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The e-krona – now and for the future

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The declining use of cash in Sweden has led the Riksbank to examine whether a state, digital currency, an e-krona, could mitigate some of the problems in a cashless society. Ultimately, the question is what role the state, and the Riksbank, is to have on the payment market in the future. This Economic Commentary describes where the project is now, the fundamental issues it raises and the investigation process that awaits. The payment market is developing at a very rapid pace. It is therefore important that the question of the state's role on the future payment market, including whether an e-krona should be issued, is investigated thoroughly and promptly.

The first time the Riksbank talked about the possibility of issuing a digital form of money to the general public, an e-krona, was at the end of 2016. The reason was that fewer and fewer Swedes are using cash, largely due to the rapid digitalisation of society that is also affecting how we pay for things.[2] In March 2017, the Executive Board of the Riksbank decided to start the E-krona Project, which was to examine without preconceptions the scope for issuing an e-krona as a complement to cash.[3]

Cash is state money in physical form, in contrast to private, digital bank money that is predominantly used by the general public to make payments. The E-krona Project was therefore to examine questions that will be natural to ask when the state's presence on the payment market undergoes substantial changes:

- Can a payment market dominated entirely by private actors guarantee that the payment system works in a way that we as a society expect?
- Could state digital money, an e-krona, mitigate some of the potential problems that might arise in a cashless society?
- If so, what effects might an e-krona have on the financial system?[4]

These are substantial and important questions going forward. By means of a decision on 18 June 2019, a unanimous Swedish Riksdag also called upon the government to appoint an inquiry in which the e-krona is to be considered part of a government inquiry into the state's role on the digital payment market.

The aim of this Economic Commentary is firstly to describe where the E-krona Project is now, and how the project and external circumstances have developed since the start. Secondly, the aim is to describe and discuss the fundamental issues raised by the e-krona. These issues ultimately concern the state's and the central bank's role in society and how key components of society are to be designed. Finally, the aim is to describe the way forward and the choices that must be made, ultimately by the Swedish Riksdag, for the future.

Money and payments are changing rapidly

The starting point for the E-krona Project was the changes that have begun to occur in the payment system, above all the fact that cash use in Sweden seems to be on the way out. In the years since the project began, this development has continued in the same direction and the issue of what the future payment system should look like has become an even hotter topic.

The decline in cash use is changing the state's role on the payment market

The decline in cash use is affecting the relationship between state and private money. In Sweden, as in other countries, private banks previously had the right to issue their own

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[2] Milne (2016).

[3] Sveriges Riksbank (2017a)

[4] For more about these questions, see Sveriges Riksbank (2017b) and Sveriges Riksbank (2018).

banknotes.[5] As the result of a series of legislative acts, enacted in Sweden in 1897, central banks were given the sole right to issue banknotes. After that, private money became synonymous with bank deposits, which, with the help of various payment instruments – cheques, bank cards and so on – could be used to make payments. This private money has, however, been backed by deposit guarantees, regulations, and monetary policy conducted by the state. For a long time, there has therefore been an established arrangement whereby state money in the form of cash is used in parallel with private bank money. The decline in cash use, however, means that private bank money is replacing state money to an ever-greater extent. It is hence a question of a very substantial change in a historical perspective, which also explains why the issue is now being investigated.

Instant payments

Another example of changes on the payment market is the continued rise in the demand for "instant" payments. These are payments that are settled within a matter of seconds and that can be completed at any time, all year round. In Sweden, this can currently be done via the Swish mobile app. That the number of instant payments has increased so sharply is the result of interaction between technical development and the changed habits and expectations of users – as everything goes faster, we also expect to be able to make payments rapidly and easily. As the volumes of instant payments have increased, so has their significance for the national economy. Many central banks have therefore considered it necessary to examine how payments can be made as securely and efficiently as possible from society's point of view. This has led the European Central Bank (ECB) to take the initiative for a pan-European system for instant payments, TIPS. It is the Riksbank's view that it shall also be possible to pay in Swedish krona (SEK) through TIPS and the bank has therefore started negotiations with the ECB.[6] The US Federal Reserve has also begun to develop a federal service for instant payments, FedNow, which it plans to bring into operation by 2024.[7]

Cryptoassets and stablecoins

Technical development has also fuelled the discussion on state versus private money in that it has given us "cryptoassets", or "cryptocurrencies" as they are also referred to. The advocates of cryptoassets see them as a new form of money. The first and still largest cryptoasset, Bitcoin, was created in 2009 and has since been followed by many new cryptoassets.[8] Cryptoassets have fluctuated substantially in value and mainly become an alternative form of investment, rather than a means of payment. On the other hand, they have probably stimulated the discussion on the future of the payment system and the possibilities presented by new technology. In 2019, Facebook announced its plans to create what it called a global digital currency, Libra. According to the plan, Libra will be administrated by a not-for-profit association, of which Facebook will be one of many members. The idea is to avoid value fluctuations in cryptoassets by backing Libra's value using a fund comprising safe assets issued in different currencies.[9] This would make Libra an example of what are referred to as "stablecoins", i.e. digital units whose value is linked to various forms of assets in order to achieve stable value development. In Libra's case, the values of these assets is ultimately linked to states' ability to pay their debts and retain the value of their currencies.

[5] Söderberg (2018a). There is also private banks in certain countries, in Scotland for example, that have the right to issue banknotes with strict limitations.
[6] Sveriges Riksbank (2019).
[7] See for instance Smialek (2019).
[8] For more on Bitcoin and other cryptoassets, see Söderberg (2018b).
[9] Libra Association (2019).

Should states issue digital currencies?

The question of whether the state should provide the general public with digital money is natural in a digital age, in which states must consider how and in what form they should develop their activities. In the world in general, cash use has not declined as much as in Sweden. On the contrary, it continues to be high in many countries. But as the transition to an ever-more digitalised society continues globally, albeit at a varying pace, it can be expected that a development similar to the one that is taking place in Sweden will sooner or later occur in the rest of the world. Consequently, the issue has received very substantial attention internationally. As state money is issued by central banks, it is primarily central banks that have begun investigating the scope for issuing what has come to be referred to as central bank digital currencies (CBDC), i.e. digital money issued by central banks.[10] The e-krona would be an example of such a CBDC. A considerable number of the world's central banks are working on the issue, either in the form of analytical work or by creating prototypes to test and evaluate different types of underlying technology.[11] However, CBDCs have given rise to debate on an international level, both on whether a CBDC is needed and on what effects it would have on the financial system. Facebook's Libra initiative has also put pressure on central banks to act so as not to be left behind in the rapid technological transformation. [12] In September 2019, the finance ministers of France and Germany also made a joint statement, in which they criticised the plans for Libra and called on European central banks to examine the scope for issuing digital currencies.[13] Recently, the Chinese central bank has also announced that it is close to issuing its own CBDC after five years of development and analysis.[14] If or when China launches its CBDC, the discussion will probably shift again as there will then be an existing example that other countries can study.

The discussion, and debate, on whether central banks should issue digital money directly to citizens has only just begun. The Riksbank's E-krona Project will be at the centre of this discussion, not just in Sweden but also internationally.

What has the E-krona Project produced so far?

Since the project began, the Riksbank has published two reports. In summary, the conclusion from the two reports is that there are four potential problems if the state's role on the payment market is marginalised:

1) Tendencies towards concentration by companies on the payment market may impair competition, which in the long run may lead to higher costs for the general public to make payments and the pace of innovation may stagnate.
2) The robustness of the payment system will decline, as the private market cannot be expected to take all the responsibility for ensuring that the system also functions in periods of crisis and war.
3) Certain groups may find it more difficult to make payments as they struggle to deal with digital technology.
4) There is a risk of basic trust in the Swedish krona and the monetary system being undermined when it is no longer possible for the general public to change their bank deposits into state money.

[10] Central banks also issue digital money to participants in their systems for large-scale payments, in which financial institutions are members. A CBDC is therefore digital money over and above this traditional digital money.
[11] Barontini and Holden (2019). In the survey, 63 central banks, representing 80% of the world population, said that they are looking into CBDCs.
[12] Jones (2019), Guarascio (2019).
[13] Guarascio (2019).
[14] Browne (2019).

The reports discussed the different ways in which an e-krona could mitigate some of these problems and put forward three recommendations. First, the Sveriges Riksbank Act should be updated to a digital age and clarify what the legal scope is for the Riksbank to issue an e-krona. Second, the analysis of the e-krona shall continue in dialogue with other authorities and stakeholders. Third, the technology for a potential e-krona shall be explored by developing an experimental version of an e-krona on a small scale, an e-krona prototype.

In connection with the publication of the second interim report, work on the e-krona entered a new phase. A new division was created at the Riksbank tasked with developing and testing an e-krona prototype, and with drafting a regulatory framework for an e-krona. In the summer of 2019, procurement was initiated of a technical supplier who will develop the prototype in cooperation with the Riksbank. The plan is to develop and test this prototype during 2020. However, it is important to stress that this work does not involve any decision to issue an e-krona. Just as in many similar technical studies performed by central banks around the world, it is primarily a question of learning more about the technical scope.

The new phase of the E-Krona Project also involves deeper evaluation of society's need for an e-krona and marks the start of the process to perform a possible review of the legal framework. This is described in the following section.

The e-krona raises fundamental questions

The e-krona brings up many different issues. What is the role of the central bank and ultimately the state in society? What is money and how should we organise the payment system so that it functions as well as possible? And what do we mean by "as well as possible"? In other words: what attributes do we as a society wish our money and our payment system to have? The economic analysis performed by the Riksbank at the start of the project has therefore been joined by a wider societal analysis and the insight that the ultimate decision on the future of the e-krona is affected by areas beyond economic analysis, including values as to how society should be organised, and should therefore be the subject of a political decision.

What role should the public sector have in society – and on the payment market?

As has been described earlier, the possible disappearance of cash signifies a historical shift, in which the state's presence on the payment market will change substantially. This leads to the question of what the state should do on the payment market. This question is actually not that different from the wider question of what the role of the state is in the economy on the whole. The motive for public-sector activities in the economy is usually that profit-driven companies cannot be expected to meet all the needs of society. As early as in the 18th century, "the Father of Economics", Adam Smith, wrote about the various roles of the state. These included maintaining law and order, and military defence, as well as satisfying needs that could not be meet by profit motives.[15] Modern economic theory has continued to develop this and talks about how market failures can motivate various types of public-sector activities.[16] The main point has remained unchanged since the 18th century: private companies function very well as a rule, but cannot be expected to perform all public services without any public-sector involvement.

The exact role of the public sector in the economy is not self-evident, however, and the view of its role is also affected by value judgements. There is, however, a broad political consensus that the public sector has the overarching responsibility for certain core areas, including national security and the judicial system. A further example of this is the payment

[15] West (1977), pp. 3-4.
[16] See for instance Stiglitz and Rosengard (2015).

market, where the public sector has exercised substantial influence and also supplied the general public with banknotes and coins.

A constant challenge is to determine how the role of the public sector should be formulated when circumstances change. We can see this in many areas of society. An example is developments after the financial crisis of 2008, which have led to the public sector increasing its presence in the financial sector in order to guarantee financial stability.[17] Similarly, the changes on the payment market mean that the presence of the public sector there is in need of review.

The public sector can use several different tools to achieve its objectives

However, the public sector can have several different roles, or, to put it another way, can use different tools to achieve its objectives. These are found in a few main categories: taxes, income transfers, subsidies, regulation and direct production of goods and services.[18] As regards the financial system and the payment system, it is the latter two categories that are of particular interest. Regulation is one of the cornerstones as regards the state's presence on the financial market and in the payment system. This applies to things like ensuring banks have adequate buffers for unforeseen events, financial institutions having to give consumers enough information and imposing security requirements on the technical systems that enable financial services. After the financial crisis of 2008, a major project was carried out both on the national and international level aimed at strengthening the regulation of the banking system, a process in which the Riksbank and legislators in the EU and Sweden actively participated. The updated rules have probably contributed to making the financial system more stable for the future.[19]

Regulation and supervision are consequently a necessary part of the state's presence in the financial system and in the payment system. A fundamental question is therefore: Should the state offer means of payment directly to the general public, in the form of cash and/or an e-krona, or does a less direct presence suffice in the form of regulation and oversight? This is a substantial and complicated question that is impossible to examine in this Economic Commentary. There is only scope here to note that there are feasible practical reasons for having a direct presence rather than just regulation in certain areas. These reasons probably weigh heavier depending on the importance of the public service involved. Among other factors, there can be costs for oversight and control to ensure regulations are followed. Economic theory talks about "asymmetric information": companies themselves know more about their activities than regulatory authorities.[20] This means, for example, that companies have to allocate resources to reporting to authorities and authorities must allocate resources to evaluating and analysing the activities of companies. There is also a potential cost when oversight quite simply fails and there are deviations from the regulations that are not detected at all or detected too late.

Regulations also take time to design and change. During periods when rapidly implemented decisions are required, changes via an already established public sector activity may be a quicker way. Another potential problem is when regulated companies find ways of circumventing and thereby undermining regulations. Regarding the finance industry, there are examples of this in so-called shadow banking – institutions that conduct bank-like activities but are not subject to the same regulations as banks.[21] The result can be a process

[17] Stiglitz and Rosengard (2015), p. 5.
[18] Barr (1992), pp. 743-744.
[19] For a discussion on Basel III and what it means for Sweden, see for instance af Jochnick (2017).
[20] The literature on asymmetric information is broad, but see for instance Akerlof (1970) for a general description.
[21] For more on shadow banks, see Hansson et al. (2014).

in which regulations must be constantly updated, which means that there is a risk of them always being one step behind.[22]

None of these potential reasons reduces the necessity for regulation. However, there is not necessarily a rivalry between regulation and direct production of certain important goods and services – both may be needed to ensure that society's objectives are achieved. From this perspective, an e-krona could therefore be seen as a complement to regulation.

The Riksbank already produces digital money for financial institutions

At present, the Riksbank produces physical means of payment for the general public in the form of cash. But it also produces digital money which is available to banks and financial institutions and which they can use to pay one another via the Riksbank's system for large-value payments, RIX. The advantages of this is that institutions do not need to worry about the value of other institutions' money and at the same time can be sure that, by pledging assets in the central bank, they can obtain sufficient liquidity to manage their payments.[23] If the state were not to produce means of payment to the general public, it would nevertheless probably continue to do so for RIX participants, while its presence on the payment market for citizens would instead only be noticeable through regulations. One question is therefore whether there is a fundamental problem; that banks and financial institutions have direct access to state, digital money while citizens do not.

It is clear, therefore, that any decision to issue an e-krona has several different dimensions, including value-related ones, which go beyond traditional economic analysis and have a major bearing on the future of society. The issues raised by a possible e-krona cannot therefore be examined and settled solely by a central bank. Consequently, a broad government inquiry must take place and a decision on the issue must ultimately be taken by the Swedish Riksdag.

A broad government inquiry into the state's role on the payment market

As mentioned previously, the issue of an e-krona is associated with the question of what role the state should have in the payment system going forward. As the Riksbank is a state authority, which, on behalf of the state, conducts monetary policy and is responsible for a safe and efficient payment system, this issue is also about the Riksbank's future role in society. In parallel with the discussion on the e-krona, a parliamentary inquiry has reviewed the Riksbank's legal framework and tasks. The inquiry shall submit its final report no later than 30 November 2019. However, the issue of cash decline was considered so urgent that an interim report entitled "Secure access to cash" was submitted as early as in the summer of 2018.[24] The starting point of the interim report was that everyone in Swedish society "shall have access to basic payment services at reasonable prices".[25] According to the report, the state therefore needs to "democratically and with a sufficient decision-making basis …come to a decision on which means of payment should exist in the future, especially those supplied by the Riksbank".[26] In this context, the interim report also called for an analysis of the pros and cons of an e-krona.

In February 2019, the Riksbank was asked by the Riksdag Committee on Finance to submit a proposal for the Riksdag to task the government to appoint a government inquiry into the state's future role on the payment market. A petition entitled "The state's role on the

[22] For more on this dynamic, see Kane (1988).
[23] It is said that this minimises credit and liquidity risks. For more about this, see the Principles for Financial Market Infrastructures CPMI/IOSCO (2012).
[24] SOU 2018:42. The interim report has been reworked into a proposition that was delivered to the Riksdag October 1 2019.
[25] SOU 2018:42, p. 15.
[26] SOU 2018: 42, p. 15

payment market" was delivered to the Riksdag at the beginning of May 2019.[27] As is clear from the title, this was not a proposal simply for an e-krona inquiry, but for a broad inquiry in which the question of whether the state shall issue a future e-krona was only one component. On 18 June 2019, the Riksdag unanimously called upon the government to appoint such an inquiry.

The way forward

In recent years, the analytical work on the e-krona has primarily been conducted under the auspices of the Riksbank, but the main work going forward will primarily take place within the government inquiry. The Riksbank will probably be part of the inquiry together with other state authorities and supply it with material and comments. In parallel, the Riksbank will continue its own analytical work, as well as continue to develop the prototype and the regulatory framework for an e-krona, known as the "Pilot Project". As previously mentioned, this is not to be seen as an e-krona coming into existence, but rather as a way of increasing knowledge about technology and regulatory frameworks for a potential future e-krona. Finally, the Riksbank will continue to participate in the national and international discussion regarding the need to review what the future payment system should look like and what role the central bank should have in the future. In this work, the Riksbank will continue to work with other central banks around the world.

The final decision on whether Sweden should issue an e-krona or not will not be taken by the Riksbank but by politicians in the Riksdag, based both on the report of the inquiry and on politicians' own thoughts and political considerations. Several of the fundamental issues that they will consider have been mentioned in this article. Their decision will establish important principles that will affect society for a long time to come. It is a process that will be carefully followed internationally and in which the fundamental issues for financial systems of the future will be decided.

In the end it is up to the Riksdag to decide on the future of the e-krona. But regardless of the outcome, it is important that the surrounding issues are thoroughly examined and that the decision is taken within the not-too-distant future. There is nothing to suggest that developments in the payment area are slowing down. Facebook's Libra initiative was a wake-up call for many decision-makers around the world, but Libra is just one part of a very substantial transformation. In addition, developments in Sweden have progressed further than in most other parts of the world. It is therefore extremely important for society that the issue of the state's role on the payment market is examined both thoroughly and promptly.

[27] Petition 2018/19:RB3.

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