

# E-Banking in the Nordic Countries - Its Emergence and Perspectives

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## 1. Introduction

Nordic countries, and in particular Finland and Sweden, are world leaders in electronic banking with more than 30% of the customers today banking online either using the internet or a personal computer (PC) connected to the bank via a modem. According to Lafferty Business Research, the proportion of Internet customers in Nordic banks at the end of year 2000 was approximately twice as high as that of German banks and more than three times the European average. The rapid transition to online banking in the Nordic countries, especially in Finland and Sweden, has led to a major restructuring of the entire banking industry, with the number of branches and personnel falling rapidly, and with the banks having to redefine their business logic.

TABLE 1: Online banking penetration in the Nordic countries

In this chapter, we look at the structure of the Nordic banking sector in order to understand why online banking has become more popular in the Nordic countries than elsewhere. We focus on the cases of Finland and Sweden, as e-banking development there has been more rapid than in the other large Nordic countries (see table 1). The chapter is organized as follows. In the second section we describe the rapid transformation to online banking in Finland and then, in section 3, do the same for Sweden. After this, we look at the effects of e-banking on the profitability of the banks in these two Nordic countries. The fifth section documents the e-banking

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development at Nordea, a leading Nordic e-bank with operations in all the large Nordic countries, as a case example. The sixth section concludes the chapter.

## **2. E-Banking in Finland**

E-banking in Finland has long roots. The possibility for PC-banking was introduced already before the mid 1980's. At that time the banking industry was heavily regulated, with low regulated deposit rates forcing the banks to compete over deposits with quality. This meant that there were the branches of all the large banking groups (five at that time, now only three) around nearly every single market square in Finland, as the banks wanted to make depositing at their bank as easy and attractive as possible. For the same reason, banks developed other means for easy access to deposit services, such as telephone banking, PC-banking, as well as bank giro. With bank giro, the customers were able to make payments by sending a filled order for an account transfer to the bank by mail, instead of having to walk to the branch in person.

With cooperation being easy given the small number of leading banks (see table 2), and cooperation being supported by the regulators, the banks were able to develop a payment mechanism based on account transfers, which was cost efficient to operate. Both in Finland and in Sweden, the payment mechanism has historically relied largely on such account transfers as opposed to, say, cheques (see Figure 1). With customers wanting to monitor their accounts closely and account transfers being easy, also direct debit has been less popular in these countries than in most other European countries.

FIGURE 1: Use of cashless payment instruments

Table 2: Combined market share of the 5 largest banking groups

The popularity of account transfers with centralized clearing was one key factor behind the rapid development of online banking in Finland. Given that the clearing of the account transfers had for a long time been computerized, the last step in the development of online banking, in regards to making payments, was merely to change the identity of the person entering the data to the computer from a bank teller

to the customer himself: Before, the customer wrote the amount of the payment, the receiver's and his account numbers on a form, sent it by mail or took it to the bank in person, where the teller entered the information into the computer. Today, the customer can enter this information directly into the computer from home. When paying a bill, a reference code is usually included in order to help the receiver identify the source of payment.

In many other European countries, such as U.K. and France, the payment system has traditionally relied heavily on cheques (see Figure 1). Cheques lack the account information of the receiving party, contain no reference codes, and are, in addition, transferable. Although some centralized clearing systems exist, in most countries the cheques are cleared pair-wise by the banks, by physically sending the cheque back to the payer's bank, after the receiver sends the check to his bank. The introduction of electronic payment services in these countries, in its Nordic form, would thus require a major change in the payment tradition of the country in question.

There are several reasons why online banking took off in Finland so quickly, but the banking crises which followed the deregulation of the banking industry in the late 1980's, certainly played the role of a catalyst in the transformation. In the early 1990's, nearly all the Finnish banks were in financial distress and many would not have survived without government aid. In this environment, the banks faced enormous pressure to cut the costs associated with their oversized branch networks. In response, the banks reduced the number of their branches quickly to almost one half, while strongly encouraging the customers (through fee structure and smaller queuing time) to do their banking over ATMs (Automated Teller Machines) capable of doing account transfers, or through personal computers. The banks' concerted strategy to move customers away from branches was successful and customers quickly started to do their banking by these alternative means. With the rapidly growing use of the Internet, the proportion of customers banking online increased especially quickly after 1996. Today, for instance, as little as 4% of Nordea's Finnish customers still pay their bills at the teller's desk in a branch (formerly the typical method for making payments). Due to the increased automation of banking services, Finnish banks have been able to reduce their personnel by 46% between 1991 and 2000.<sup>1</sup>

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<sup>1</sup> The large consolidation that took place within the Finnish banking sector in the 1990s is another important reason behind the rapid fall in the number of branches and personnel.

FIGURE 2: Branches vs. PC-bank contracts in Finland

In addition to the increased use of online payment services, an important development has been the swift rise in online equity trading. In the year 2000, only the Finnish brokers specializing in Internet trading accounted for nearly one third of all orders reaching the Helsinki Stock Exchange. When, in addition, one takes into account that most of the orders reach the large brokers and brokerage departments of banks via the Internet - at Nordea approximately 80% - the importance of online trading is clear. It should be noted, however, that if one looks at the volume in Euros, the situation is different: only 2.8% of the Euro volume goes through brokers who specialize in Internet trading. (There are no statistics on the Euro proportion of online trading among large brokerage houses or banks). Also, while the rise of online share trading in Finland is impressive, the development has been similar elsewhere. With computerized trading and clearing in many European and US stock exchanges, there have been no obstacles to moving online, as there has been for payment transmission, even outside the Nordic Countries. In the US, for instance, according to U.S. General Accounting Office, 2000, on-line trading accounted for over 35% of all retail trading volume in equities and options already in 1998.

In addition to payment services and share trading, several other bank services are today offered online in Finland. The online offerings include equity and bond initial public offerings, mutual funds, life insurance, loans, electronic billing and electronic salary statements. There are significant cost savings with electronic billing as the seller can send his bill electronically, thus avoiding mailing costs, and the customer need not re-enter the billing information to his computer. With electronic salary, on the other hand, past salary statements can be stored at the customer's personal computer. Today the online loans are still approved in a branch by a bank teller, so the only change resulting from the increased use of online lending, so far, is to save the time and effort of the customer. At least OKO Bank Group, however, is planning to fully automate even the approval process for some types of loan applications, which would result in cost savings also for the bank. There are large cost savings also with online equity issues, as compared with equity issues using traditional sales channels, due to the ability to distribute large amounts of information over the Internet at a low cost. At Evli, a leading Finnish Investment Bank, lately over 90% of the subscriptions to equity issues are made, and immediately paid, online.

A fourth important trend in online banking in Finland is that it has become an important portal to electronic commerce. The banks are building electronic market places, where the customers can pay for their shopping through their online account at the bank. It is particularly in this area where the banks are moving away from their traditional business to take up attractive opportunities in the electronic commerce. Although products in the market places are sold by independent stores, the banks' presence, as a provider of security and a means of payment, has become an important dimension in the attractiveness of the electronic offering of the merchants. With millions of customers online, the banks are also in an attractive position to expand their role in electronic commerce. OKO Bank Group, for instance, is communicating electronically to targeted groups of its customers, sorted out based on characteristics such as geography, balance information etc., about investment opportunities in case of, say, equity offerings. They are planning to extend such messages to other, non-financial, e-commerce opportunities in the future. By that time, it should also be possible for the customer to specify electronically what kind of offers and messages he or she is interested in. For the banks' corporate customers, who already pay for their right to sell in the banks' "market places," such direct marketing channels would also bring additional value.

### **3. E-Banking in Sweden**

The structure of the Swedish banking system has historically been similar to that of Finland. In Sweden, the banks similarly competed at an early stage for deposits by building a dense branch network - although not to the same extent as in Finland - and an efficient payment system based on account transfers, with the possibility to use bank giro (bankgiro or postgiro).<sup>2</sup> In Sweden, however, PC-banking was never developed for private customers to the extent that it was in Finland. In fact, in Sweden, online banking started to develop as late as in 1995, when a small savings bank, Sparbanken Finn, started to sell banking services via online. SEB was the first large bank that started aggressively to develop its electronic banking services, introducing Internet banking for private customers in December 1996. Other large banking groups quickly followed. During the final four years of the 1990's, all the

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<sup>2</sup> In Sweden in 1990 there were over 2600 inhabitants per branch, whereas in Finland the corresponding figure was less than 1600.

large Swedish banks invested heavily in the development of their Internet-banking services. Today FöreningsSparbanken (FSB) has the largest Internet bank operation in Sweden, with more than 950,000 Swedish online banking customers.

The development of Internet-banking for private customers in Sweden has been more difficult than in Finland for at least two reasons. First, as indicated earlier, the Swedish banks did not develop their PC-banking solutions as early as their Finnish peers. Second, in Finland, in the mid 1990's, customers were commonly paying their bills at ATM's adapted for that purpose, whereas in Sweden the use of such ATM's never became common. Instead, the customers continued to pay their bills mainly using the bank giro. For banking services other than payments, telephone banking had started to gain in popularity from 1994. Since 1997, however, the banks have guided their customers to Internet in a concerted fashion through the pricing of their services. This strategy worked well - according to the Swedish Bankers' Association, by the beginning of 2001 already 30% of the Swedish banks' customers used online banking on a regular basis, a figure that is rapidly rising. As in Finland, the transformation was greatly facilitated by the fact that the payment system was based on account transfers. Partly due to customer migration to the Internet, the banks have been able to drastically reduce the number of their branches: between 1995 and 2000 the number of branches fell by 23%.

Although online banking for private customers developed only in late 1990s, the first online solutions were available to corporations already in the late 1970's. Today, corporations can purchase most of their banking services online. The use of Internet has also become widespread in securities trading, where, according to the Swedish Financial Supervisory Authority, the number of private individuals with agreements to conduct share trading via the Internet has risen from 100,000 in the beginning of 1999 to nearly 500,000 (or 5,6% of the population) at the beginning of 2001. As in Finland, in addition to these, several other financial services, such as loans, life insurance and mutual funds are today offered online. In fact, today the range of services offered by Swedish banks via the Internet is broadly competitive with that in Finland. Nordea, for instance, is a large player in both markets with a nearly identical Internet bank offering. One difference between the two countries is that the Swedish banks offer other financial institutions' mutual funds on their web sites more commonly than their Finnish counterparts.

Although the banks' electronic offerings in both countries are quite similar, Swedish banks have been much more aggressive in exporting their e-banking knowledge to other markets. All major Swedish banking groups have large operations outside Sweden, mainly in other Nordic and Baltic countries. SEB has been the most aggressive bank in exporting its e-banking knowledge beyond the Nordic countries: for instance, through its subsidiary BfG, it has nearly 160,000 Internet-banking customers in Germany.

We have stressed the structure of the payment system as the most important reason for the rapid development of online banking in Finland and Sweden. Another important reason for the rise of online banking has been the high level of technological readiness in these two countries. Besides having one of the highest Internet adoption rates in the world - a prerequisite for the success of Internet-banking - both countries have been among the worlds' fastest adopters of other technological innovations such as the mobile phones. In Sweden, the Internet adoption rate is especially high: according to a survey by the Swedish Institute for Transport and Communication Analysis, in September 2000 65% of the Swedish population had Internet access at home. One reason for the high Internet and PC penetration in Sweden is that corporations are given tax cuts if they provide their employees with PC's. The high Internet penetration is a key factor when explaining the rapid rise of e-banking in Sweden.

#### **4. The Effect of E-banking on Banks' Performance**

As a result of the rapid rationalization, banks in both Finland and Sweden look efficient when compared with most of their European competitors. Figure 3 presents the number of bank personnel in selected European countries per 1000 inhabitants. As the figure shows, the banks in Finland and Sweden are able to produce their countries banking services with far fewer personnel than their average European peers. In case of Finland, this is explained by the high degree of automation that the rapid movement to payment transmission through ATM's, and later to online banking, has brought about. In Sweden, the banks were already highly efficient before online banking became popular, and so the effect of online banking has been smaller.

FIGURE 3: Personnel per 1000 inhabitants

As Figure 4 shows, in Finland the movement to online banking has resulted in a steadily falling cost-income ratio. Despite of the customers continuously switching to online banking for which they pay lower fees, partly due to increased activity of the switched customers, the banks' income has steadily risen, between 1997 and 2000 by an average of over 6 % per annum. With the decline in the cost income ratio, this resulted in a 20 % average annual growth for the operating profits over the same period of time.<sup>3</sup> In Sweden, the cost income ratio has not declined in a similar way and actually rose between 1997 and 1999, falling only during the year 2000. This is partly explained by the high development cost of the online banking systems and investments in IT capacity in Sweden during the years 1997 -1999. In Finland, the development of the online banking system was gradual and the development costs have therefore remained smaller and have been spread across a longer time period. Despite higher costs in Sweden, international comparison reveals that during the past few years the banks in both Finland and Sweden have fared well in terms of their cost efficiency. In the year 2000, in Sweden, as the customers were rapidly moving to online banking, the large banking groups' operating profits increased substantially. For instance, at FSB, 85% of whose income is generated from the Swedish market, operating profits rose by 45% in the year 2000.

FIGURE 4: Cost- Income ratio in Finland

FIGURE 5: Cost-Income ratio in Sweden

The good profitability development of the past few years along with the option to use the developed IT knowledge in other markets, have resulted in a good performance for the Nordic banks in the stock market: from the beginning of 1995 to the end of 2000, the banking indexes in Helsinki and especially in Stockholm have outperformed the European banking index (DJ Euro Stoxx Banking index).

With the marginal cost of producing most of the e-banking services close to zero, the banks must enjoy some monopoly power in order to be able to profit from the reduced costs that electronic banking brings about. In Sweden and especially in

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<sup>3</sup> These figures exclude the extraordinary income to banks from the Pohjola Group transactions.

Finland the market concentration in banking is one of the highest in the world (see table 2), which suggests that competition in these markets is likely to be low. The degree of monopoly power, as it determines the firms' ability to profit from innovations, is also an important factor in providing the firms with an incentive to innovate. It may thus not be a coincidence that the two countries with the leading (and most expensive) Internet-banking products are also countries with highly concentrated banking sectors.

## **5. Case Example: Nordea**

Nordea is a product of mergers between Finland's Merita, Sweden's Nordbanken, Denmark's Unidanmark and Norway's Christiania Bank. It is often cited as the "leading internet bank" in the world with its 2,4 million online bank customers (out of a total 9,6 million customers).<sup>4</sup> In Finland alone Nordea has over one million customers that use its online banking service entitled "Solo". Nordea's customers in Finland place over 80% of their orders for share trading online and pay over 50% of their bills online (this figure includes corporate customers). Also, over 40% of the mutual fund subscriptions and over 20% of all credit applications are sent online to Nordea, in Finland. Today, at Nordea, it is possible to use almost all banking services via the Internet, WAP-phone or a television with an Internet adapter. It is even possible for a customer to sign his loan contract electronically using Solo. Nordea has over 1700 contracts with vendors who accept payment via Solo and over 600 of these are represented in the "Solo Market Square," where Nordea's customers can do their online shopping. Although Solo Market Square is probably ahead of most similar market places of other banks, the number of visitors there is still modest, currently around 200,000 per month.

Table 3: Nordea's e-bank services

To make the transactions secure, Nordea uses a system with both a constant and several continuously changing passwords. When signing up for Solo a customer

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<sup>4</sup> Nordea's Net customers complete 7.2 million online transactions (payments) per month, which, according to Business Week, April 16, 2001, is twice the amount of the Internet activity at the next most active Internet bank, the Bank of America.

is given a personal code and a list of passwords that can only be used once. Both are needed to enter the Solo system. To confirm a payment, after entering the amount and the account number of the receiver, one confirms his payments with another code from the list. Buying shares, mutual funds or goods from the Solo Market Square works in a similar way. In addition, the permanent personal code is accepted by some vendors as an electronic signature even outside the Solo system.

Nordea's e-banking solutions are largely based on the PC-banking solutions developed in its Finnish arm, Merita Bank, already in late 1980's and early 1990's. When the prospects of the Internet banking became clearer, to implement its strategy to become a leading e-bank, Merita Bank (later MeritaNordbanken) has systematically grown its customer base by merging with, or acquiring, large incumbents in other Nordic countries, as opposed to trying to obtain customers from other banks. This strategy has had the benefit of avoiding excessive competition, and yet has allowed the bank to quickly obtain a large number of online customers and thus capture more of the economies of scale in e-banking. An important factor in its ability to obtain so many online customers so quickly has probably been the fact that Nordea never established a separate e-bank within its organization, in contrast to many banks outside the Nordic countries, but rather allows the branches to keep their customers even after the customer moves online. This has given the branch managers' an incentive to aggressively sell the bank's e-banking solutions to their customers to obtain cost savings.

Despite its clear success in this field, Nordea is not the sole contestant for the Scandinavian leadership of e-banking. Several other Nordic banks, such as OKO Bank Group and Sampo, from Finland, have a higher proportion of e-banking customers today than Nordea. One can argue though, that partly this is due to the fact that Nordea has recently acquired large banks in Denmark and Norway with few existing e-banking customers. Nevertheless, the electronic offerings of these and other Nordic banks, such as SEB, FSB and Handelsbanken, are quite competitive, and quite similar with that of Nordea's. If the proposed merger between SEB and FSB goes through, the combined entity will have roughly two million Internet banking customers, barely less than the 2.4 million Internet customers at Nordea.

## 6. Conclusion

Electronic banking has become an enormous success in the Nordic countries, especially in Finland and Sweden. We argued that the quick adoption of online banking in these countries was made possible by a well developed payment system, that has for a long time been based on computerized and centrally cleared account transfers. The movement to online banking in this system was merely to alter the identity of the person entering the data needed for an account transfer from a bank teller to the customer himself. With a huge need for cost savings in the early 1990's, and a large part of the development costs of their online systems behind them, the Finnish banks provided, in a concerted fashion, high incentives to customers to pay their bills either using an ATM suitable for that purpose, or to migrate to online banking. Along with the growing use of the Internet, online banking penetration in Finland quickly rose to nearly 50%. In Sweden the development of online banking started later - only in the mid 1990's - but has been extremely rapid. At the beginning of 2001, already over 30% of the Swedish banks' customers used online banking on a regular basis.

We showed that as a result of this transformation to online banking, the banks in Finland and Sweden now compare favourably in terms of profitability and efficiency with most of their European peers. Comparatively low level of competition has helped the banks reap much of the benefit of the cost savings associated with e-banking. Strong past profit development, and future prospects, have also been reflected in favourable share price development. Another question is whether e-banking eventually, when it becomes more common in Europe, will increase competition by lowering the customers' switching costs between banks and by increasing the number of competitors, given that geographical distance loses its meaning (see e.g., Vesala, 2000). This remains to be seen. Another view is that the banks' increasingly broad and sophisticated electronic offerings may actually increase, not decrease, the switching costs of the customers', and thus only decrease competition.

Despite having already established itself as the most common method for an array of banking services, electronic banking is still in a constant mode of change. There are at least three developments that are still changing the field of e-banking.

One is electronic cash, which is already in use both in Finland and Sweden. The use of electronic cash is still modest, in Sweden, for instance, in 1999 there were only 400,000 transactions per month involving the use of electronic cash. Nevertheless, the hope is that such cards would eventually replace the use of notes and coins. The growing availability of electronic identification cards (SIM cards) will also open new possibilities, as well as help in making the electronic commerce and banking more secure.

The third and perhaps the most profound change is likely to come from an increased use of mobile solutions. It is already today possible to do one's banking from a WAP phone, but perhaps due to less customer-friendly solutions, mobile banking has not yet become popular. With better technological solutions continuously coming to the market, this seems likely to change. With mobile phone banking, people will be able to do their banking any time and anywhere. It seems that many of the services that banks now provide, like online equity trading or access to electronic commerce, would become even more attractive to the customers with a sound mobile solution. Finland and Sweden with high mobile phone penetrations are in a good position to lead the development of such "m-banking" as well.

As the last point, I wish to raise the issue of security. So far things have worked out surprisingly well in the development of the Internet banking systems in the Nordic countries. There are no known instances where hackers would have been able to enter the computer systems of any Nordic bank, not to mention to succeed in emptying any customers' accounts. There have, however, been some instances where even some of the large e-banks' systems have crashed, blocking customers' access to their accounts for long periods of time. The banks have invested enormous sums of money to avoid both kind of problems, but only future will tell whether more serious system failures or frauds can indeed be avoided. In any case, even such events do not seem capable of stopping or reversing the e-revolution in banking that is taking place.

**Additional Sources:**

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Nordic banks' communication departments and annual reports.

Interviews with Lars Ekstedt, Head of E-banking Sweden, SEB; Matti Korkeela,  
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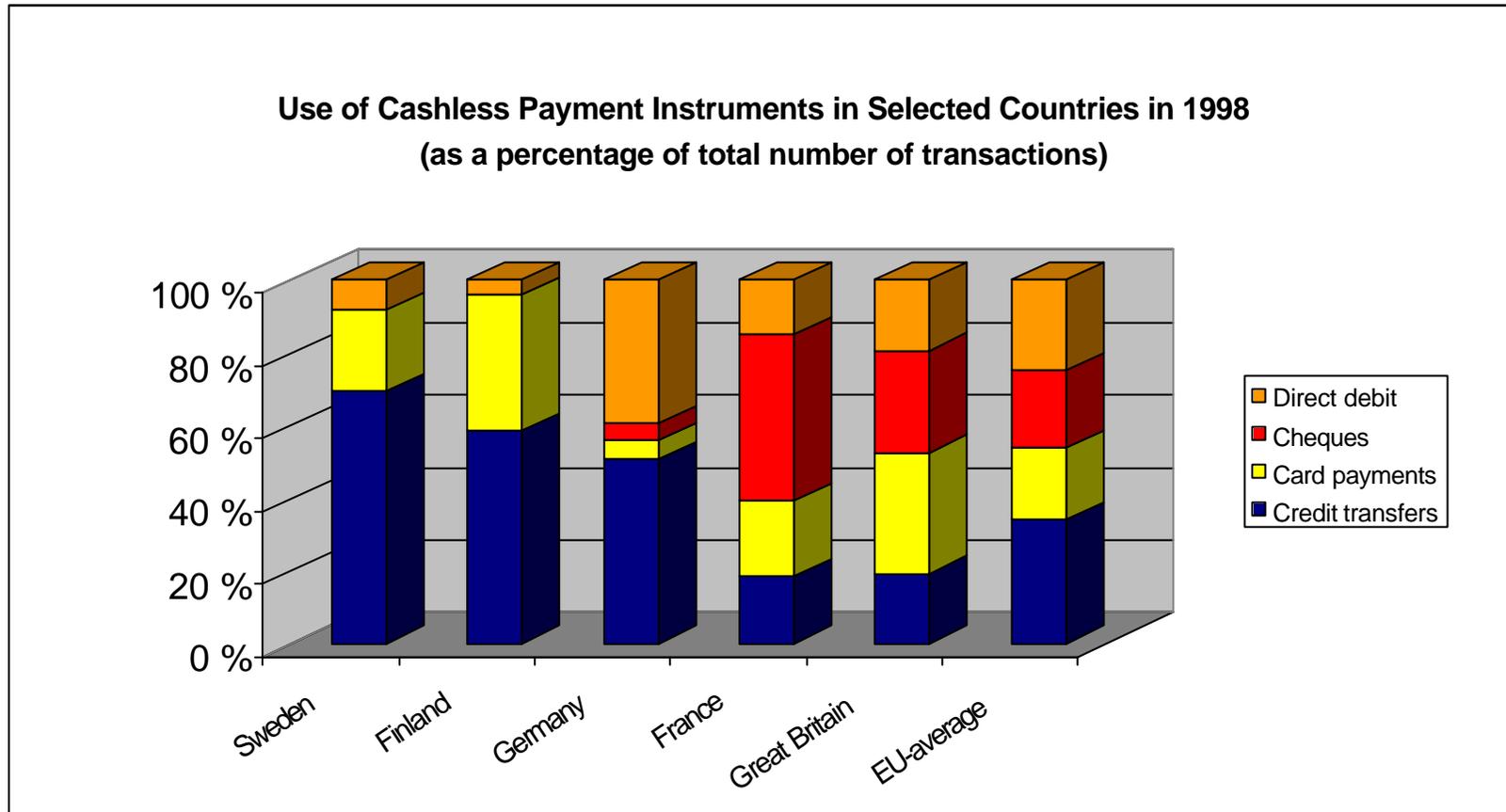
**Table 1.** Online Banking penetration in the Nordic countries\*

	1999	2000
Finland	36%	47%
Sweden	18%	30%
Norway	13%	21%
Denmark	12%	18%

\*The percentage of online contracts (including corporate customers) in proportion to population

Sources: Bankers' Associations in Finland, Denmark and Sweden and the Central Bank of Norway.

**FIGURE 1:**



Source: European Central Bank

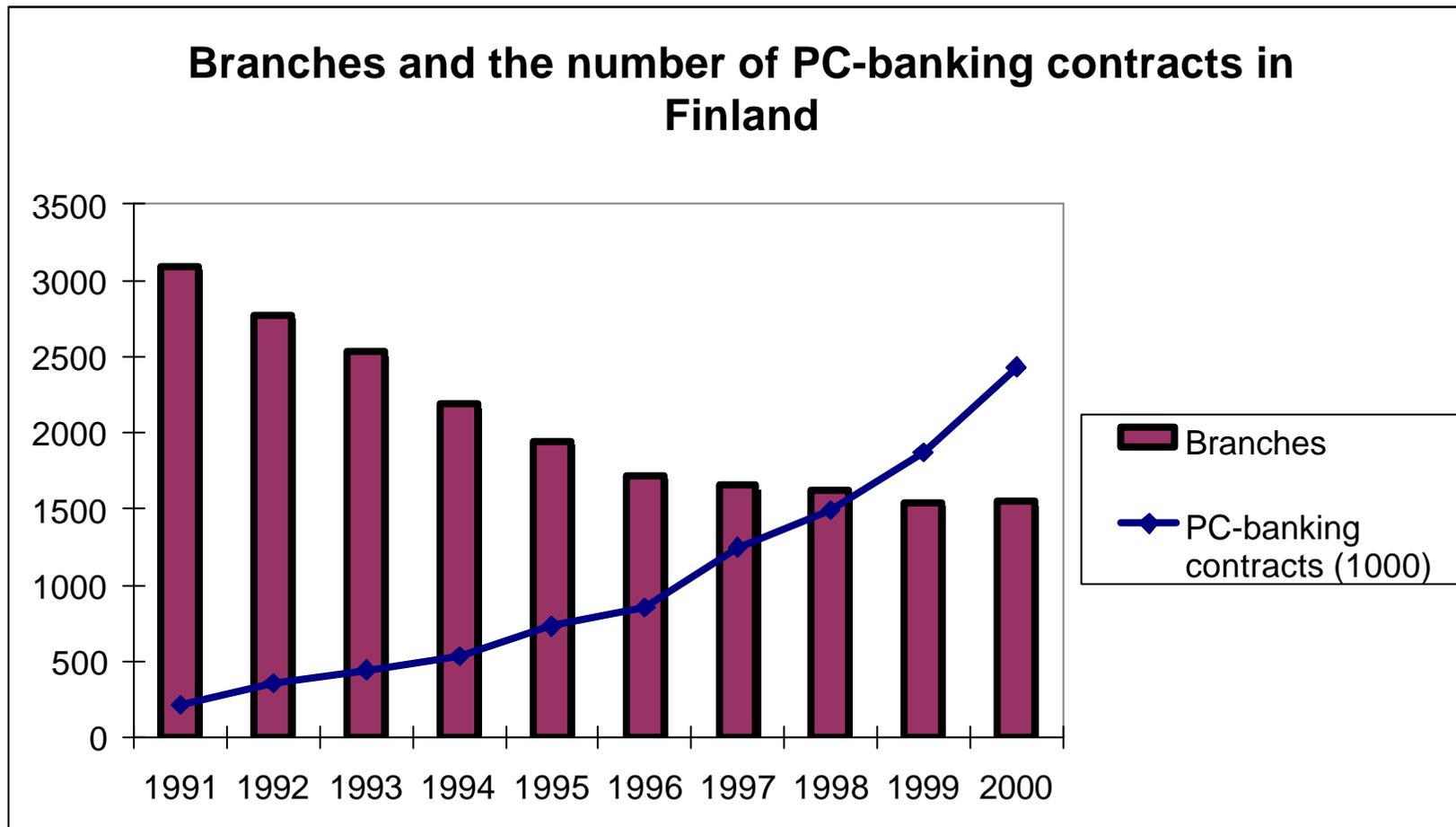
**Table 2.** Combined market share of the 5 largest banks of household deposits

	1995	1999
Finland*	65%	90%
Sweden	89%	83%
EU-average	56%	58%

\*Given the mutual responsibility for liabilities within Cooperative Bank's Union since 1997, they are counted as a single unit in the 1999 figures

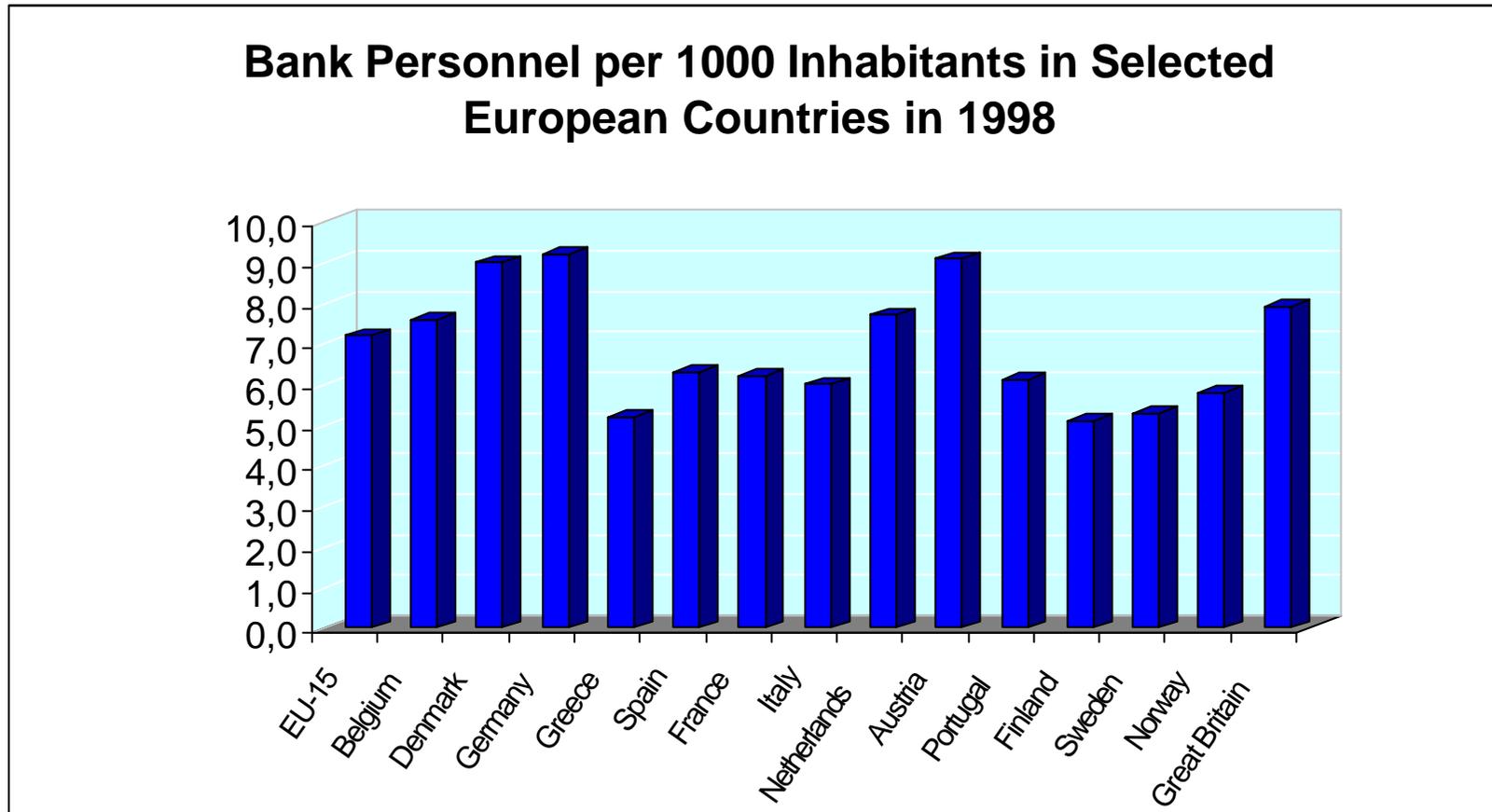
Sources: European Central Bank, Financial Supervision, Finland.

**FIGURE 2:**



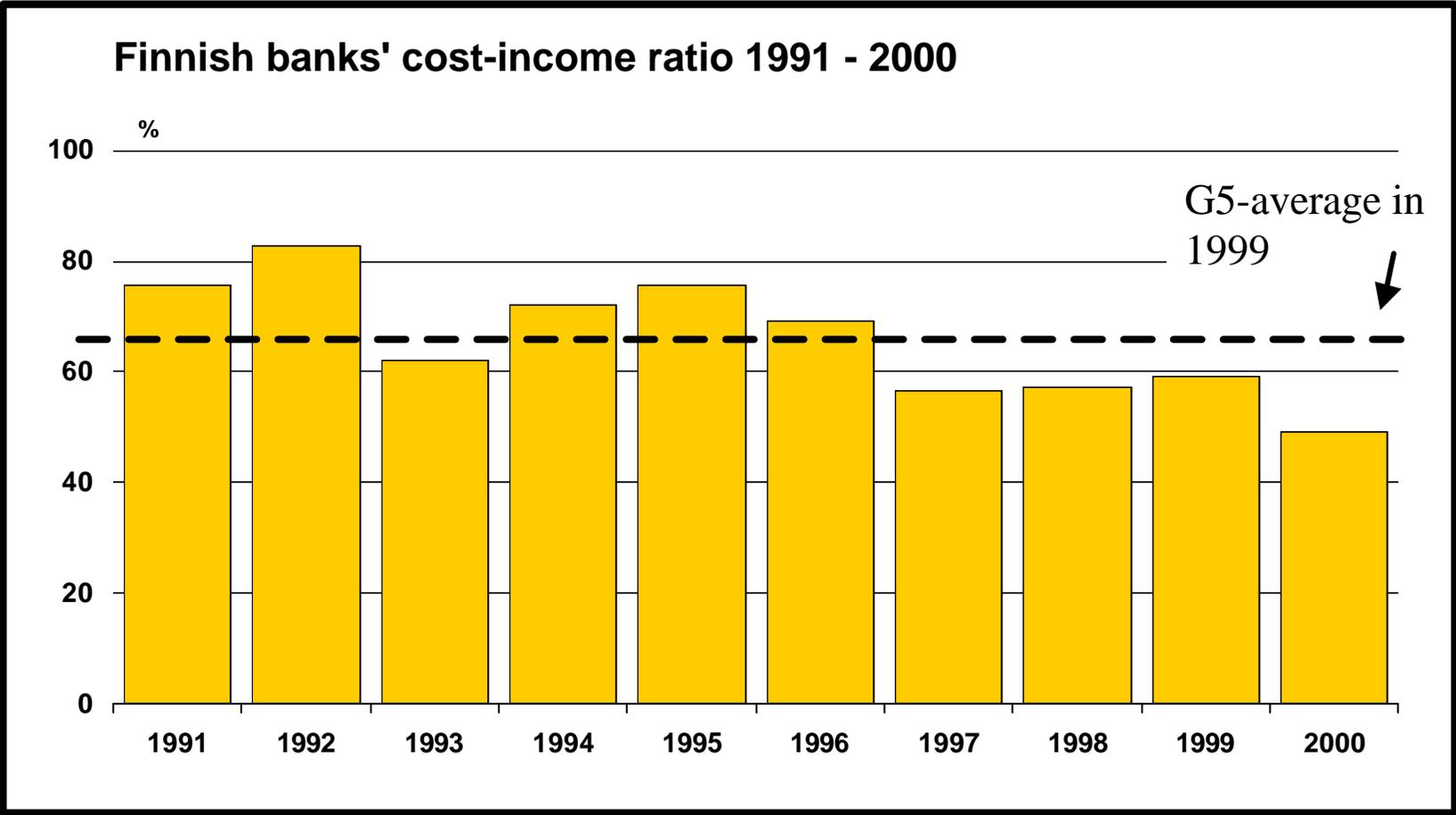
Source: Finnish Bankers' Association

**FIGURE 3:**



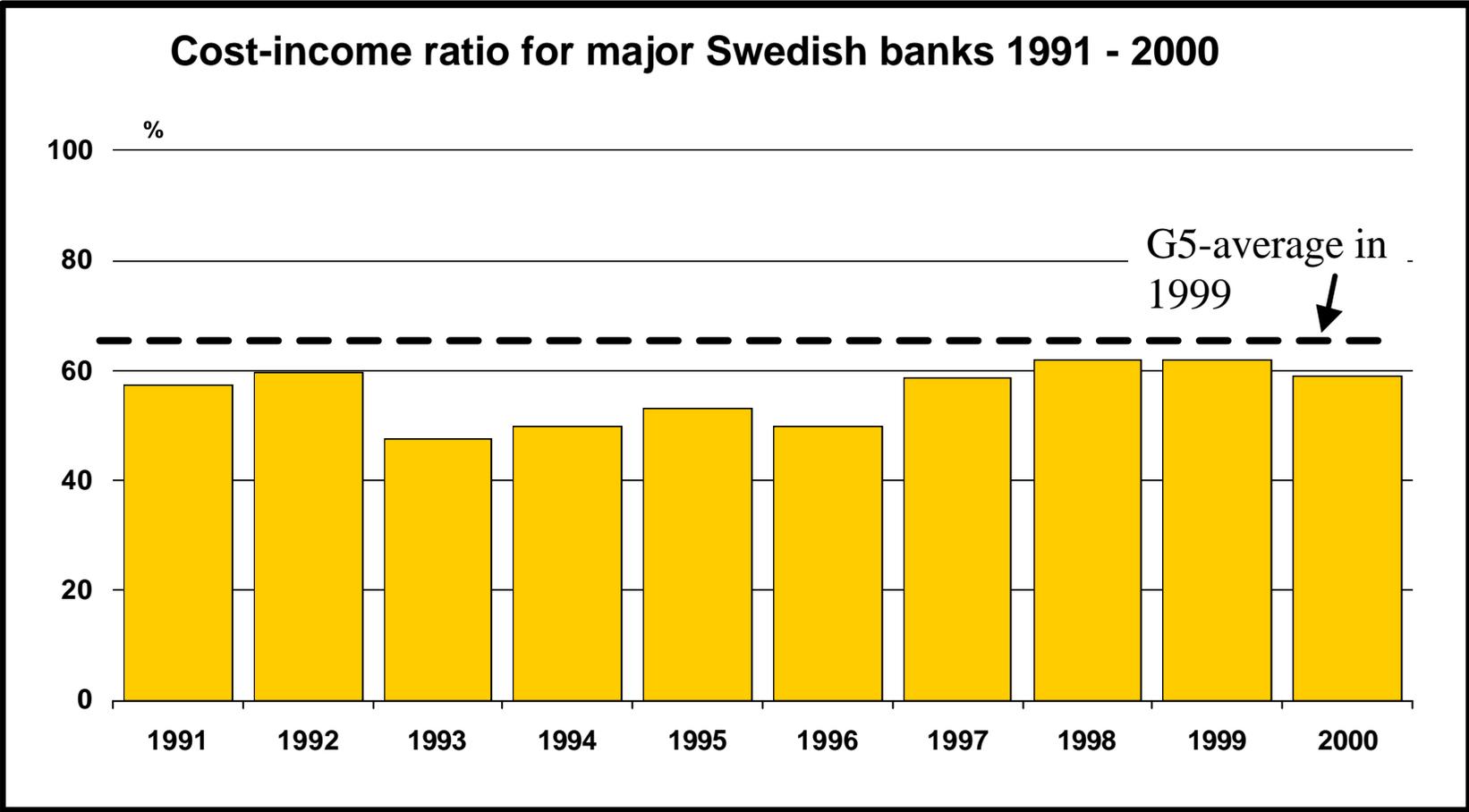
Source: Eurostat

**FIGURE 4:**



Source: Finnish Bankers' Association, The Banker, July 2000. The G-5 average in 1999 was 66%.

**FIGURE 5:**



Source: Swedish Bankers' Association and The Banker, July 2000. The G-5 average in 1999 was 66%.

Table 3:

E-Banking Services at Nordea (Solo)	
1982:	Fully automated telephone banking
1984:	Balances and payment services in PC
1988:	Online share trading
1992:	Mobile phone banking
1996:	Internet banking Services expanded to mutual funds “Solo Market”
1998:	Loans over the Internet Electronic billing Electronic signature to mobile services purchases
1999:	Solo services available through WAP phone Foreign payments Electronic student loans Life insurance
2000:	E-salary WAP-trading E-mortgage
2001:	General insurance
TODAY:	2.4 million users in Scandinavia 1700 contracts with vendors who accept payment by Solo 600 of them in “Solo Market”  In Finland: 80% of share trading orders through Solo Over 50% of invoices paid electronically 41% of mutual fund subscriptions 21% of consumer credit electronically

Source: Nordea