



SPEECH

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Considerations for a cashless future¹

Two years have passed since I asked the question of whether the Riksbank should issue digital money – the e-krona.² Since then, we at the Riksbank have started an investigation and have been given the opportunity to analyse and discuss the matter from several different angles. Of course, the need to modernise the money issued by the Riksbank is new and is connected to the increased digitalisation of society as a whole. But there are also points in common with older issues such as that of which role central government should play on the payment market.

On 28 September 1900, a crowd of bankers gathered in Stockholm to listen to Professor Pontus E. Fahlbeck, a member of the Riksdag (the Swedish parliament). The subject of this meeting was the decision by the Riksdag to give the Riksbank sole right to issue banknotes in Sweden. As from 1904, the commercial banks' right to issue banknotes would thus come to an end. At the meeting, this reform was denounced as unnecessary, inappropriate and even dangerous. It was not considered possible for the Riksbank, on its own, to be able to provide the 'means of exchange' to such an extent as to satisfy the needs of the business sector.³ This was a period of great change, when responsibility for financial services was being reallocated between the private and public sectors. In retrospect, it was a success to change the rather undisciplined issuance of banknotes for a standard set by the Riksbank, leaving the private banks free to concentrate upon deposits and lending. Now, 118 years later, we are facing a similar situation: once again, we are discussing how the issuance of money is to be organised and how responsibility can best be allocated to ensure that our payments are secure and effective.

Now, as then, opinions are divided over the role the Riksbank should play on the payment market. There are those who are positive to the suggestion of an e-krona and those who are doubtful towards such an initiative from the Riksbank. What I would like to communicate today is the insight that, regardless of whether or not the Riksbank decides to issue an e-krona, the old order will change. We

¹ I would like to thank Hanna Armelius, Marianne Sterner and Calum McDonald for all their help with this speech. I would also like to thank my colleagues on the Executive Board of the Riksbank for valuable discussions. Stances and any remaining lack of clarity is entirely my own responsibility.

² Skingsley, S. (2016). "Should the Riksbank issue e-krona?" Speech at Berns, Stockholm, 16 November.

³ Fahlbeck, P. E. (1900). "Bankreformen" (the bank reform), *Statsvetenskaplig tidskrift*, (political science journal) vol. 3, no. 5.

need a broad discussion of what it means when central government's presence on the payment market's supply side risks disappearing along with cash. Introducing an e-krona would entail taking a new step and the consequences of this must be analysed carefully. But accepting a situation in which the general public no longer has access to any form of central bank money would also be a step into the unknown. Issuing digital Riksbank money, an e-krona, as a complement to cash would be one way of avoiding this situation. The alternative to an e-krona would be for central government to intervene with more detailed regulation of the market to ensure society's different interests are met. But this too would have its problems, as I shall discuss in more detail.

The largest and smallest payments: the Riksbank's role today and in the future

Traditionally, the Riksbank has been responsible for the underlying system in which all payments in Swedish kronor are settled, the RIX system. This system was created to manage large-value payments in a highly secure manner. In addition, the Riksbank's banknotes and coins have been used for the very smallest payments. The payment market is currently undergoing a large number of major changes that are affecting both of these 'systems'.

As cash usage declines, almost all consumer payments in shops are now made by card. This market is completely dominated by Visa and Mastercard and much of the infrastructure is located outside Sweden's borders. Unlike Norway and Denmark, Sweden has no card network of its own.

At the same time, new technology is leading to new, convenient ways of paying becoming available, such as the mobile application Swish, for example. In Sweden, 6.5 million of 10 million inhabitants are connected to Swish. As the rest of society becomes digitalised, demand is increasing for digital payments and, above all, for rapid payments that can be made in real time. For the Riksbank, this means adjusting or complementing the RIX system so that it is able to manage instant payments in a secure and efficient manner. It is important to ensure that all participants involved in payments act under equal and equitable rules. At the moment, we are busy analysing whether we can take advantage of our European cooperation by joining the European Central Bank's system for instant payments.⁴ We are aware, however, that this would mean that part of our infrastructure for payments would thereby end up outside Sweden's borders and are thus mulling over whether some kind of domestic back-up would be needed and over how the e-krona could be paired with this as a complementary means of payment. This is particularly important as we expect instant payments to become increasingly important in the future.

The trend towards a cashless society has also continued – a trend that risks leaving Sweden without functioning cash in the near future. My speech two years ago was part of a proactive strategy to create different alternative courses of action from this trend. As the e-krona is something new, it will take time to analyse and perhaps develop such an alternative. This work must therefore be initiated in

⁴ The Riksbank sent out a consultation over joining TIPS on 5 June 2018. See Consultation on instant payments and the Riksbank's role in the payment infrastructure. www.riksbank.se.

good time, before cash usage has declined to such a point that cash is no longer a generally accepted means of payment in Sweden.

The Riksbank's e-krona project: results and the way forward

In my speech, I introduced the discussion of the e-krona by asking whether the Riksbank should adapt the money we issue to the modern, digital economy. I emphasised then that the e-krona should be seen as a complement to cash, which was in the process of becoming marginalised. I also pointed out the need of working in parallel in three areas: investigating the technical possibilities, analysing the consequences for, among other things, monetary policy, and reviewing the legal issues to which a possible e-krona would give rise.

After two years, I can say that we have come quite far within all of these areas, but also that we still have some way to go until we reach our goal. We have discovered that it would be possible to develop an e-krona using existing technology, but we will have to start constructing and testing a finished product to learn more and to establish different alternatives for the Riksbank in the future. We have also discovered that it is possible to design an e-krona that would not have excessive consequences for monetary policy or financial stability.⁵ On the legal side, we interpret this as meaning we have a mandate to issue a simpler, value-based variant of the e-krona that we will develop as a pilot version. We also intend to approach the Riksdag to propose legal amendments that will clarify our mandate and make it possible to issue an account-based e-krona.

We need to prepare ourselves for a cashless future

As regards the rapid rate at which cash usage is declining, the Riksbank Committee has submitted an interim report with a few proposed measures to brake this development.⁶ The decline in cash usage that we are now witnessing is going too fast for certain vulnerable groups who are unable to use digital technology or who do not even have access to it. The Riksbank therefore welcomes the proposals that the Riksbank Committee has submitted. The Riksbank has been requesting protection for cash usage since 2016, when the Payment Accounts Directive was introduced. I therefore consider it a welcome step that there is a broad political will to speak with a clear voice in this matter and that the legislator intends to increase its influence over this structural transformation so that it is not steered by the private sector alone. The Riksbank Inquiry's proposal, supported by representatives of all parties in the Riksdag, would ensure access to cash. However, as the acceptance of cash in commerce is not legally required, the Inquiry's proposal will not ensure that cash will remain usable in society.

Consequently, even if the measures proposed may help slow down this development, I do not think that it will come completely to a halt. Streamlining within the banking industry, for example via cashless bank branches, may certainly have re-

⁵ See Armelius, H., Boel, P., Claussen, C. A. and Nessén, M. (2018) "The e-krona and the macro economy" Sveriges Riksbank Economic Review no. 3, and Juks, R. (2018) "When a central bank digital currency meets private money: effects of an e-krona on banks". Sveriges Riksbank Economic Review, No. 3. Sveriges Riksbank.

⁶ See "Secure access to cash". Interim report from the Riksbank Committee. SOU 2018:42.

stricted the general public's ability to use cash, but other factors such as technological progress, changed consumption patterns and the lack of legal requirements forcing traders to accept cash are probably more important.

For example, in its report "Grundläggande betaltjänster i en digitaliserad framtid (Essential payment services in a digitalised future)"⁷, the Swedish Post and Telecom Authority (PTS) writes that "even if the cash infrastructure is maintained and cash is available, cash will not necessarily be fully usable in the future". The most recent results of the Riksbank's survey of payment patterns in Sweden also show that the proportion paying in cash is continuing to decrease, while Swish payments are increasing. So, even if the proposals of the Riksbank Inquiry were to be realised, there would be nothing to prevent shops and other establishments from refusing to accept cash. Neither is there any way to induce consumers to use cash. This development seems to be steered at least as much by demand as by supply.⁸

In other words, the tendencies that led us to start our analysis of the e-krona are continuing. And neither is the Riksbank alone in analysing this issue. Many other central banks are expending resources in investigating digital central bank money and a number have already conducted experiments or developed pilot versions.⁹ The Riksbank has met with many other central banks, politicians with responsibility in Sweden and representatives of the private sector. Reactions have varied from great enthusiasm to great scepticism. The banking sector in particular often argues that an e-krona is not needed and that launching one would be an intrusion into the private sector. But the Riksbank's presence on the market and competition with the private sector's payment services are actually nothing new.

When private banknotes were first issued in the 1830s, the Riksbank had already been active in the issuance of banknotes for over 100 years.¹⁰ The state started Postgirot in the mid-1920s to secure a national payment system, over 30 years before the private banks got started with Bankgirot. History shows that innovative capacity in the private sector functions best when it can use state infrastructure and clear regulations that develop apace with the possibilities offered by technology as a launching pad.¹¹ And, if the payment market is to be privatised completely, an active decision should be required in this case from the legislator regarding choosing such a new direction. It cannot be allowed to just happen.

Confidence in money is a socio-economic asset

Since confidence in money among the general public is a public good, there is a social benefit in monitoring the development of the payment market. The confidence that has been built up is a kind of social capital and there are many examples from other countries of how badly it can go when confidence in money is lost.

⁷ PTS-ER-2017:20.

⁸ See Erlandsson, F. and Guibourg, G. (2018), "Times are changing and so are payment patterns", Economic Commentary No. 6, Sveriges Riksbank.

⁹ See the Riksbank's e-krona project report 2 for more information.

¹⁰ See Söderberg, G. (2018), "Why did the Riksbank receive a banknote monopoly?" Sveriges Riksbank Economic Review, No. 3.

¹¹ This relationship is also pointed out in Carney, M. (2018) "New economy, new finance, new bank". Speech published 21 June. Bank of England.

Theoretically, it is often assumed that the possibility of converting private bank money into secure central bank money is a basic precondition for maintaining confidence in privately issued money.¹² Above all in times of financial unease, problems can arise when confidence in the private banks' money can rapidly collapse. The question is what happens in a financial crisis if confidence in the entire banking sector sinks. Would there be problems if, in the future, it became impossible to switch from commercial bank money to central bank money?

Issuing an e-krona is sometimes described as something revolutionary and, in principle, I share this opinion. However, how revolutionary it will be depends, to a great extent, on how the e-krona is designed. If it were to be approximately the same as cash but stored in a card or another physical unit, the consequences for the payment market, monetary policy and the financial system would generally be minor. The more popular the e-krona were to become, the greater the consequences would be, of course: greater competition with depositing in banks and greater risks for the Riksbank's balance sheet, for example. Careful analysis and calibration is therefore required here. It is also therefore wise to proceed with caution.

At the same time, we must stand prepared with a state solution if cash becomes completely marginalised, which could happen quickly.¹³ Judicious government intervention in the payment market cannot be consigned to history. In my opinion, the presence of the state will also be needed in the future to allow us to manage the different problems that could arise if state-issued means of payment (banknotes and coins) were to vanish entirely from the payment market.

The alternative to the e-krona, increased regulation, could be difficult and expensive

One conceivable alternative to the introduction of an e-krona would be for central government to intervene with increased regulation of the payment market to ensure safeguard objectives that private agents may not see as important but which are important for society. These include objectives such as general accessibility, resilience and innovative capacity. However, achieving both efficiency and security via regulation on a market like the payment market may be complicated. Allow me to explain why. In general, we usually consider competition to be good for achieving cost-effectiveness and innovation on a market. However, this does not apply to all types of market. In economics, we talk about 'natural monopolies'. These arise on markets where major investments in infrastructure are needed and where the cost of serving an additional customer is low. A common example of such a market is the water system, where large investments are needed to lay water pipes and extend sewage systems. It would not be efficient to have two different companies digging up the streets and competing to supply water. In addition, once a system is in place, it is difficult for a competitor to enter the market and thus a monopoly arises.

¹² See, for example, Tobin, J. (1985). "Financial innovation and deregulation in perspective". Keynote paper presented at Bank of Japan and BIS, CPSS (2003) "The role of central bank money in payment systems".

¹³ Arvidsson, N., Hedman, J. and Segendorf, B. (2018) "När slutar svenska handlare acceptera kontanter?" (When will Swedish retailers stop accepting cash?) Swedish Retail and Wholesale Council research report, 2018:1.

On the payment market, we have what is basically a similar situation, requiring major investments in IT infrastructure, which easily leads to a monopoly situation with one dominant company. So far, however, cash has always been available as an alternative that restricts the monopoly's chances of exploiting its power.¹⁴

Often it is central government that is responsible for production on markets with natural monopolies, but a private company can also have a monopoly at the same time as the state intervenes and regulates prices.¹⁵ If the company were allowed to set the price itself, excess profits would arise, in addition to which quantities of the product would be too small and/or the quality too poor, as in all monopoly situations.

On the payment market, there are also economic advantages in the participants using the same infrastructure. For the consumer, it is convenient if the same solution works everywhere the consumer makes a payment. We would prefer not to need one card for each shop, another for parking, using public transport and so on. This means that so-called network effects arise, as the more people who join the same system, the better it is for everybody in the system. However, this also means that it is difficult to set up normal competition on the market.

In addition to problems in achieving the right pricing and quantity, there are also other aspects that must be considered in the event that the state-issued means of payment disappears from the payment market in the future. Social welfare maximisation is a broader goal than private actors' interest in maximising their profits. For example, it is important for central government to achieve a good balance between socio-economic risks and costs. Central government also takes account of factors connected with ensuring accessibility for all groups in society, resilience to shocks, preparedness and equal conditions regardless of where in the country users may live, for example. What I want to say is that it would probably require increased state governance and quite extensive resources to ensure that the private market delivered on all these points. What would be required is something that needs to be analysed further in parallel with the analysis of the e-krona.

The alternative to regulation is for the Riksbank to continue to supply a means of payment that sets the standard for the country's means of payment and that also exposes the private sector to a certain amount of competitive pressure, just as we have done for 350 years.

Several measures are needed for resilience on the payment market

The Riksbank also carries out other work than the analysis of the e-krona to safeguard the resilience of the payment market. For example, we are working within the framework of the Swedish Retail Payments Council to survey the possibilities of making card payments and withdrawing cash in an offline situation, which is to

¹⁴ See Mancini Griffoli, T., Martinez Peria, M. S., Agur, I., Ari, A., Kiff, J., Popescu, A., and Rochon, C. (2018) "Casting Light on Central Bank Digital Currency". IMF Staff Discussion Note. SDN/18/08.

¹⁵ It may, however, be difficult to know what the right price is in such a market. Theoretically, an efficient market is considered to be one in which no company makes excess profits. The price of one product should approximately reflect the cost of producing one more product, known as the marginal cost. But if the price were to reflect the marginal cost, the company would make a loss in these special markets. In normal industries, the marginal cost normally rises when production encounters bottlenecks. For natural monopolies, fixed costs dominate instead, so that a price corresponding to the marginal cost will be too low.

say when disruptions have made it impossible to check the balance of the account or credit to which a card is linked.¹⁶ At present, certain cards do not function at all in an offline situation, while others do.

If we were to be impacted by a complete breakdown of both the Internet and telecommunications, it would not be possible to withdraw cash. Consequently, we cannot, at present, rely upon cash being available in a crisis situation. It is possible that the e-krona could play a role for Sweden's crisis preparedness. But in any case, the Riksbank needs to clarify its role as provider of money in appropriate forms in a crisis situation. In the same way as the Riksbank is 'lender of last resort' for the banking system, we have a responsibility to enable payments in a crisis, to be a 'money provider of last resort'.

Personal reflections

Two years of intensive work on the e-krona have now passed and I will be leaving the chairmanship of the steering group as the project enters the next phase. It has been two incredibly educational years, but I think it is still too early for me to decide whether or not I shall support an e-krona for the general public in the future. As has hopefully been clear from my earlier reasoning, this depends on whether it emerges that there are better alternatives to guarantee both the security and efficiency of the payment market. And to answer this, the analysis needs to continue. At the Riksbank, we will work in two parallel tracks: partly, we will develop the pilot version of a simpler form of the e-krona and learn the lessons that may be needed if it turns out that an e-krona is to be issued. And partly we will deepen our analysis of the consequences for Sweden if the payment market should become entirely privatised. In collaboration with other parties in society, we need to discuss which characteristics should be prioritised for an e-krona and make cost-benefit analyses of various alternative solutions to the problems we see that the e-krona could solve. For example, if we conclude that the e-krona is needed for contingency purposes, this may lead to characteristics such as offline functions being prioritised, while other characteristics may be prioritised if other aspects turn out to be more important.

As the payment market is an infrastructure that is fundamental for Sweden's economy to function, questions of this type must ultimately be determined by our legislators in the Riksdag. In our talks with agencies that make state disbursements, we have noticed that these could be rationalised with the help of an e-krona. It is possible that the best route would be to build the e-krona together with others. The Riksbank also intends to review the legislative amendments that may need to be implemented to provide us with a clear mandate in the issue.

If the e-krona is to be realised, I believe that the best solution would be for the Riksbank to provide the e-krona via our balance sheet but that the private sector then be involved in its distribution. Private companies are better at handling customer contacts and finding the tailor-made solutions that the general public demands.

¹⁶ See Report from the Swedish Retail Payments Council (2018) "A scenario analysis of payments at points of sale and withdrawals from ATMs in the event of disruptions to the card systems" Sveriges Riksbank.

Equipping ourselves for the future

My speech in 2016 had the heading “Should the Riksbank issue e-krona?” After two years of analysis, we now know that the technological possibility exists and we know a bit more about how the design of the e-krona can affect the consequences for financial stability and monetary policy. We are also working to ensure that the means of payment issued by the Riksbank will have legal support, even in a digital future. But it is too early to be able to answer fully the question of whether the Riksbank *should* issue a broader variant of the e-krona to the general public. Ultimately, this is a political decision, for which the Riksbank, as an expert authority, needs to be prepared to provide advice and suggest solutions.

By starting the analysis and creating alternative courses of action, we have made sure we stand better equipped should cash be marginalised further in the future. As Benjamin Franklin famously said: “by failing to prepare, you are preparing to fail”.