

# Speech

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## Electronic money from a central bank perspective

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Thank you for inviting me here today. I am going to talk about how we at the Riksbank view the phenomenon of electronic money, an area that is closely related to the overall subject of this conference.

What we are seeing today, and for some time now, is a rapid electronification of payment traffic in a broad sense – this takes many forms, of which e-money is one expression, and perhaps the most spectacular.

There are a number of ways to define e-money. The definition that I am going to use here is that formulated by the Swedish commission on e-money which has recently published its first report, namely electronic registrations of value that can be used as a general instrument for payment, without being linked to an individualised account.

This covers both "money" on a chip card and on a hard disc, so-called network money. When payment is made using a credit card number via the Internet, this is not, however, an example of e-money but a method of making traditional credit card payments, although in a new way. Neither should telephone cards and the like be regarded as e-money – they should rather be viewed as electronic tokens. The concrete example of electronic money that we have in Sweden today is the so-called Cash card, which is being introduced at a number of places throughout the country.

On the part of the Riksbank, we – perhaps opposite to what many people believe – consider it to be basically a good development: organised in the right way, it will contribute to increased speed, efficiency and security in payment traffic. However, there is another side to the coin. Payments systems of different kinds

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involve building up and developing the infrastructure. Infrastructures are often sensitive to disturbances of various kinds and the effects of these disturbances are often spread in a way that is difficult to foresee and difficult to deal with. Furthermore, infrastructures are characterised by certain typical economic characteristics: these typically involve large initial investments and high fixed costs, and low or very low marginal costs. All this poses great demands on risk handling, legal arrangements, conditions for competition and more. These are questions which cannot simply be resolved by the market itself, which is why almost all central banks, including the Riksbank, have a general mandate as it is called in the Riksbank Act to strive for a "secure and effective system of payments".

The situation today on the e-money front can, put briefly, be described as there being a lot happening at different places in the world, although breakthrough on a broad front is still in the future.

It may still be some time before this happens; what is involved is above all reaching the so-called critical mass, when a sufficient number of people have accepted and begun to use this new payment technology. Once that point has been passed, things may then move very quickly. How quickly this critical threshold will be reached depends on a lot of things; product design, the development of the infrastructure, pricing philosophy, and the extent to which producers and users are able to work together. All this is interrelated to a large extent, and we can note that the Swedish experiences – at any rate as they are reflected in the mass media – have unfortunately been rather mixed.

In any case; e-money is starting to leave the pilot stage and come into the regular service output. Parallel with this, intensive efforts are being made by government agencies in many places, including Sweden, to consider how this should be regulated, and how legislation is to be adapted.

This issue has been part of the picture in the international central bank world for quite a long time, although, to begin with, most people regarded it as some kind of science fiction without any major practical relevance. However, a few years ago it started to take off in earnest both within the G10 co-operation and within EU circles, once it was realised that things were really starting to happen.

Since then, systematic reviews have taken place of the issues that are important for central banks. Quite a lot has been clarified and a common view is beginning to emerge, even though there are still clear differences in attitude on certain questions, perhaps especially concerning the right of issue.

## **What kind of money is it?**

How should this phenomenon be viewed? What kind of animal are we talking about? Is it cash or money in an account, i.e. bank deposits, or neither?

I think we can say, to put it somewhat carelessly, that it is somewhere in between: some solutions are closer to cash, others more like money in an account. The similarity with cash lies in the transactions being able, in principle, to be anonymous, and without any checks being made of any account, i.e. "off line". In systems, where values can circulate from user to user without returning to the issuer after each round, the similarity with cash is even greater – this does not apply to the Swedish cash system, however.

It differs from cash, however, in the same way as money in a bank-account, i.e. the value is not guaranteed by the state and the Riksbank, and it can be lost if the issuer becomes bankrupt. Moreover, this money is not so-called legal tender like

notes and coins, i.e. a means of payment, which everybody is legally obliged to accept.

In general, it can be said that the degree of anonymity and transferability in practice determines whether it most resembles cash or money in an account.

It can be said that e-money is something new in the sense that it is definitely something more than an electronification of an existing service or product. At the same time, it can be said that it is "old" in the sense that it basically involves traditional functions and routines. In other words, it is a new way of combining

## **The central banks and e-money**

As stated above, work started in earnest about two to three years ago, first within the framework of the G10 co-operation, where a quick, extensive problem inventory was carried out in spring of 1996. The summary of the results was also published and focused on a number of core issues:

- the effects on seigniorage, i.e. the effects on central bank revenue
- the effects on monetary policy
- the effects on financial stability and on supervisory issues
- legal issues
- matters relating to technical security

With respect to the first point, note issue is by long tradition a core task for all central banks.

It provides us with interest income. i.e. what is sometimes called seigniorage. A conceivable instinctive reaction from central banks would, of course, be to safeguard this unique, monopolised source of income and work against the introduction of competing means of payment. The central banks that may take this view – and we are not among their number – can, however, find consolation in the analyses that have been carried out, which show that it is not especially probable that there will be any major effect on seigniorage, at any rate not during the foreseeable future, and that, if more tangible effects should arise, the financing problems, which might then arise for central banks, can be dealt with.

Moreover, it can be added that the problem is not at all new – notes and coins have encountered competition for a long time from other means of payment, without in any way threatening our ability to carry out our tasks. An indication of this is the fact that the value of all notes in circulation in relation to GDP has continually fallen throughout the entire post-war period.

Neither with respect to monetary policy can it be argued that the problems would be especially difficult: the ability of the central banks to carry out monetary policy does not rest on note issue. Certain practical complications would arise, of course, including those of a statistical nature. Some changes in monetary policy techniques might also be necessitated. However, there is nothing earthshaking about this; we have coped with this sorts of change before.

## **Is regulation necessary?**

For central banks, the focus is on the third issue I mentioned, the issues relating to stability, which e-money places in focus. In a broader sense, this can include points four and five, i.e. the legal and the technical arrangements. I intend to dwell on

this for a while therefore. In general, it can be said that the processing of payments and handling of money have long been considered to involve major public concerns regarding confidence and stability. The requirements for financial, administrative, technical and legal expertise have been pitched at a high level. In order to ensure that a sufficient standard is maintained, the major part of the production of financial services is therefore subject to regulation and supervision. The issue is whether the same should apply to e-money.

Firstly, it should be said that these issues are of interest only to the extent that a system is developed where money or units of value can be used for several purposes and at several recipients, i.e. an open system. It is then that an infrastructure is established, a system of processing, or network that many can use and benefit from, but which can also give rise to major problems that are difficult to overview if something goes wrong – for example, if the issuer becomes bankrupt or if the technical security is not up to standard.

There are risks both for the individual users (the consumers) and for the stability of the financial system. These two aspects often interact. The classic example of a financial crisis is a bankrupt bank, where both depositors/consumers lose money and the ability to function of the total payments system is imperilled due to the chain reactions that arise for other financial institutions. It is typical that these systemic risks are seldom clarified and, in that way, rendered manageable for the individual actors.

However, it is hardly likely that disturbances in a system of e-money or, for that matter, in a traditional credit card or a giro system, would lead to a total breakdown in the entire payment system. Nevertheless, there is a "systemic problem" of another kind. What can happen is that a poorly designed and incompetent or not seriously organized system can lead to widescale problems of credibility that spill over to similar systems and technologies, which would in turn lead to a gradual eroding of the ability to function of the payments system. A consequence can be a return to a cash economy, which would, from an economic point of view, be a very expensive "flight to quality". In this perspective, the issue of notes and coins by the central bank can be seen as an ultimate safety net for an even larger and more destructive retrograde step: a return to a barter economy. In order for this safety net to function, it is in turn a requirement that money can retain its value – price stability is therefore very important also in this perspective.

There is, to put it briefly, a public interest in the systems being technically secure and financially and legally sound. What is needed to achieve this?

The more detailed requirements that should be made on the institutional arrangements, primarily who should be the issuer have in recent years been the object of a lively, international discussion, both within the EU – the EU Commission and the EMI – and within the G10. With respect to European co-operation, EMI, the European Monetary Institute which the EU central banks belong to – adopted the standpoint in 1994 that the purchasing power of prepaid cards is to be regarded as a deposit of funds and that the right of issue should therefore be restricted to credit institutions, i.e. in practice, the banks, which was subsequently legislated on in the majority of continental European countries. Within the EMI, work has taken place in recent years in reviewing and following-up this recommendation. Within the framework of the EU Commission, discussions are presently taking place on a draft directive that includes a general regulation of the right of issue, etc. It is anticipated that a decision will be taken on this later this year.

The basic attitude to regulation still varies from country to country and among central banks. Somewhat schematically, it could be said that the central banks on the continent have a more restrictive attitude than the Nordic central banks and the Bank of England. U.S.A. and Canada represent the opposite pole, where no regulation whatsoever is desired. In the recently published Swedish commission report, it is assumed that an issuer is to be subject to the supervision of the Financial Supervisory Authority, but need not be a bank.

Another important issue for confidence and stability concerns the technical security. According to a number of experts, chip technology is today very secure and difficult to tamper with. However, unlike "ordinary" counterfeiting, if the encrypting can be broken, it is possible to produce electronic money that is entirely identical with the "genuine" article, at the same time as the source of the counterfeiting is difficult to trace and prove. In other words, the technical integrity must be very high to avoid the risk of "collapses of confidence" in the systems. To that end, it seems to be necessary that the systems can be scrutinised to make it possible to monitor transactions that have taken place, making it possible to detect the entry of counterfeit values in the system fairly rapidly. However, the fact remains: the financial incentives for breaching the system will be considerable, and this will stimulate criminal creativity. These risks can never be neglected, even with advanced technical safeguards.

Finally, there is reason to point out the international dimension with respect to the demands made on financial strength, legal arrangements and technical security. For a number of reasons, it is important that we do not build up systems based on norms that differ from those of other countries. The work of analysis and norm setting now in process with respect to electronic money is accordingly to a very great extent work carried out through international co-operation, and, as previously mentioned, the Riksbank has been active in this arena. There are special reasons to draw attention to the growth of network-based systems, which, in their very nature, are cross-border and global; in this perspective, arrangements

## **The Riksbank and E-money**

What does the Riksbank intend to do? As I have indicated rather clearly, we do not intend to hinder the development of electronic money – on the contrary, technical and structural renewal is fundamentally positive, in this as in other areas. There are risks and problems that have to be dealt with, but there is a great potential for quickness, efficiency and security and it is important that this is made use of. *On the other hand*, it is for this very reason important to achieve a stable basis for development, otherwise setbacks can be difficult and expensive both for enterprises and society as a whole, and for the technology as such. It is in this perspective that we have to view the discussion around the type and extent of regulation and monitoring that we need.

We will accordingly monitor developments attentively. However, we do not strive to have an operational role in this field. Our view is that the market should play the principal role, with respect to other payment services, and, for that matter, financial services as a whole. This does not rule out that initiatives may be required to make the market function in a rational way. Bearing in mind the special features relating to production economy that exist in such activity, which I took up initially, there are risks for undesirable effects with respect to pricing and

competition. Other agencies beside the Riksbank also have a role to play here, for instance, the Swedish Competition Authority.

Issuing notes and coins constitutes, as I have mentioned, a traditional core task for all central banks. At the same time, it is also a source of income for central banks and indirectly, the state – the so-called seigniorage. As I have said, we are not especially concerned about this aspect. To begin with, it is the case that notes and coins have been exposed to competition from cheques, giro payments and credit cards for a long time, which has contributed to the value of notes in circulation as a proportion of GDP being largely halved during the post-war period. The introduction of electronic money will not be quite so dramatic in this perspective. Moreover, we do not think that we will have a "cash-less" society, not even in the long-term – historically, it has been the case that the new means of payment have not eliminated but added to existing techniques and systems. There will always be place for notes and coins even if to a lesser extent than today. Last but not least, it is in fact our task in society to strive for stability and efficiency in the payments system, not to maximise our own interest income.

We regard it as important, therefore, to contribute to making the payments system more efficient, and, if we see problems, it is rather that development has proceeded too slowly rather than too quickly; not least in the perspective of international competitiveness, it is important that Swedish banks and other actors are in the van with respect to technical development and the ability to introduce new technology in production – this applies not least in the field of payments. If we are able to assume a catalysing and driving role, we will gladly do so, and we are at present planning a discussion with the parties on the "payments market" to identify problems and developmental obstacles that may exist and what in this case can be done about them. This may concern issues of the need for regulation, on pricing and availability, on co-operation on the part of producers and between producers and users, on the role of the Riksbank, the role of other authorities, and so on. We believe that there is a need for such a forum in order to clarify what the situation is and how we can proceed.

## **A part of a larger process**

Until now, I have dealt with electronic money as, so to speak, an individual phenomenon. Among other things, bearing in mind the theme of this conference, electronic trade, I intend to conclude by airing some general reflections about the wider context which electronic money forms part of. The growth of e-money is a phenomenon that coincides with to a great extent – and is partly contingent on – the coming into being of trading on the Internet and the need of payment techniques adapted to that. This applies *per se* not just to electronic money in the sense I am speaking of today, but also the new forms for account-based payments processing – secure systems for credit-card based transactions via the Internet are now being developed.

The rapid development of the possibilities of ordering electronically and paying electronically reinforce one another. The rapid growth of the number of people with access to networks at the same time creates the necessary basis for acceptance and profitability in this activity. To this a further factor can be added: in less than a year a number of large European countries will have introduced a new European currency – the euro. This will mean, among a lot of other things, that price comparisons between countries will become much simpler – even for

those of us that, at least to begin with, remain outside the EMU; if nothing else, we will have ten less currencies to keep in order. Another aspect of the introduction of the euro which is of interest in this context is that euros will not exist in the form of notes and coins for a period of about three years, which will provide interesting possibilities for electronic handling of euro payments, both in the form of electronic euros and in the form of account-based payments.

Without getting lost in too far-reaching speculations about the rapid and exciting development that we are on the threshold of, I think nevertheless that we can dare to make the assessment that the combined effect of all this will lead to a rapid growth of electronic trade and electronic payments, at the same time as a really internationalised retail trade market will begin to take shape with all that that means in the form of increased competition and pressure on prices to the benefit of consumers.

The Riksbank has basically two tasks, which we have been given by the Riksdag. One is monetary policy, which is to be carried out with price stability as the overriding goal. The ultimate purpose of this is to create the preconditions for a long-term, high and stable economic growth. The other is to strive for a "reliable and efficient payments system". Development with regard to the electronification of the payments system constitutes a very tangible example of the importance that a well-functioning system of payments has for general economic development. In other words, the Riksbank's main tasks in the final analysis concern one and the same thing: promoting a good economic development.

**In conclusion,** I would like to say the following:

- The ongoing electronification of the payments system – in which electronic money forms a part – means an important potential for making payments processing more efficient, ultimately, probably also many related activities. There is a considerable economic interest in making use of this potential – and the Riksbank wishes for its part to take part in this in a suitable way.
- If this potential is to be fully made use of, it is necessary, however, that the systems are - and are viewed by the users as – technically secure and legally and financially sound. In order to make sure of this, some regulation and supervision of activities is required, and this may also require initiatives to promote a well-functioning market.
- Another important prerequisite to be able to make full use of these possibilities is that there is an international harmonisation of standards, etc., but also with respect to regulation. Applying our own Swedish models won't work, nor will it suffice with EU solutions. What is required and what we must work for are agreements at the global level.