digital banknotes. In total, 200 million e-pesos were issued, of which 7 million were distributed via a payment service provider that held a corresponding value in the central bank reserves. Individuals and companies were able to hold e-pesos in digital wallets in an amount equivalent to 30,000 e-pesos (about USD 1,000) and 200,000 e-pesos respectively. Payments were made immediately, person-to-person, via mobile telephones, either through an app or by sending a text message. Blockchain technology was not used for the pilot tests and users were not required to have smartphones. The pilot test was

³⁸ Barontini C. and H. Holden, 2019, "Proceeding with caution – a survey on central bank digital currency", BIS Paper No. 101, January 2019. <https://www.bis.org/publ/bppdf/bispap101.pdf>.

³⁹ Slides shown at the conference "Economics of Payments IX", arranged by BIS and CPMI in Basel, Switzerland, 15-16 November 2018.

concluded in April 2018, after which all e-pesos were annulled. The legal mandate for the Central Bank of Uruguay was considered sufficient for it to issue digital pesos as a complement to banknotes and coins. The project was deemed to have been successful and is now in an evaluation phase. Before any decisions can be taken on further tests or a possible issue, more detailed analysis is needed of matters such as the specific design of an e-peso, the role of the central bank and the consequences.

Incentives for investigating the possibilities of issuing central bank digital currencies differ from country to country but the prime incentive can be summarised in the form of decreased cash usage and increased financial inclusion. For Sweden, decreasing cash usage has been the starting point for the Riksbank's work with the e-krona. Norway is facing a similar situation and is also conducting analysis within the area. For less developed economies such as Uruguay, South Africa and the Bahamas, for example, financial inclusion is emphasised as the foremost argument for a CBDC. Large parts of the population in these countries do not have access to bank accounts and a central bank digital currency could be a way of giving them access to the financial system. In addition, cash usage is expensive for households, as they often need to travel long distances to withdraw cash from ATMs.

The IMF is another international actor that has become interested in central bank digital currencies. A recently published report describes central bank digital currency as a potential natural next step in development.⁴⁰ Historically, the form of money has always been adapted to users' needs and, in light of the increased digitalisation, central banks are considering the possibility of issuing central bank digital currencies. However, according to the IMF, it is too early to draw any conclusions concerning the net benefits of a central bank digital currency. Central banks are therefore being encouraged to consider country-specific circumstances and to consider carefully the risks and advantages of alternative solutions. In addition, more analysis is needed of the technological possibilities and operational costs.

⁴⁰ Mancini-Griffoli, T. et al., 2018, "Casting light on central bank digital currency", IMF Staff Discussion Note, November 2018. <https://www.imf.org/en/Publications/Staff-Discussion-Notes/Issues/2018/11/13/Casting-Light-on-Central-Bank-Digital-Currencies-46233>.

Annex 2: Consultation response – The Riksbank's e-krona project, report 2

The Riksbank’s second e-krona report was published in October 2018⁴¹ along with an invitation to submit comments to the Riksbank. The last date for responding to the consultation was 1 February 2019. A total of 20 responses were received from various authorities and organisations⁴²:

- Arbetsförmedlingen (Swedish Public Employment Service)
- Bankgirot
- Swedish Board of Student Finance (CSN)
- Finansinspektionen (Swedish financial supervisory authority)
- Finansförbundet
- Konkurrensverket (Swedish Competition Authority)
- Konsumentverket (Swedish Consumer Agency)
- Dalarna County Administrative Board
- Migrationsverket (Swedish Migration Agency)
- Pensionsmyndigheten (Swedish Pensions Agency)
- Swedish Post and Telecom Authority (PTS)
- Swedish National Debt Office
- Skatteverket (Swedish Tax Agency)
- Sparbankernas Riksförbund (Swedish savings bank association)
- Svenska Bankföreningen (Swedish Bankers’ Association)
- Sveriges Kommuner och Landsting (Swedish Association of Local Authorities and Regions)
- Swedish Financial Technology Association
- Svensk Handel (Swedish Trade Federation)
- Svenskt Näringsliv (Confederation of Swedish Enterprise)
- Sveriges Konsumenter (Swedish Consumers’ Association)

In general, there is a broad understanding for why the Riksbank is investigating the scope for introducing an e-krona now when cash is being increasingly marginalised as a means of payment. However, several of the responses point out the existence of other tools for achieving the Riksbank’s objectives linked to an e-krona.

Agents who are dependent on banks’ payment services tend to appreciate the competition an e-krona could create and authorities such as the Swedish Tax Agency and the Swedish Social Insurance Agency see an opportunity to rationalise their incoming and outgoing payments. Many referral bodies also pointed out that the e-krona could be interesting as it could strengthen Sweden’s preparedness and robustness in the event of crises or shocks in

⁴¹ <https://www.riksbank.se/globalassets/media/rapporter/e-krona/2018/riksbankens-e-kronaprojekt-rapport-2.pdf>.

⁴² See: <https://www.riksbank.se/globalassets/media/rapporter/e-krona/2019/remissvar-riksbankens-e-kronaprojekt-rapport-2.pdf>.

society. Furthermore, most referral bodies also stressed the necessity for a government inquiry into the e-krona, something that the Riksbank has also called for.