

Lars Nyberg: IT in the financial sector

Speech by Mr Lars Nyberg, Deputy Governor of Sveriges Riksbank, at UNISYS, Executive Business Conference, 16 September 2002.

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To begin with, I would like to thank you for the opportunity to come here today and discuss how information technology has affected the financial sector. This is a very large subject, with many possible approaches and my aim is merely to illustrate a few of these. I have also been given the chance of selecting which of them I wish to discuss, which I especially appreciate.

IT and the stock market

Probably the first thing one thinks of when one hears the words IT and the financial sector is the “bubble” on the stock market, the increasingly unrealistic assessment of the profits that would be generated by the new technology and the “new economy” at the end of the 1990s and the painful sobering up process when the stock market took a downturn in winter 2000. Although we all feel some unease with regard to the stock market fall when we read our old age pension forecasts, this is perhaps in the long term the least interesting aspect of IT in the financial sector. I therefore intend to limit myself to two reflections regarding the “bubble issue”.

The first is that it has happened before and will probably happen again. Let me remind you of the first “IT bubble”, at the beginning of the previous century when the new technology was wireless telegraphy. No less than 150 companies with some connection to this information technology were introduced onto the New York stock exchange in 1901 and early 1902. In 1907 there was only one of these companies left that was making a profit and paying dividends, and even this company’s stock market value had halved since its introduction. As far as I know, no one then spoke of a “new economy” that would follow on from the technical developments, but this may be due to insufficient research on my part. Otherwise, the similarities are both striking and depressing. As we all know, if we cannot learn from history, we are doomed to repeat it.

My other point is that the burst bubble has certainly made one of the stock market’s main tasks more difficult, namely conveying risk capital between savers and companies - it is no easy task at present to acquire risk capital through new share issues. However, this does not mean that the financial system as a whole is under threat. On the stock market, the banks act as intermediaries and are not directly affected by the downturn, as they only to a limited extent own or mortgage stock market shares. Of course, the income from portfolio management and share trading is declining, and many operators outside of the banks may experience problems, but this does not comprise a threat to the system. It is a completely different situation when a bubble on the property market bursts, as was the case in Sweden in the early 1990s. Then the value of the banks’ collateral declines and this can lead to an acute crisis, if the price fall is sufficiently severe. We have seen the effects of this in practice, as I hope we all remember.

Yet another issue is what effect the downturn on the stock market may have had on the real economy and thereby on economic activity. Of course, a deep recession could comprise a threat to the stability of the banking system, but this seems an unlikely prospect at present and I do not intend to take up that issue today.

Is a financial sector a good thing to have?

It is easy to express irritation in sweeping statements about the financial sector in general and the banks in particular; especially when the value of mutual funds falls or we feel that the banks want us to carry out all of our own banking services over the Internet without the aid of knowledgeable bankers in an office. I shall return to the latter issue later, but let me first remind you that the financial system is actually an essential part of the economic infrastructure in every modern society. It is possible to manage without a steel industry or shipyards, but for society to function one must have an infrastructure, a transport sector, an energy sector and also a financial sector. The most obvious task for the financial sector is to ensure that the payment system functions. We must all be able to pay our bills in a secure manner, preferably also in a simple and speedy manner, i.e. we must know that the

party to which we are sending money actually receives it. There are many countries in the world where this does not function and this is as much of an obstacle to development as when roads and railways do not function.

The banks are the institutions that handle the major part of the payments. It is because they are so important to the financial sector that they are subject to such comprehensive legislation and that they are the companies most closely monitored by Finansinspektionen (the Swedish Financial Supervisory Authority). We may have views on how the banks should set charges, handle their customers and so on, but without them our lives would certainly be more complicated.

In this context it is worth noting how much IT in a broad sense has helped the banks to develop and simply means of payment. It is not so long ago that one received a weekly wage in the form of a brown envelope containing banknotes, handed out on a Friday afternoon. Nowadays our wages are paid directly into our bank accounts and we receive notice of this in a bank statement. Nor do we have to go very far to pay our bills; we can sit at our desks and fill out giro forms or - even easier - pay through the computer. The time we used to spend queuing at the bank can now be used in a more fun or more productive manner, or hopefully both. I am not one of those who enjoyed standing in a queue at the post office on a Saturday morning to pay my bills.

The savings in resources attained through improvements in the efficiency of the payment system since the days of the brown envelopes have actually been estimated at around five per cent of GDP. This is a productivity gain from which we all benefit. In many emerging economies the potential productivity gains from a functioning payment system would of course be even greater.

Sweden - an IT country

Sweden and the other Nordic countries are currently, alongside the USA, world leaders in the use of IT. If one looks at the percentage of households with access to the Internet, in 2000 Sweden with an estimated 61 per cent held second place in the EU. Only the Netherlands had a higher percentage. If we instead look at expenditure on IT in relation to GDP, Sweden came top among the EU countries in 2001. Sweden is an IT country.

Why have developments moved so quickly in Sweden? There are many answers to this question, but allow me to mention a couple I believe to be important. One concerns the deregulation of the telecommunications market. The Swedish Telecommunications Administration's monopoly began to break up as early as the 1980s, but the real turning point came in 1993, when the Administration was privatised as Telia. The market was opened up and exposed to competition; new challengers could gradually take over more than a quarter of the total market and a significantly greater part of the mobile telephony and Internet telephony segment. At the same time, technical developments were very rapid. Fiberoptics enabled lower costs for long distance calls and increased the speed of transfer of large amounts of data, which benefited the development of the Internet. Together, increased competition and rapid technological developments led to a fall in prices with regard to both telephony and Internet connection. The lower prices for users have probably contributed to the widespread use of the Internet in Sweden.

The new technology was perhaps available in all essentials to all developed countries, but the views on deregulation varied. Only eight of the 25 member countries, today 30, of the OECD allowed competition in the telecommunications market, while the remaining countries retained a monopoly. There is also a clear connection between use of the Internet and competition. Competition is allowed in the telecommunications markets of six of the nine countries with the highest Internet usage. These countries have also experienced an increase in access to the Internet six times as fast as countries that have a monopoly market.

Another reason for the rapid development in Internet usage in Sweden could be connected to the structure of the Swedish banking system. The banking sector in Sweden is dominated by a small number of large operators, all listed on the stock market and with a strong incentive to rationalise their operations. They have also had the resources to rapidly implement new technology. The same applies in the Netherlands, which has a similar bank structure. The more Internet services a bank can offer its customers, and the better they are, the more customers will use the Internet bank and the cheaper the administration costs will be for the bank. If we compare this with the USA, which has a bank market consisting of a large number of small operators, developments there have not been anything like as rapid. Only a few US banks offer advanced Internet services. The range of services is also much smaller than in Sweden.

There is a lot to be gained by making payments via the Internet, both for the banks and for their customers. Sweden, like the other Nordic countries, has a giro-based payment system. Giro payments corresponded to more than 95 per cent of the total value of payments made in 2000 and to over 70 per cent of the number of transactions. Giro instruments are traditionally paper-based. However, the Internet enables the paper-based giro system to be speeded up by making it paperless. Preliminary figures indicate that approximately 130 million giro payments were made over the Internet during 2001. Between 1998 and 2000 the number of giro payments initiated over the Internet increased by a good 890 per cent. Today all Swedish banks offer Internet banks with rapidly growing range of services. Studies also indicate that Sweden is way ahead with regard to utilisation of Internet services. At the end of 2001 there were more than 3 million bank customers subscribed to Internet banks.

For the banks the electronic payments entail considerable opportunities for rationalisation, probably to a much greater extent than could be foreseen just a few years ago. Some time ago I met the manager of a banking office in Stockholm who told me that he now had the same number of employees as five years ago, but his turnover was almost 50 per cent higher. This was largely due to the fact that the companies (including small and medium-sized companies) that had earlier been serviced by the bank could now carry out many of their transactions themselves via the Internet bank, which simplified their work and facilitated cash management. The companies could, for instance, with one click (as we say nowadays) pay all wages through a paperless transfer from the company's account to the employees' accounts and at the same time do the bookkeeping and pay slips, all without the long paper strips that needed to be manually checked. Already today, the Internet banks contain much more than merely the opportunity to make payments and check one's account balance.

One function on the Internet that will probably lead to increased competition within the finance sector is the existence of companies that offer price comparisons. There are, for instance, several independent companies on the Internet today which enable a simple comparison of mortgage costs or provide assistance in finding the most beneficial insurance policies. Competition will increase with regard to share trading, mutual funds, insurance and mortgages, even from abroad. One reason for this is that the Internet will cause a reduction in entry barriers, i.e. that the costs connected with starting a business and achieving critical mass with regard to customers will not be as high as before. New companies today do not need to establish far-reaching office networks, which is proved by companies such as Skandiabanken and companies known as Internet stockbrokers.

Finally, it is perhaps worth pointing out that IT in the financial sector does not merely consist of the Internet. Many of the instruments that are currently traded in the markets, particularly derivative instruments such as options and swaps, are completely dependent on modern information technology to be priced and traded at all. As derivative instruments are mainly used to buy and sell financial risks in a cost-efficient manner, it is possible to say that IT comprises a base for modern financial risk management, as it is put into practice on dealers' tables around the world. IT is also a necessary condition for the methods used to calculate financial risks in portfolios of securities or credits. The new Basel Committee rules on capital adequacy in banks, to take an example, are entirely dependent on such calculations.

Network effects in the payment system

The banking sector in Sweden is, as we know, strongly concentrated. This can raise questions in certain contexts as to how well competition functions. However, the concentration has also enabled, as I pointed out earlier, a more rapid exploitation of network effects and economies of scale connected with IT developments. Let me go into this in more depth, hopefully without becoming too abstract.

The development of payment services is governed, just as on other markets, by supply and demand. Supply is affected by costs and technology, while demand is affected by factors such as price, acceptance, comfort and accessibility.

Advantages of scale within the production of payment services arise as these services are often connected with high fixed costs and relatively low flexible costs. Building up a new computer system is expensive, but every transaction that passes through the system costs less. The economies of scale effects provide incentive for various types of co-operation and joint solutions, where producers join forces to utilise the economies of scale and spread costs over greater volumes. There are also advantages of scale on the demand side, the in the form of positive network effects. Positive network effects mean quite simply that a particular system becomes more usable the more people who use it.

The classical example is the telephone - who wants one if no one else has one? With regard to payments, positive network effects mean that the benefit for the consumer of using a particular payment system grows in relation to the size of the system. This means that their willingness to pay also increases.

Network effects also influence the introduction of new technology and here the consumers' expectations of the future scope of the system play a decisive role. Consumers can continue using a certain payment instrument or system, even if a superior alternative is available, because the old system/instrument is established and accepted and has a large market share. To continue with the telephone analogy, imagine you were the only one with a new GSM telephone, what use would it be to you if everyone else was still using NMT? The fact that GSM is considered to be a superior system is hardly any comfort. The producers therefore have greater opportunity to reach a critical mass when new systems are being introduced if they co-operate with one another. The ATM co-operation, where customers can withdraw money from an ATM regardless of whether they have an account with that particular bank, is a good example of this. It also shows that co-operation, even if it essentially benefits the customers, may come into conflict with the Competition Act. The Swedish banks' approach to launching e-money in the Cash system is another example, to which I will return shortly.

One example where the banks did not co-operate in the payment market is the service of digital invoicing systems. Up to spring 2002 the banks were offering two different, non-compatible systems, "e-giro" and "e-faktura". The existence of two digital invoicing systems was an obstacle with regard to getting both companies and households to utilise the new technology. Today the banks are investing in making the systems compatible with one another and the goal is that invoicers and invoicees will be able to reach one another regardless of which bank they use. If this succeeds, it should lead to increased acceptance from customers and enable critical mass to be achieved more easily.

Will cash disappear?

The use of cash in Sweden has halved since the mid-1950s, which is of course a result of the technological developments with card payments and later Internet payments offering good substitutes for payment with banknotes. However, the decline in the use of cash has slowed down in recent years and the M0 money supply is currently around SEK 90 billion, or 4 per cent of GDP. Cash is suitable for certain types of transaction, including, unfortunately, those that people don't want registered, and there is perhaps a lower limit for the demand for banknotes. In addition, the alternative cost for cash has been low in recent years, as a result of low inflation and low interest rates. However, the use of cash in Sweden is higher than in other Nordic countries.

The important alternatives to cash are charge cards (or credit cards) and Cash cards. Charge cards and credit cards currently account for more than one quarter of all transactions, which is a lower figure than for the other Nordic countries. With regard to purely electronic money, there is currently only a national issue in Sweden, and that is the Cash card. This project involves every bank issuing its own e-money that is downloaded into a chip in the respective bank's charge card or credit card. The Cash system has not yet attained sufficient critical mass to become accepted, which also applies to the corresponding systems in other countries. Perhaps the old cash and new charge cards offer too good substitutes.

In this context it may be interesting to note one aspect of how cash is distributed. The dominant quantity of withdrawals is through ATMs, but the ATM network in Sweden differs considerably from the networks in other countries. In Sweden we have only approximately 300 ATMs per million inhabitants; in Europe only Greece and Turkey have fewer. On the other hand, we have by far the largest number of transactions per ATM. We thus have fewer ATMs, but use them more.

This ATM structure is probably due primarily to the fact that the banks have placed their ATMs by bank offices and only there. In many other countries, cash dispensers are located in shopping centres and other places where people are active, regardless of the location of bank offices. This development is also beginning to appear in Sweden, at least in the larger cities. Abroad the ATMs often have independent owners, who charge a small sum (SEK 10-15) to customers wanting to use their ATMs. The customers are happy to pay this for the benefit of being able to withdraw cash on the spot rather than having to go several blocks to find a bank and stand in line there.

One may wonder why both the use and distribution of cash show different patterns in Sweden than in other countries. Evidently, we like cash, even if it is difficult to get hold of. So although developments

are clearly moving towards increased use of cards and paperless payment instruments, the cashless society still lies some way in the future.

IT reduces the risks

IT makes the payment system more efficient in a number of different ways, some of which I have already indicated, but technology can also contribute to reducing risks. Trade in shares, bonds and currencies with the accompanying derivative products entails, for instance, that large credit risks arise between the banks managing the payments, what are known as settlement risks. The necessity of reducing these risks has become increasingly clear.

Let me take foreign exchange trading as an example. The foreign exchange market has a huge daily turnover. On two occasions the credit risks in foreign exchange trading have become uncomfortably evident; when Bankhaus Herstatt was declared bankrupt in 1974 and when Barings Bank fell in 1997. These risks can easily be passed on through the global financial system, because of the different time zones, and can bring about serious disturbances. There has therefore been a global collaboration on a project called CLS, Continuous Linked Settlement, for some years now. All of the dominant foreign exchange banks in the world are taking part in this project, with the aim that a joint system will settle all of the members' foreign exchange transactions. This will enable payment in one currency to be made directly against payment in another, which will entail the credit risk that arose earlier disappearing.

IT in a broad sense has, of course, also been necessary for the security of the systems for large payments that central banks around the world develop or oversee, where the trend in recent years has been towards real time gross settlement. Our own RIX system is an RTGS system, as is the TARGET system used by the ECB. I would be happy to discuss this, but it would involve a deviation from my subject here.

Conclusion

In conclusion, I would like to make two reflections. Firstly, it is of course the case that IT, while increasing both the efficiency and security of the financial system in general and the payment system in particular, also increases risks of a purely operational nature. Operational risks were strongly in focus prior to the new millennium, particularly in the financial sector, and extensive preparations were made to guard against them. With hindsight, it is easy to talk about making a mountain out of a molehill, but the lack of problems was of course largely due to the fact that they had been foreseen and due precautions taken. One positive consequence of all the fuss around the new millennium was that openness regarding security and IT was increased and that attention was drawn to the need for routines to manage crises. At the same time, it can also be concluded that the IT systems proved to be fairly robust. The consequences of the terrorist attacks in the USA on 11 September last year could actually be handled to a large extent as there were security arrangements for most of the central financial systems. However, these events emphasised the importance of taking into account such potential threats as terrorism and other physical threats to the financial system when establishing security routines.

My second reflection is of a more human nature. After having given a whole speech on IT in the financial sector it is easy to give the impression that the banks and other institutions operating on the financial markets consist merely of technology and money. That is not the case. Fundamentally they are not about technology or money, but about people and the relations between people. All successful managers of financial companies, particularly bank managers, are aware of this. Technology is a useful aid, but a customer who does not receive a respectful, personal and competent reception at one bank will choose another next time. That is the way things will probably remain and we should be glad of it.

Thank you.