



NORGES BANK

Annual Report on Payment Systems

2007

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Annual Report on Payment Systems 2007



Norges Bank

Oslo 2008

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Norges Bank's Annual Report on Payment Systems

Norges Bank is responsible for promoting robust and efficient payment systems in accordance with the Norges Bank Act and the Payment Systems Act. The Norges Bank Act states that Norges Bank shall promote an efficient payment System in Norway and vis-à-vis other countries. The Payment Systems Act gives Norges Bank a special responsibility for the authorisation and supervision of systems for clearing and settlement of money transfers between banks.

Norges Bank oversees the payment systems in order to identify factors that may weaken the stability of the financial system. The work is primarily aimed at minimising risk in the clearing and settlement systems, but Norges Bank also monitors important trends in the payment system as a whole. Furthermore, Norges Bank provides for secure and efficient settlement of payments between banks in their accounts in Norges Bank, and supplies the community with banknotes and coins in a manner that promotes an efficient payment system.

The Annual Report on Payment Systems provides an account of Norges Bank's oversight of important payment and settlement systems. The 2007 report is divided into two parts. The first part concerns customer-oriented services. The second part provides an account of Norges Bank's oversight of interbank systems. Here we pay particular attention to liquidity risk in settlements and foreign exchange settlement risk.

Contents

Foreword	4
1. Payment services	5
1.1 Use of payment instruments	5
Box: The security of Internet banking	10
1.2 Prices for payment services	10
Box: Charges on international payment cards	14
1.3 Cross-border payments	16
Box: Private transfers to developing countries	17
2. The interbank system	18
2.1 Systemically important interbank systems	18
Box: The new interbank settlement system at Norges Bank	21
Box: SWIFT	25
Box: European securities settlement	26
2.2 Liquidity risk	27
2.3 Foreign exchange settlement risk	32
Box: Continuous Linked Settlement (CLS)	36
References	38
Statistical annex	41
Definitions and abbreviations	58
Guide to the tables	61

Foreword

Norway has an efficient payment system. Almost all payments with deposit money are now carried out electronically. Cards and Internet banking have not only replaced cheques and mail giros, they have also contributed to a reduction in the use of cash. The rapid transition to the use of electronic services is partly due to the banks' charges for payment services.

The banks must charge for their payment services if they are to cover the costs associated with payment systems. There are now signs that the charges for such services are being reduced or abolished completely. This is not in the best interests of the banks' customers. Secure and efficient payments require considerable investments. Lower income may reduce the ability and willingness to invest in better infrastructure. Moreover, if costs are not recovered, the payment services must be financed by income from other services. Such cross-subsidisation gives the wrong signals to customers, and may result in inefficient use of resources.

Since summer 2007, there has been turbulence in the international financial markets. In such situations, financial institutions may be vulnerable to disturbances. A robust financial infrastructure is then of paramount importance.

The systems for clearing and settlement of payment transactions (interbank systems) form an essential part of this infrastructure. Both large transfers between banks and small payments between bank customers are settled in these systems. Norges Bank oversees the Norwegian interbank systems. We find the systems to be of high quality. They are structured so that they in the main do not increase the likelihood of a problem spreading between banks. Norges Bank has previously pointed out certain factors of the systems where there was room for improvement. A number of these factors were improved in 2007.

Svein Gjedrem

1. Payment services

An efficient payment system is a prerequisite for a well functioning economy. It should be possible to effect payments quickly, securely and at low cost. In the following, we assess developments in the Norwegian payment system. The main conclusion is that the Norwegian payment system is becoming increasingly efficient and is asserting itself internationally.

1.1 Use of payment instruments

Payment instruments provide access to cash or deposit money. Deposit money constitutes 94 per cent of the available means of payment in Norway (M1) (see Chart 1.1).¹ There has been a substantial growth in the bank deposits of Norwegian households and enterprises. Cash constitutes a relatively small and diminishing part of means of payment (see Chart 1.2). This trend is linked to the provision for efficient use of deposit money. In Norway, more payments are carried out with deposit money than in most other countries.

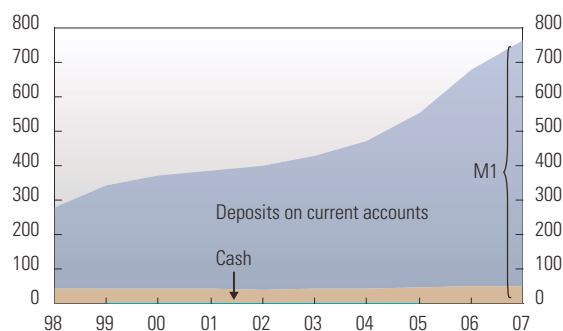
1.1.1 Cash

Cash circulation in Norway has grown during the last four years (see Chart 1.3). This growth, however, is somewhat lower than the growth in the economy and in household consumption, and much lower than the growth in deposits in current accounts (see Chart 1.4). A growing share of household consumption is paid for by means of cards. This indicates in relative terms less use of cash as a payment instrument.

In 2007, the value of banknotes in circulation was on average NOK 45.9bn. This is over 3 per cent higher than in 2006. After many years of even growth in the value of coins in circulation, the value fell by approximately 2.5 per cent from 2006 to 2007. This fall is primarily due to the prohibition of gaming machines from 1 July 2007.

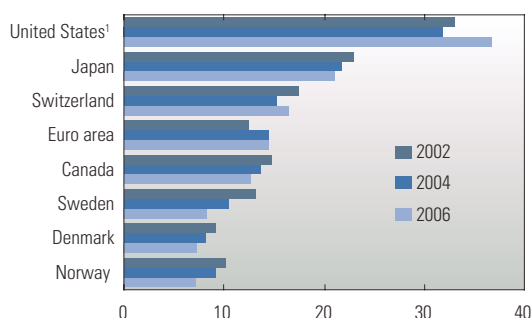
The extent of counterfeiting is low in Norway (see Chart 1.5). In 2007, no more than approximately 3 counterfeit

Chart 1.1 Means of payment (M1) in Norway. Year-end. NOK billions. 1998 – 2007



Source: Norges Bank

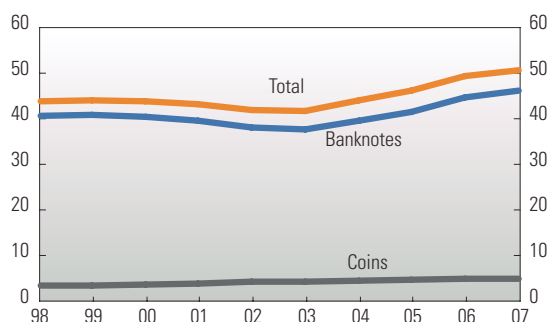
Chart 1.2 Cash in per cent of means of payment (M1) in selected countries. Year-end. 2002 – 2006



¹ The volume of cash has been adjusted for the estimated share of the currency outside the country's borders.

Sources: Norges Bank, ECB Blue Book and BIS Red Book

Chart 1.3 Cash circulation. Annual average. NOK billions. 1998 – 2007



Source: Norges Bank

¹ M1 is the holding households and enterprises have of Norwegian banknotes and coins in addition to deposits in current accounts in Norges Bank and in banks (in NOK and foreign currency).

notes per million notes were detected. This is somewhat more than in 2006 (see Chart 1.5). By way of comparison, in euro countries, approximately 49 counterfeit notes per million euro notes were detected (ECB 2008). New security elements in NOK 100 and 200 notes have contributed to the major reduction in counterfeiting from 2001.

1.1.2 Deposit money

The transition from paper-based to electronic payment instruments has increased the efficiency of the Norwegian payment system. In 2007, less than 4 per cent of payments with deposit money were made with paper-based instruments (see Chart 1.6). The banks' pricing of payment services has contributed to this increase in efficiency (see Part 1.2). The frequency of use of the various instruments for use of deposit money varies from country to country (see Chart 1.7).

Giro payments

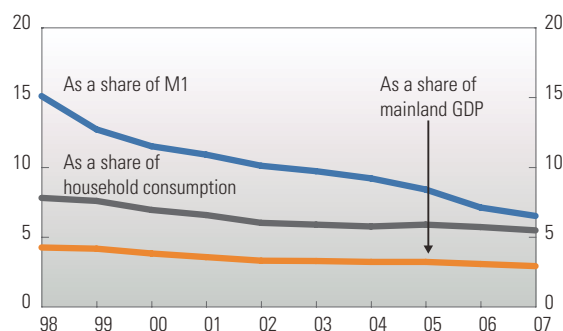
Giro payments initiated by the payer, are referred to as credit transfers. In terms of value, this type of transfers is dominant both in Norway and in other European countries (see Table 1). Credit transfers can be carried out in various ways. In Norway, Internet banking is most frequently used (see Chart 1.8). There has been substantial growth in the use of Internet banking since the service was introduced. In 2007, the number of Internet banking agreements increased by 11 per cent to 4.4 million. Individuals carried out 154 million internet banking payments. The number of transfers by means of mail giros and telephone giros fell.

Giro payments initiated by the payee (direct debits, known as Avtalegiro and Autogiro), are used less in Norway than in other countries. However, during the last ten years the use of such instruments has increased steadily in Norway, and there was a rise of 19 per cent from 2006 to 2007.

The extent of electronic invoicing is increasing. In January 2008, 460 undertakings offered the service eFaktura from Banking and Business Solutions (BBS). This is 39 per cent more than the previous year. In 2007, 13.5 million such invoices were dispatched, as against 9.4 million in 2006. Of giros paid via Internet banking, 4 per cent now originate from an eFaktura.

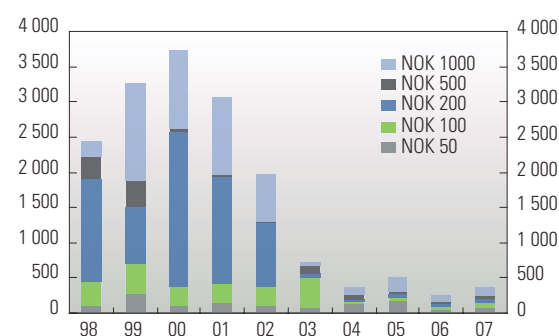
The transition to electronic invoicing and direct debits is likely to continue in the years ahead. The services simplify payment of bills for the public and provide enterprises with improved handling of their incoming and outgoing payments. These developments will further increase the efficiency of the payment system in Norway.

Chart 1.4 Value of banknotes and coins in circulation. As a share of M1, household consumption and mainland GDP. Per cent. 1998 – 2007



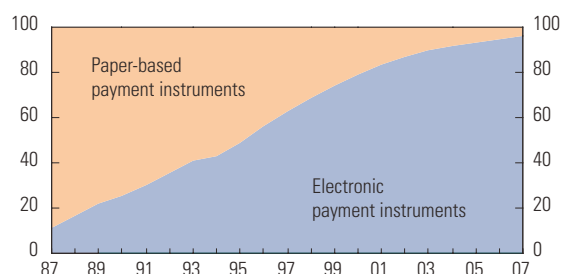
Sources: Statistics Norway and Norges Bank

Chart 1.5 Number of seized counterfeit notes. 1998 – 2007



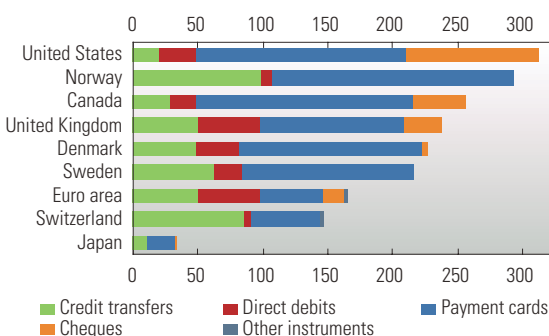
Source: National Bureau of Crime Investigation

Chart 1.6 Use of paper-based and electronic payment instruments. Transactions in per cent. 1987 – 2007



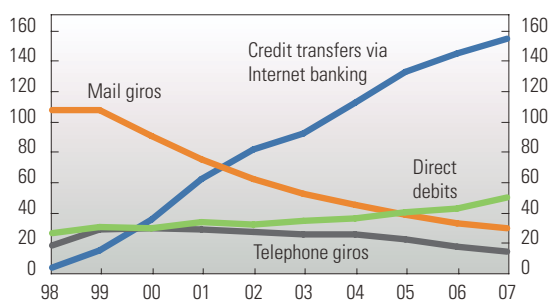
Source: Norges Bank

Chart 1.7 Use of deposit money by instrument. Transactions per inhabitant. 2006



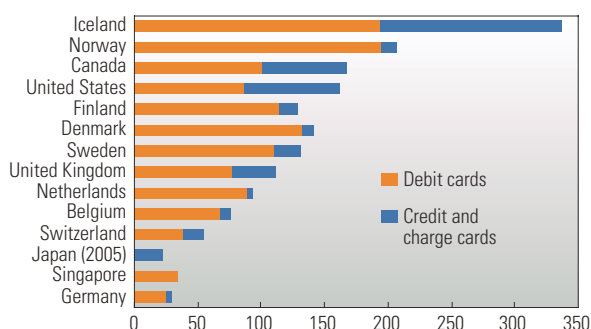
Sources: Norges Bank, ECB Blue Book and BIS Red Book

Chart 1.8 Use of selected giro services for retail customers. Millions of transactions. 1997 – 2007



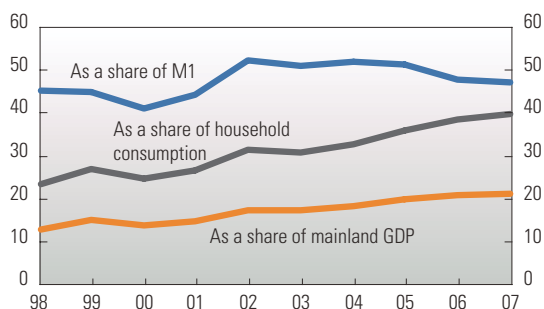
Source: Norges Bank

Chart 1.9 Number of card transactions per inhabitant. 2006



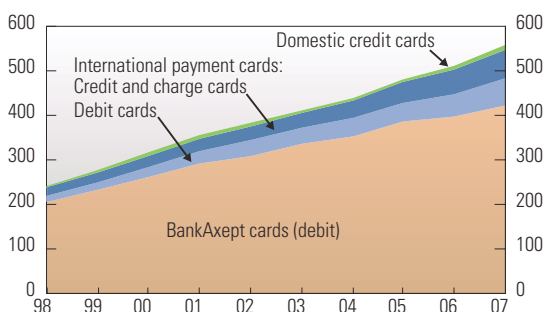
Sources: Norges Bank, ECB Blue Book, BIS Red Book and Sedlabanki Islands

Chart 1.10 Value of goods purchases with payment cards. As a share of M1, household consumption and mainland GDP. Per cent. 1998 – 2007



Sources: Statistics Norway and Norges Bank

Chart 1.11 Use of payment cards issued in Norway. NOK billions. 1998 – 2007



Source: Norges Bank

Payment cards

In 2007, 207 payments by card per inhabitant were made in Norway. This is 13 per cent more than in 2006. Iceland is the only country where the inhabitants pay by card more than in Norway (see Chart 1.9). The value of card transactions is increasing as a share of household consumption and GDP (see Chart 1.10). Norwegians use payment cards for a greater share of trades than previously. More people also use cards to pay small amounts. In a survey conducted by TNS Gallup for BBS in October 2007, 33 per cent said that they habitually paid amounts under NOK 50 by card. This is 50 per cent more than in 2005 (BBS 2007). Cards are also increasingly used for online purchases.

Compared with other countries, a large share of card transactions in Norway are carried out by means of debit cards. The Norwegian national debit card scheme BankAxept has a dominant position (see Chart 1.11). However, international payment card systems such as VISA and MasterCard have increased their market share in recent years. These card systems provide both debit and credit cards.² Norwegian banks often issue bank cards combining the functionality of BankAxept and an international card.

Payment terminals and ATMs

The use of cards increases with the number of payment terminals. Cash constitutes a relatively small share of the total means of payment (M1) in countries with many payment terminals (see Chart 1.12). If the payer has a card and the payee has a terminal, deposit money is a close substitute for cash.³ The number of payment terminals in Norway is steadily increasing (see Chart 1.13).

While more payment terminals seem to give more card payments, ATMs accommodate the use of cash. In recent years, the number of ATMs in Norway has increased. Nevertheless, there are fewer ATMs in Norway per inhabitant than in most other European countries (see Table 1). In Norway, however, cash is available from payment terminals in shops to a greater extent than in other countries.⁴

The banks have considerable costs associated with cash handling. These costs are only to a limited extent passed on to their customers in the form of charges. Norges Bank encourages the banks to charge for their services. If the banks to a greater extent demanded payment for their cash services, there would probably be

² See the definitions given at the end of this report.

³ Scholnik et al. (2008) have studied bank level data from Spain and conclude that debit card and ATM transactions are substitutes. Bolt et al. (2008) have examined aggregated data from Norway and also find support for this view.

⁴ No international statistics are available for cash withdrawals associated with goods purchases.

a fall in demand for cash, and the banks' losses from cash handling would be reduced. However, the banks are reluctant to implement such measures and try to reduce the use of cash through other means. This is to be achieved by stimulating the use of deposit money and by making cash somewhat less available. The banks have decided, among other things, to reduce the fee a bank pays when its customers withdraw money from another bank's ATMs.⁵ This will make it less profitable for banks to deploy more ATMs. This may result in fewer ATMs, fewer withdrawals and a reduction in cash circulation. Cash is easily available in Norway, and will continue to be so regardless of a small reduction in the number of ATMs.

Fraud

The extent of fraud and attempted fraud with electronic payment instruments is small in Norway. No comprehensive statistics are currently available, but the Norwegian Financial Services Association (FNH) collects statistics for approximately two-thirds of Norwegian banks, measured in total assets. In 2007, 9 688 cases of fraudulent use of payment cards were registered. This is approximately the same number as in the previous year (see Chart 1.14). The value of losses in 2007 was approximately 0.03 per cent of total sales involving payment cards.

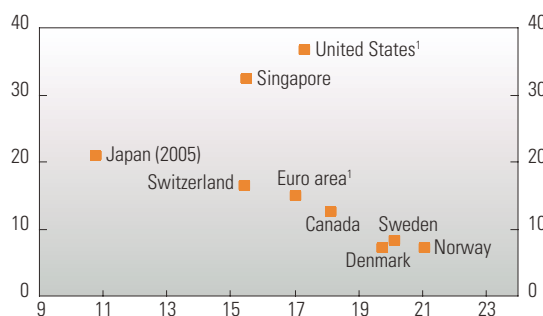
In order to reduce card fraud, Norwegian banks now issue cards with a chip. It is more difficult to copy data stored in chips than that stored in magnetic strips, and the solution is therefore regarded as more secure. At the end of 2007, almost 30 per cent of cards were chip-based.

During the same period, 1031 cases of fraud were reported in connection with Internet banking, Internet, telebanking and telephone giros. The number is increasing, and new threats are an important challenge for the banks. See also the box concerning the security of Internet banking. Internationally, Norwegian Internet banking is considered as secure.

New payment services

BankAxxess is a new service for payment of online purchases. The buyer is connected directly to his or her

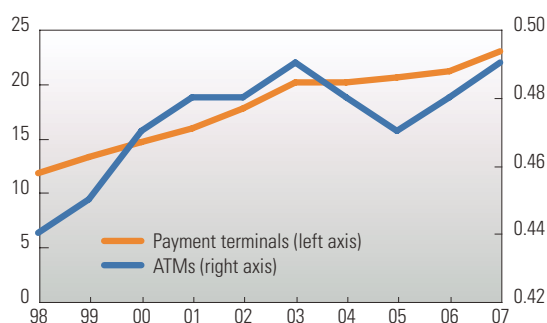
Chart 1.12 Share of means of payment (M1) in cash (y axis) and number of payment terminals (x axis). Per cent and per thousand inhabitants. 2006



¹ The US and the Euro area are adjusted for the estimated share of the currencies that are outside the country's borders.

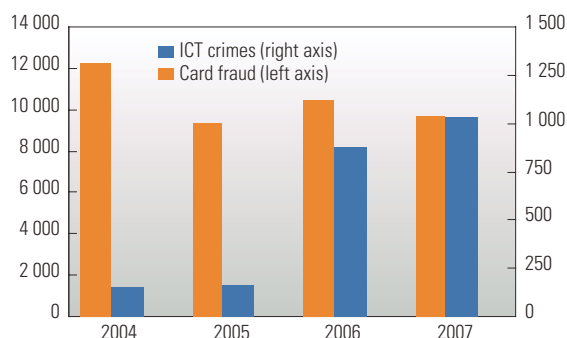
Sources: Norges Bank, ECB Blue Book and BIS Red Book

Chart 1.13 Number of payment terminals (EFTPOS) and number of ATMs. Per thousand inhabitants. 1998 – 2007



Source: Norges Bank

Chart 1.14 Fraudulent practices registered by Norwegian Financial Services Association (FNH). Number of card frauds and ICT crimes. 2004 – 2007



Source: Norwegian Financial Services Association (FNH)

⁵ Until 1 March 2008, the charge was NOK 6.50 per transaction, and was then reduced to NOK 5.50. On 1 January 2009, it will be further reduced by NOK 1.00.

Table 1 Key figures for different payment systems (2006)

	United States	Euro area	Sweden	Denmark	Finland	United Kingdom	Germany	France	Norway
Cash and bank deposits									
Banknotes and coins in circulation, % of GDP	6,2	6,5	3,6	3,1	:	3,8	:	:	2,3
Banknotes and coins in circulation, % of M1	59,1	14,4	8,4	7,3	:	:	:	:	7,1
Branches									
No. branches offering payment services per million inhabitants	370	636	264	398	304	461	515	631	597
ATMs									
No. ATMs per million inhabitants ¹	1 318	832	309	569	623	999	654	757	485
No. ATM withdrawals per year per inhabitant	:	23	34	:	37	45	30	23	21
Average ATM withdrawal (EUR)	:	123	98	154	84	96	156	69	145
Payment cards									
No. terminals per million inhabitants	17 288	17 009	20 107	19 759	19 938	17 399	7 023	18 071	21 556
No. payment cards per 1000 inhabitants									
- Debit cards	910	954	962	776	939	1 129	1 070	997	1 193
- Credit and charge cards	4 390	598	568	325	689	1 230	218	1 061	684
No. card transactions per inhabitant									
- Debit cards	87	25	110	133	136	76	25	:	176
- Credit and charge cards	75	8	21	9	17	34	5	:	12
Average amount per payment (EUR)									
- Debit cards	46	56	41	76	35	75	67	50	65
- Credit and charge cards	30	53	39	96	62	98	96	:	60
- Credit and charge cards	66	79	54	61	31	65	61	:	144
Relative use of payment instruments, in percent of number of transactions (of value of transactions in brackets)									
Credit transfers (various giro services)	7 (24)	30 (83)	29 (91)	22 (78)	43 (98)	21 (97)	42 (88)	17 (82)	34 (94)
Direct debits (Avtalegiro, etc.)	9 (18)	29 (7)	10 (4)	14 (10)	5 (1)	20 (1)	43 (10)	18 (5)	3 (2)
Cheques	33 (55)	9 (7)	0 (1)	2 (7)	0 (1)	12 (2)	1 (2)	26 (10)	0 (0)
Payment cards	52 (4)	30 (1)	61 (5)	62 (6)	52 (1)	47 (0)	14 (0)	38 (1)	63 (4)
Other payment instruments	0 (0)	2 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (2)	0 (0)

¹ For Norway the figure only includes terminals accepting BankAxept cards.

Sources: Norges Bank, ECB Blue Book and BIS Red Book

Internet bank, and is thus able to pay without revealing card details. The customer proves his or her identity and authorises the payment by means of BankID. BankID is a system for identification and signing via the Internet, developed jointly by the Norwegian banks. Until now, BankAxxess has only been available for online purchases. The service will gradually be made available for other forms of commerce, such as trade via mobile telephone or digital TV. International payment cards are the dominant payment instrument for online purchases. BankAxxess extends the range of payment solutions available to customers and merchants.

Payment services are increasingly available via mobile telephone. To date, such banking services have included payment of bills, transfer between own accounts and account statements. The range of services is under

development. In the future, mobile telephones will probably also be used for low value payments. Both Visa and MasterCard have developed contactless payment solutions (Visa's payWave and MasterCard's PayPass). A chip is placed in a payment card or in a mobile telephone. The customer pays by the chip communicating with a payment terminal when placed close enough. The new solutions will provide customers with new options. However, the banks are facing challenges associated with the security of such solutions.

1.2 Prices for payment services

Prices outside of customer programmes (list prices) for payment services⁶ changed little in 2007. The prices for electronic payment services have long been much lower

The security of Internet banking^a

There is a steady increase in the range of payment services offered via open networks. Most giro payments are made by means of Internet banking, and there is a steady increase in the number of card payments made via the Internet. Open networks are vulnerable to new types of crime. Criminal groups have become more professional, and there appear to be well organised markets for software and data that can be used to commit fraud via Internet banking. In 2007, there were a number of cases of fraudulent transactions in other persons' Internet bank accounts. However, the banks have become more proficient at monitoring and detecting this type of fraud before the trans-

actions are carried out. In 2007, under the auspices of the Banks' Standardisation Office (BSK), the banks implemented joint measures to improve security. These measures include mutual exchange of information on suspicious transactions.

The banks hold the main responsibility for preventing misuse of their payment systems on the Internet. Customers can improve their security by installing and updating security software on their computers.

The banking industry has collaborated on developing BankID, a system for authentication and signing via the Internet. Most Norwegian banks have implemented BankID

for authentication of customers and authorisation of payments in their Internet banks. The service can also be used by other merchants and institutions that need customers to sign documents electronically. Because the same log-on mechanisms can be used for several purposes, it could be practical for the users if BankID became more widely employed. However, the systems may become more vulnerable if they become extensively dependent on a single service. If operational problems put BankID out of operation, it may have consequences for both individual users and the community at large.

^a This information is based on Kredittilsynet (2008).

⁶ For several years, Norges Bank has conducted a survey of official prices aimed at customers outside of customer programmes for a number of payment services. The survey includes both large and small commercial and savings banks. The 24 banks in the survey, had a total of 86 per cent of Norwegian banks' deposits in current accounts on 30 November 2007. The average prices are weighted with the banks' deposits in such accounts. The list prices were collected on 1 January each year, and are shown in the statistical annex.

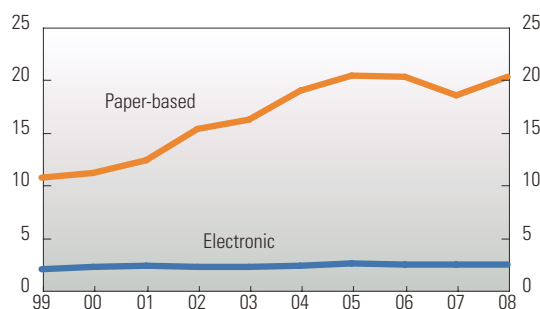
than those for paper-based services (see Chart 1.15). This has contributed to increased use of electronic payment services (see Part 1.1). Because an increasing number of customers participate in customer programmes with discounts on electronic payment services, the actual difference in prices is greater than list prices indicate. Figures from the Norwegian Savings Banks' Association's Internet banking survey of 2008 show that approximately 40 per cent of bank customers participate in a customer programme. Norges Bank's calculations indicate that these customers account for 65–70 per cent of the transactions involving the most used electronic services. The content of and cost of participation in customer programmes varies considerably both between banks and within individual banks. Some programmes are free of charge. Others cost approximately NOK 1 000 a year. At the start of 2008, the average charge for electronic payment services in customer programmes was less than half of corresponding list prices.

The list prices show that there is no charge for withdrawing money from one's own bank, from one's own bank's ATMs during opening hours or for withdrawing cash when purchasing goods. Most banks charge for cash withdrawals from ATMs outside of opening hours. The average list price for this service has been stable for several years (see Chart 1.16). The price of withdrawing cash from other banks' ATMs is much higher. This is partly because the bank that issued a bank card pays a fee for each cash withdrawal to the bank that owns the ATM (see footnote 5). Very few banks have included discounts on withdrawals from other banks' ATMs in their customer programmes.

Payment of bills via Internet banking and direct debits (Avtalegiro) are the cheapest payment services available to retail customers (see Chart 1.17). The average list price for transactions with payment cards at shop terminals (EFTPOS) was NOK 2.32 at the start of 2008. These services are generally priced much lower in the banks' customer programmes. In many cases, they are free. Figures from a selection of banks' customer programmes average out at NOK 0.8–0.9 for these services.

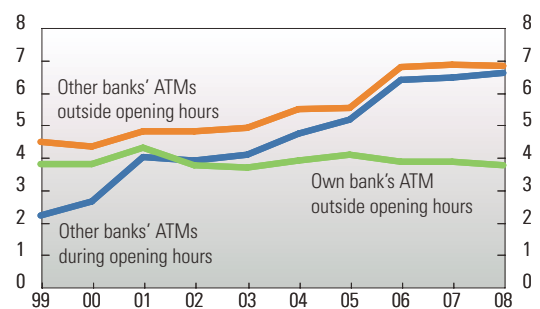
In recent years, the banks have made changes in the range of services for business customers. The scale of Internet banking has increased, while a number of banks

Chart 1.15 Weighted average prices of electronic and paper-based payment services. Nominal prices. NOK. 1999 – 2008



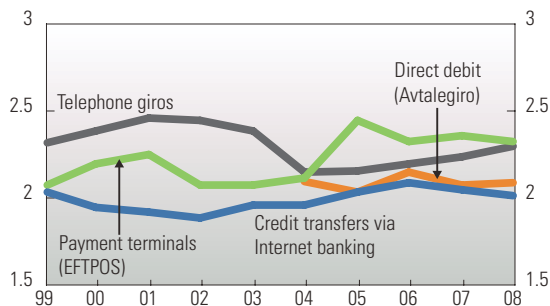
Source: Norges Bank

Chart 1.16 List prices for ATM withdrawals. Weighted average for the banks included in the survey. NOK. 1999 – 2008



Source: Norges Bank

Chart 1.17 List prices for electronic payment services for retail customers. Weighted average for banks included in the survey. NOK. 1999 – 2008



Source: Norges Bank

no longer provide payment solutions such as company terminal giros and direct remittance. This involves a move towards cheaper services. The price of the services has been quite stable in recent years (see Chart 1.18).

The banks earned approximately NOK 5.2bn on retail payment services in 2007. This was 3 per cent less than in 2006. This may be because customers favour low-priced services. However, there is some uncertainty regarding how income from customer programmes is recorded in the banks' accounts. Approximately half of the income from retail payment services was derived from payment cards (see Chart 1.19). Giro services are also important sources of income.

1.2.1 Efficient pricing of payment services

For many years, Norwegian banks' prices have reflected relative differences in the costs of the various payment services. This has contributed to the phasing out of services with a large element of manual processing and to the making of a predominant share of payments with

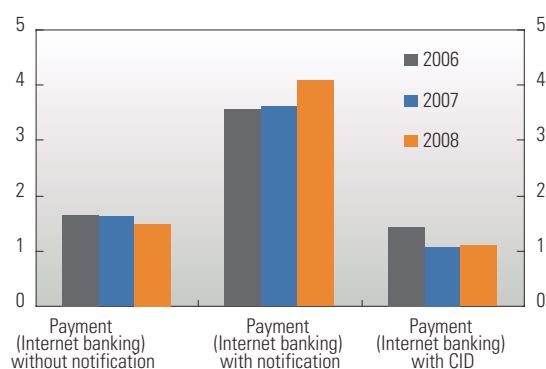
deposit money by means of electronic services.⁷

Some years ago, the banks' income from the payment system was mainly derived from charges on transactions. Now, a considerable share of the income comes from standing charges associated with customer programmes and payment cards.

At the same time, customer programmes give large discounts on the list prices of electronic payment services. There are challenges associated with the fact that customer programmes include services other than payment services. The programmes may make it more difficult for customers to compare prices for payment services of the various banks. This may hinder competition. Competition is a major precondition for an efficient payment system over time.

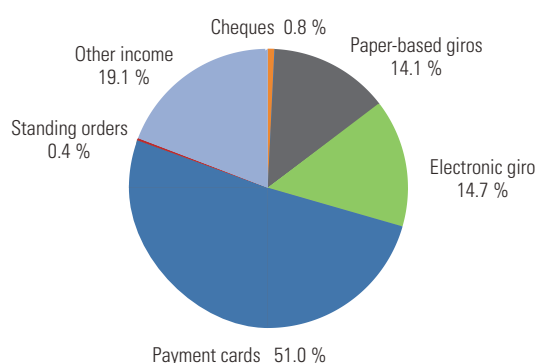
Services such as Finansportalen may make it easier to compare prices, including those of bundled products (see information box). At the same time, new rules have made it easier to change bank (see information box). However, it is too early to assess the effect of these measures on competition.

Chart 1.18 List prices for Internet banking for business customers. Weighted average for banks included in the survey. NOK. 2006 – 2008



Source: Norges Bank

Chart 1.19 Income from retail payment services by service type. Per cent. 2007



Source: Norges Bank

⁷ See Enge and Øvre (2006) for a discussion of the introduction of charges in Norwegian payment systems.

Economic efficiency entails maximisation of the total benefits to consumers and providers of payment services. This is achieved when the price is equal to the marginal cost. The additional benefit that the consumer receives from the payment service is then equal to the additional cost of providing the service. An efficient consumer selects the service corresponding to his needs and preferences at the lowest possible price. When the price is set equal to the marginal cost, consumers are given an incentive to adapt themselves to what is socially efficient. Price is therefore an important instrument for improving the efficiency of the payment system.⁸

Electronic payment systems are characterised by high fixed costs, partly as a consequence of investments in infrastructure, while the marginal cost (the cost of each transaction) is low. This is often referred to as economies of scale. Although the average cost falls when the volume of transactions increases, it is still higher than the marginal cost in cases of economies of scale. If the price is set equal to the marginal cost, costs are not covered. If the providers do not cover their costs, they may choose not to develop

new payment services or invest in new technology. Over time, this may prevent the payment system from becoming more efficient.

It is possible to adopt a price strategy that results both in economic efficiency and cost absorption: a fixed price that covers the average fixed cost and a transaction fee that covers the average variable cost.^{9 10} Several Norwegian banks have chosen a price structure that resembles this. This involves a fixed annual fee for customer programmes or card ownership and a fee for each transaction. It has not been established how well the prices reflect the fixed and variable costs or whether the banks succeed in absorbing costs.¹¹ We know however that the discounts in the customer programmes include electronic services, and that transaction charges mainly reflect relative cost differences between payment services. Some banks have recently abolished annual fees. This may make it difficult to achieve cost recovery in the payment system.

Finansportalen.no

When the prices and properties of the various payment instruments are known, the users will choose the solutions that, all in all, best serve their interests. This requires that they are well informed. Finansportalen.no, which was launched on 14 January 2008, makes such information more easily available. The portal is an independent information channel aimed at retail customers. It contains comparisons between price of everyday banking services, loans, insurance terms and information on savings products. Finansportalen includes the prices of a number of different payment services aimed at the general public in the areas of payment cards and payment of bills. The service also contains information on the terms of customer programmes.

Easier to change bank

Rules that make it easier to change bank came into force on 1 May 2008. According to the rules, the bank that the customer moves to and the bank he moves from are to assist in:

- Closing accounts
- Obtaining a list of payment orders and direct debit agreements.
- Upholding payments associated with closed accounts
- Redeeming and moving loans and credits

Customers who wish to change bank must fill in a form in the new bank. The new bank and the old bank will then make all the necessary arrangements for the transfer. The new rules may help increase competition, thereby lowering the prices of banking services.

⁸ On the basis of data for Norway and the Netherlands, Bolt, Humphrey and Uittenbogaard (2008) find that direct pricing of payment services increases the pace of change towards electronic services by approximately 20 per cent. Humphrey et al. (2001) and Scholnick et al. (2008) also find that consumers respond to prices in their choice of payment instrument.

⁹ See Bolt og Humphrey (2005) for a discussion of such a dual price strategy. The average variable cost is a simplification of marginal cost.

¹⁰ In two-sided markets, the total price should be compared with the total marginal cost. Engé and Øwre (2006) discuss the charging of costs to the various participants in two-sided markets.

¹¹ The cost survey conducted by Norges Bank in (2007/2008) may provide more information about this.

Charges on international payment cards

There has been a steady increase in consumers' preference for payment cards over cash when purchasing goods and services. The greatest increase has been in the use of international payment cards such as Visa and MasterCard. Many participants and fees are involved in settling these payments (see Chart 1).

When the cardholder (the customer) swipes the card and receives the products, the amount is earmarked in the customer's account (debit cards) or the issuer subsequently invoices the customer (credit and charge cards). The issuer transfers the amount to the merchant's acquirer. The acquirer is a finance company or a bank that handles the transactions on behalf of the merchant.^a Acquirers of transactions carried out by means of international payment cards pay

an interchange fee to the issuer. The charge is calculated as a percentage of the amount paid.

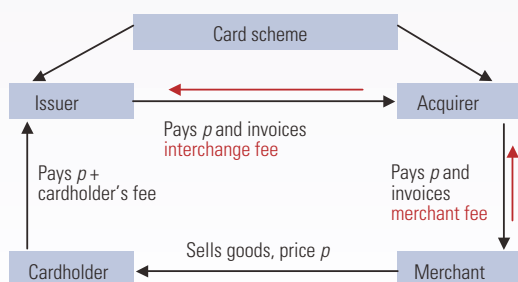
The merchant receives settlement for the trade from the acquirer. The acquirer charges the merchant a merchant fee. This is also calculated as a percentage of the value of the trade. In order to cover its costs, the acquirer must set the merchant fee higher than the interchange fee. Merchant fees vary considerably in relation to the merchants' turnover and power to negotiate. While the average fee has fallen slightly (see Chart 2), the fee for the smallest merchants is almost unchanged.

Visa and MasterCard maintain that the interchange fees are necessary. They argue that the costs of issuing cards will result in lower charges for the card holder, thus

encouraging more people to use cards. In their view, this will constitute an advantage for the merchants, and thus for the whole network. No interchange fee is charged on transactions using the national debit card system BankAxept. According to the EFTA Surveillance Authority (2008), the annual fee for use of BankAxept cards is on average 50 per cent lower than the corresponding fees for international payment cards. It is therefore not certain that the interchange fee is used to subsidise card holders. The EFTA Surveillance Authority (2008) shows moreover that most of the issuers in the EFTA countries would have profited from issuing cards even if the interchange fee was abolished.

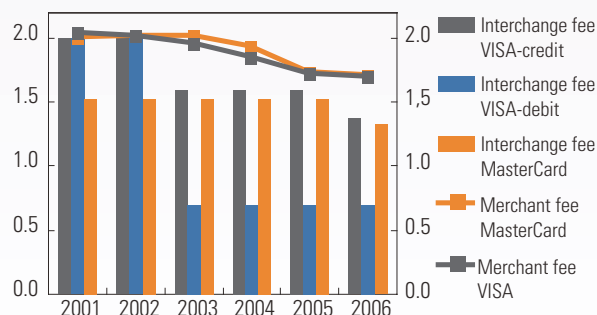
A comparison between the interchange fees in Norway and those

Chart 1 Transaction charges on international payment cards such as VISA and MasterCard



Source: Norges Bank

Chart 2 Average merchant fees and list prices of interchange fees in Norway. VISA and MasterCard. Per cent. 2001 – 2006



Source: Kaardal, Ryste and Solberg (2007)

of the EU member states shows that the fees on international payment cards are high in Norway.^b When the interchange fees are high, the merchant fees are also high. Unless the merchant differentiates charges by means of different payment cards, the costs are distributed between all customers. Therefore, what benefits one customer, does not necessarily result in the best overall solution. Although the merchant fees for international payment cards are somewhat high in Norway, merchant fees are on average low in international terms. This is because BankAxept cards, which have very low merchant fees, are used for 84 per cent of the transactions. In sectors where international cards dominate, the average charge is much higher.

In 2007, the European Commission (2007) published a report that addressed the structure and level of

charges in the various payment card systems in EU member states. The report shows that merchant and interchange fees vary considerably from country to country. Attention was drawn to the lack of competition between countries and to domestic obstacles to competition in the various countries.

In December 2007, the European Commission decided that MasterCard would not be permitted to charge an interchange fee on cross-border payments within the EEA area (Kroes 2007). The grounds given for this were that MasterCard could not prove that the interchange fee served the interests of the consumers, and that it therefore violated the EU rules of competition. On 1 March 2008, the European Commission instituted proceedings against VISA Europe (the European Commission 2008). In February 2008, the Norwegian

Ministry of Finance requested the Norwegian Competition Authority to assess the legality of the interchange fee and the merchant fee pursuant to the Competition Act.

Norges Bank is concerned with payments being effected quickly, securely and at low cost. There is reason to believe that the charges associated with international payment card systems are higher than is socially optimal.

^a A merchant may be a shop, hotel, restaurant, transport enterprise, etc.

^b In the case of VISA, the official Norwegian reference prices for the interchange fee were in 2006 1.37 per cent for credit cards and 0.70 per cent for debit cards. Corresponding charges associated with MasterCard's credit cards are calculated at 1.32 per cent. In 2004, the average interchange fee for MasterCard was higher in Norway than in 18 of the 21 countries referred to in the European Commission's report. Correspondingly, the interchange fee for VISA credit cards was higher in Norway than in 15 of 21 countries.

1.3 Cross-border payments

Cross-border payments are more expensive and time-consuming than domestic payments. For example, a bank customer in Norway is charged on average NOK 30 to pay a bill to a recipient in another EEA country. It often takes three days before the payment is available on the recipient's account.

The high costs and the long transfer time is a result of the fact that each country has its own payment services, its own infrastructure and its own rules for payments. The banking industry in Europe is currently working on the establishment of a common European payment area in order to enhance the efficiency of cross-border payments (ECB 2007). The project is called SEPA – Single Euro Payments Area.¹² Norwegian banks wish to offer their customers efficient solutions for payments to recipients in other European countries, and are therefore participating in this work.

Among other things, SEPA involves a set of joint European payment instruments (see information box). The first of these was implemented in January 2008 (SEPA Credit Transfer). Most Norwegian banks will introduce this payment service for euro in the first half of 2008. The new

instruments are expected to reduce the costs and transfer times of payments between European countries.¹³

A single European payment area requires a common statutory basis. The European Parliament approved the Payment Services Directive (PSD) in April 2007 (see information box). Pursuant to the EEA Agreement, the Directive will also be implemented in Norwegian law.

The competition in the banking industry and between other providers of payment services will increase as the significance of national borders declines. National markets with weak competition will be opened to new participants. It will become easier to exploit economies of scale. In the longer term, the SEPA instruments will probably also be implemented for domestic payments in the Euro area. Eventually, consumers and enterprises will only need one account to cover payments throughout the euro area. Costs may increase as long as domestic solutions are used alongside the joint solutions. It is therefore important that this period is as short as possible (Schmiedel 2007). It is difficult to determine what will happen to the distinctively Norwegian payment systems. This will depend on the extent to which banks view it as appropriate to allow the systems for NOK to approximate the new European solutions.

SEPA instruments

SEPA Credit transfer was launched on 28 January 2008. At the beginning of March 2008, approximately 4 230 European banks (of these, 27 Norwegian) had adopted the scheme.

SEPA Direct Debit requires a common statutory basis, and cannot be used until the Payment Service Directive is implemented throughout the EEA area by 1 November 2009.

SEPA Cards Framework (card payments) provides a set of principles that must be met in order that a card holder shall be able to pay with a single card throughout the euro area on the same conditions as apply in the country where the card was issued.

The Directive on Payment Services (PSD)

The new EU Directive on payment services establishes a statutory platform for a single European payment area. The Directive is intended to contribute to making payments within the EEA as efficient and secure as in the best domestic system. The Directive regulates who may provide payment services to the public. It also concerns the rights and obligations of the users and suppliers of payment services. The Directive will increase competition by opening the market for a new type of payment services providers, so-called "payment institutions". The Directive is referred to as a full harmonisation directive. This means that countries may only make exceptions to the Directive if specifically provided by the text of the Directive. The new rules shall be implemented in national law by 1 November 2009 at the latest.

¹² SEPA covers the EEA countries and Switzerland.

¹³ See Haare (2008) for a more detailed account of SEPA.

Private transfers to developing countries

A survey conducted by Statistics Norway (2008) shows that 57 per cent of a selection of non-western immigrants to Norway provide financial support to their families in their countries of origin.^a In world terms, more than USD 340bn was registered transferred from immigrants and their descendants to families in developing countries in 2007 (Ratha and Mohapatra 2008). This is more than twice the total amount of development aid received by the developing countries. The systems for payments between Norway and many of the countries to which immigrants send money are not currently satisfactory (Carling et al. 2007, Økokrim 2007).

Payments to other countries are made through various formal and informal channels. In order to be licensed to provide such payment services, enterprises in Norway must satisfy the requirements of the Financial Institutions Act.^b Banks and enterprises that specialise in value transfers, for example MoneyGram (Forex) and Western Union, hold such licences. Bank transfers require that the recipient country has a functioning banking system. In 2007, NOK 52.3bn was transferred via banks in Norway to the countries of origin of the 20 largest groups of non-western immigrants.^c MoneyGram (Forex) and Western Union have agents in approximately 200 countries, and convey payments between these countries. Licensed value transfer enterprises transferred NOK 1.2bn from Norway in 2007. The problem with the formal channels is that they

are often expensive and/or that transfers take a long time. Moreover, there are countries and towns that have neither banks nor agents for licensed value transfer enterprises.

The most well known informal value transfer systems are known as Hawala. These systems are based on trust. A person or enterprise receives money in Norway. A collaborator in the recipient country is then notified that the money can be paid to the person concerned. The money is paid before it is actually received in the recipient country. The transfer itself takes place when a number of payments have been made so that the money can be transferred as a single amount. Hawala systems have no licence and are therefore not lawful in Norway. Consequently there are no reports of the amounts transferred. The National Authority for Investigation and Prosecution of Economic and Environmental Crime (Økokrim 2007) investigated nine Hawala systems from 1999 to 2007, and estimates that these systems made payments amounting to NOK 600m during this period.

Providing for efficient and legal money transfers to developing countries is important out of consideration for both development and control purposes. When unlicensed systems are used, the transfers are not transparent, and there is a greater risk of exploitation and misuse. Økokrim (2007) draws attention to the risk of laundering of money and financing of terrorism. In 2007, BIS and the World Bank issued a report on

remittance services. They argue for better provision for competition between the systems for currency transfers. This can be achieved, among other ways, by adapting capital and reporting requirements. Emphasis is also placed on ensuring that the systems are transparent and protect users.

It should be possible to carry out payment services quickly, securely and at low cost. There is room for improvement of services for money transfers from Norway to developing countries in all these areas. The legal systems can be made faster and less expensive. Unlicensed systems pose a challenge because they are unlawful and do not provide the users with formal rights. The Ministry of Finance has requested the Financial Supervisory Authority of Norway (Kredittilsynet) to consider amendments to the rules in order to facilitate provisions allowing immigrants to lawfully send money to their countries of origin (Ministry of Finance 2008).

^a The sample included over 3 000 individuals from Bosnia-Herzegovina, Serbia and Montenegro, Turkey, Iraq, Iran, Pakistan, Sri Lanka, Vietnam, Somalia and Chile who had resided longer than two years in Norway. At the start of 2006, 145 000 persons from these countries resided in Norway, i.e. 51 per cent of the non-western immigrants (Statistics Norway 2008).

^b The Act includes requirements concerning capital adequacy and reporting as well as rules concerning organisation, board of directors and management.

^c The amount includes transfers from private individuals and enterprises in Norway to Pakistan, Iraq, Somalia, Poland, Vietnam, Bosnia-Herzegovina, Iran, Turkey, Sri Lanka, Serbia and Montenegro, Russia, the Philippines, Thailand, India, Afghanistan, Morocco, Chile, China, Ethiopia, and Croatia (Statistics Norway 2008).

2. The interbank system

During six days, values equivalent to Norway’s GDP are channelled through the Norwegian interbank system. Every day, an average of almost six million customer payments and public incoming and outgoing payments are settled. In addition to this are transactions originating from trade in financial instruments and currency and large transfers associated with the banks’ liquidity management. The large values and volumes involved make the interbank system a critical element of Norway’s financial infrastructure. The systems must not only function; they must also be structured in such a way that they do not contribute to the spreading of problems between banks. Norges Bank oversees the interbank system as a whole and specifically the systems subject to licensing.¹⁴ The system owners are responsible for ensuring that the systems are appropriately organised and that they function properly.

The description of the interbank system is divided in three parts. The first part describes the various systems that make up the Norwegian interbank system (see Chart

2.1). Here we follow up the assessments published in the Annual Report on Payment Systems for 2006 (“Payment Systems 06”). We then consider two major areas of risk in the interbank system, liquidity risk and foreign exchange settlement risk.

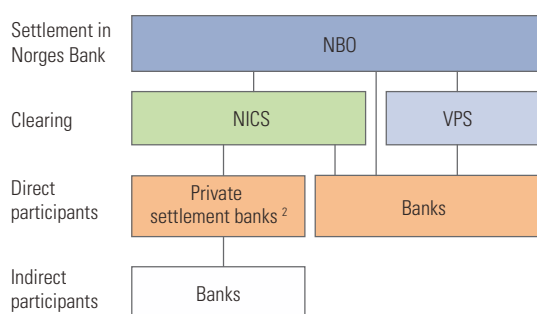
2.1 Systemically important interbank systems

Norges Bank’s settlement system (NBO), the clearing system Norwegian Interbank Clearing System (NICS), DnB NOR’s interbank system and the settlement of securities trading cleared in the Norwegian Central Securities Depository (VPS) are regarded as particularly important systems for the stability and efficiency of the Norwegian interbank system.

Norges Bank is the final settlement bank in Norway. All the larger Norwegian banks have accounts in Norges Bank and settle their payments in NBO.

Payments between customers of different banks are channelled through NICS. Most payments derive from the use of payment instruments such as giro and payment cards (see Part 1.1). In NICS, the payments are cleared so that each bank has either a debit or a credit position.

Chart 2.1 The interbank system in Norway¹



¹ The chart does not give a complete picture.

² DnB NOR is the largest private settlement bank in Norway.

Source: Norges Bank

Definitions

Interbank system: a system based on common rules for clearing, settlement and payment transfer between banks. *The interbank system* is the common designation for the Norwegian interbank systems.

The payment system includes both the interbank systems and the instruments and procedures used to secure the flow of money in a geographical area, normally a country.

Clearing: Two or more transactions are offset against each other and a net position is calculated for each bank.

Gross settlement: Transactions are settled separately, without clearing.

¹⁴ For more about Norges Bank’s role of supervision and oversight, see “Annual Report on Payment Systems 2006”, Norges Bank, and Haare and Sletner (2007).

The clearing is then sent to NBO for settlement. Transactions to be settled individually in NBO are also sent via NICS. These are usually very large customer payments or transactions associated with foreign exchange trading or the banks' liquidity management. NICS holds authorisation as an interbank system and is subject to supervision by Norges Bank pursuant to the Act relating to Payment Systems.

Banks may either participate directly in the settlement of the clearing of customer payments (NICS retail clearing) in Norges Bank or allow another bank to settle for them. DnB NOR is the most important private settlement bank. One hundred and three smaller banks allow their positions from the retail clearing to be included in the position of DnB NOR. In this way, DnB NOR settles on their behalf in NBO. After settlement in Norges Bank, these banks' accounts in DnB NOR are credited or debited with the balance they had in the retail clearing. Since a large number of banks may be affected if DnB NOR's interbank system fails to function properly, the system is regarded as central to the efficiency of the Norwegian payment system. In terms of total assets, the banks that participate indirectly in the settlement in Norges Bank constitute a limited share (see Chart 2.2). DnB

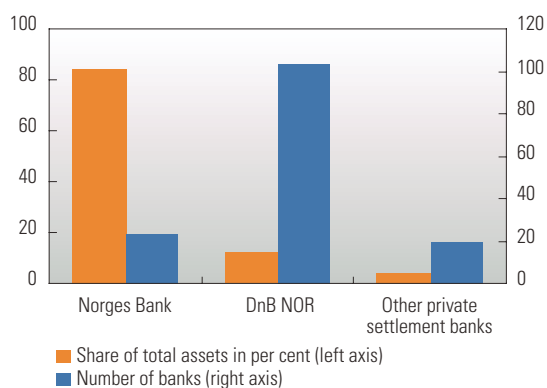
NOR's interbank system holds authorisation and is subject to the supervision of Norges Bank pursuant to the Act relating to Payment Systems.

VPS clears brokers' and investors' trades in shares, certificates and bonds. VPS calculates the participants' net positions in the securities settlement associated with both the securities and the payments for these. Settlement of the securities is carried out in VPS and the settlement of the associated cash positions in NBO.

2.1.1 Assessment of the various systems

In Payment Systems 06, NBO, NICS and DnB NOR's interbank systems were assessed against the core principles for such systems issued by the Committee on Payment and Settlement Systems (CPSS 2001).¹⁵ The main conclusion was that the systems were of high quality. However, attention was drawn to some matters that could be improved. This year's report describes events and changes in 2007, and provides the status in relation to matters pointed out in Payment Systems 06. It also describes the status of the Norwegian settlement of securities trades.

Chart 2.2 Norwegian banks by settlement bank. Share of total assets and number of banks. 2007



Source: Norges Bank

The FSA's IT supervision

The Financial Supervision Act provides the Financial Supervisory Authority (FSA) of Norway (Kredittilsynet) with the authority to issue regulations concerning information and communications technology (ICT). The regulations shall help ensuring the quality and security of the electronic solutions and reduce the operational risk of the financial sector. Kredittilsynet monitors financial undertakings' compliance with the regulations. One of the measures employed is inspection of financial undertakings. During inspection of the undertaking, Kredittilsynet may request access to information concerning the activities of ICT suppliers. Kredittilsynet publishes an annual Risk and vulnerability analysis (RVA), which concerns financial undertakings' use of information and communications technology.

¹⁵ The CPSS is a forum for the central banks in the G10 countries. The purpose of the CPSS is to promote robust and efficient payment systems. The Bank for International Settlement (BIS) has the secretariat for the CPSS.

Norges Bank's settlement system (NBO)

At the end of 2007, 142 banks had accounts in Norges Bank. Of these, 23 banks participated on a daily basis in the settlement of clearings and individual transactions. The turnover in NBO has increased in recent years (see Chart 2.3). From 2006 to 2007, the average daily turnover increased by 13 per cent.

The operational stability of NBO has been good in recent years. In 2007, availability in NBO was on average 99.71 per cent (see Chart 2.4).¹⁶ The longest lasting disruption in 2007 occurred on 2 January in connection with the transition to the New Year. Owing to a missing manual update, the system failed to open as normal. As a result of this, settlements were not entered in NBO until approximately 2½ hours after the system should have been opened. In addition to this, there have been some faults of brief duration, like a power outage and an error when synchronising watches in the system. After these disruptions, Norges Bank and the affected parties reviewed and improved their routines.

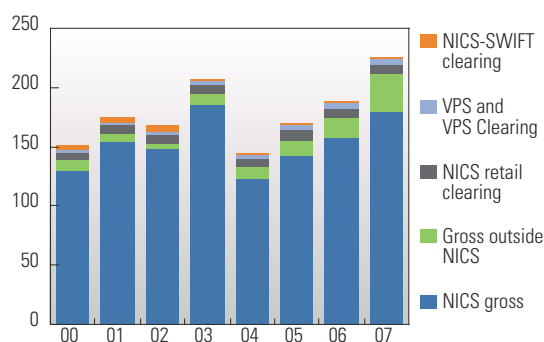
NBO can also be affected by events in international transaction channels and settlement systems. An example of the former is the interruption of operations at the main operations centre for SWIFT on 23 March (see box on SWIFT). The interruption lasted approximately one hour,

during which participants in NBO were not able to send payment orders via the SWIFT network to NBO.

The banks must have sufficient liquidity for their payments in NBO. This is obtained through deposits on accounts or borrowing facility in Norges Bank. Pledging of approved collateral provides borrowing facility. The liquidity in the payment settlement has mainly been ample in 2007. The rules for what may be accepted as collateral have been amended in recent years. Amendments adopted in 2005 came fully into force on 1 November 2007. Viewed in isolation, these amendments resulted in a certain reduction in the banks' pledged collateral.¹⁷ However, the banks have compensated for this by pledging new securities, and the total borrowing facility has not been reduced. See 2.2 for more information on the amount of liquidity needed by the banks for the settlement, and how much they have access to.

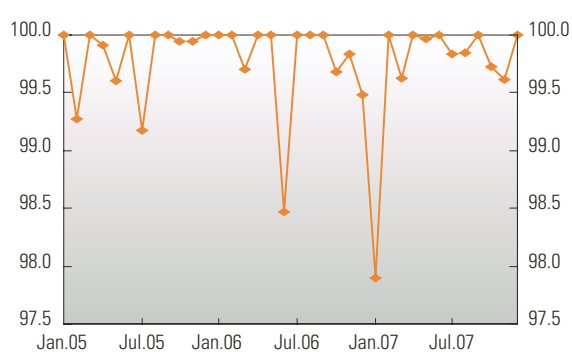
Norges Bank is in the process of renewing its settlement system (see separate box). The new system was planned to be implemented in spring 2008, but now seems likely to be postponed. It is the experience that changes in systems give rise to an increased risk of operational instability. Emphasis is thus placed on developing robust strategies for the handling of disruptions that arise during and after the transition from the old to the new system.

Chart 2.3 Daily turnover in NBO by settlement. NOK billions. 2000 – 2007



Source: Norges Bank

Chart 2.4 Availability in NBO during opening hours.¹ Monthly result. Per cent. 2005 – 2007



¹ 2005 – 2006: Availability for IT operations for NBO by ErgoGroup. Source: Norges Bank

¹⁶ The availability of NBO is defined as the proportion of time that NBO is technically available to receive, enter and issue receipts for completed payment settlements.

¹⁷ For a more detailed account, see Bakke, Sandal and Solberg (2007).

Norwegian Interbank Clearing System (NICS)

The turnover in NICS increased by 13 per cent from 2006 to 2007 (see Chart 2.5). The transactions that are sent individually (gross) to NBO dominate in value. On average, 593 such transactions are sent daily. By way of comparison, an average of 5.5 million transactions are

each day included in the retail clearings.

NICS is operated by BBS (Banking and Business Solutions) on contract from the NICS Operations Office.¹⁸ In 2007, the system functioned relatively stably. The number of disruptions was at the same level as the two previous years (see Chart 2.6). The disruptions were

The new interbank settlement system at Norges Bank

Norges Bank is to implement a new interbank settlement system in 2009. This follows a gradual alteration of the tasks that the current settlement system has been used for, and that the system is approaching the end of its technical life. The system is not as flexible as it needs to be, and few people have the necessary knowledge to upgrade the software.

In March 2006, Norges Bank signed an agreement with the Italian company SIA S.p.A. (now SIASSB) for delivery of software for a new settlement system. Since the agreement was concluded, the parties have been working on adapting the new system to Norges Bank's requirements and on making the system ready for use.

The new settlement system will have approximately the same main functions as Norges Bank's current system. One of the most important changes will be that all payment instructions will be sent to the system via the international messaging system SWIFT or by means of a web based interface (NBO Online).

The account structure will be changed. Each bank will have a main account where all liquidity is gathered overnight for calculation of interest and automatic transfer to Norges Bank's general ledger. The main account can also be used for payments. However, the account does not facilitate a queuing function. A payment instruction that is sent for settlement on this account will be rejected immediately if the bank does not have sufficient liquidity available on the account. The main account will therefore normally only be used for incoming and outgoing payments to Norges Bank. In connection with the main account, the participating bank will be given a loan account with borrowing facilities, similar to what the banks have today.

In addition to the main account and the loan account, each bank will be given one or more subaccounts with mechanisms for efficient use of liquidity (including queue handling functions for unsettled payment instructions). Initially, there will be three such subaccounts. One of these is general, and is to be used for all regular settlement

instructions. This account will also be used for settlement of clearings from NICS and VPS Clearing. At the start of the day, the banks that have pledged collateral draw up an intra-day credit and transfer the liquidity to this account. All the banks that participate in NBO will have such an account. Banks that participate, respectively, in securities settlement and in the foreign exchange settlement system CLS will have their own subaccounts for this purpose. Transfer of liquidity to such accounts will replace the earmarking used in the current system. At fixed intervals and finally at the end of the day, the liquidity will be transferred from the subaccounts back to the main account.

The new settlement system also has a number of functions not available in the current system. The banks have chosen not to use the majority of these functions initially. As the banks gain experience with the new settlement system, they may wish to begin using them. This will enable improved management of liquidity and more efficient handling of payments.

¹⁸ As part of a major reorganisation, the infrastructure area of BBS has been established as a separate company. From 22 December 2007, NICS has been operated by BBS Infrastruktur AS.

mainly caused by technical faults that created problems for the receipt or handling of SWIFT transactions. This also caused the delay of some payments.

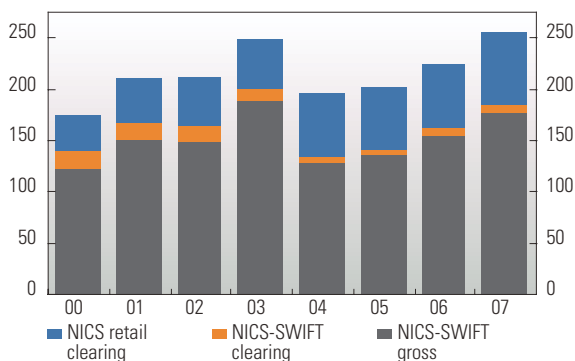
In Payment Systems 06, NICS was assessed not fully to observe Core Principle I on the legal basis of the system.¹⁹ The criticism was mainly directed at the rules for settlement of the banks' positions associated with BankAxept transactions²⁰ if a bank is placed under public administration. In 2007, new rules were laid down. In these rules, the settlement bank is no longer obliged to provide liquidity in order that the settlement shall be effected. NICS is now assessed to fully observe Core Principle I.

Each year, securities for considerable amounts are paid through the use of the service 'One off direct debit'. The transactions from this service are included in the retail clearing in NICS. However, the service has contractual deficiencies, for example, that the payer's bank is not included in the agreements underlying the use of the service. The service thus fails to meet the criteria for transactions that can be included in NICS. The operator of NICS has informed the banks of this, and the banks have had to declare the NICS Operations Office to be free of liability for these transactions. The service will be blocked from 1 November 2008. The banks are making efforts to find a satisfactory alternative.

The operations centre of NICS (BBS) is in process of gradually replacing its technological platform. The purpose is improved flexibility and security at lower costs. After some delays, transactions from payment terminals and ATMs (BOLS format) were processed on the new platform from 25 April 2008. NICS Online, with information on transactions on the BOLS format, was then also implemented. This information system provides the banks with more detailed information on their positions than has previously been available to them. From 2009/2010, other retail transactions and SWIFT transactions will be processed on the new technological platform. The operational risk normally increases when new systems are implemented. In the view of BBS, the risk of serious errors is lower when a new system is introduced gradually.

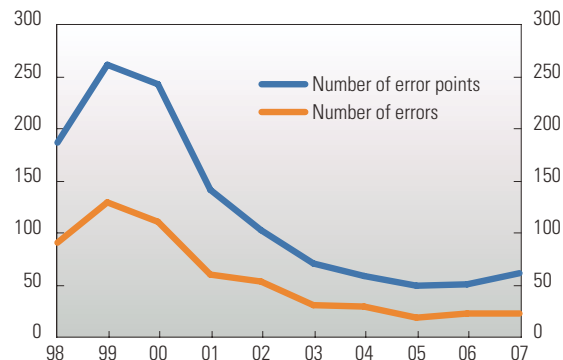
NICS has had stable operations in 2007, and has good routines for reporting and handling disruptions. BBS seems to have satisfactory control of risks in connection with the ongoing process of change. In Payment Systems 06, it was commented that there was room for improvement in the provision for the participants' understanding of their own financial risks incurred through participation in NICS. The new BankAxept agreement and the clarification concerning 'One off direct debit' have contributed to this.

Chart 2.5 Turnover in NICS. Daily average. NOK billions. 2000 – 2007



Source: Norges Bank

Chart 2.6 Disruptions in NICS. Number of errors and error points. 1998 – 2007



Source: NICS Operations Office

¹⁹ According to Core Principle I, the system shall have a well-founded legal basis under all relevant jurisdictions (CPSS 2001).

²⁰ BankAxept is the banks' joint system for payment by card in Norway.

NBO and NICS - closely connected

NBO and NICS are connected in that payment transactions are cleared in or channelled through NICS before being settled in NBO. Delays in one of the systems are likely to result in delays in the other.

Owing to these interdependencies, it is important that the systems are coordinated. In Payment Systems 06 attention was drawn to a lack of correspondence in some places between the agreements and rules concerning NBO and NICS. In 2007, Norges Bank made changes which resulted in better correspondence. However, certain matters are still unclear. NICS' rules describe how Norges Bank will handle disruptive situations. Since Norges Bank will not waive its right to exercise judgment in such situations, it has not made it clear in advance how it intends to handle such situations. Better coordination of agreements would have resulted in increased predictability for the banks.

In Payment Systems 06 it was also pointed out that the settlement of the clearings calculated in NICS is not ensured if one of the participants is unable to settle. No change has been made in this arrangement. NBO and NICS therefore still do not fully satisfy Core Principle V.²¹ Norges Bank considers the solution the banks have chosen for retail settlement to be as expedient as a solution

based on an ensured completion of the settlement. This is partly due to the fact that an ensured settlement would have imposed a credit risk on the banks that they do not have with the current solution.

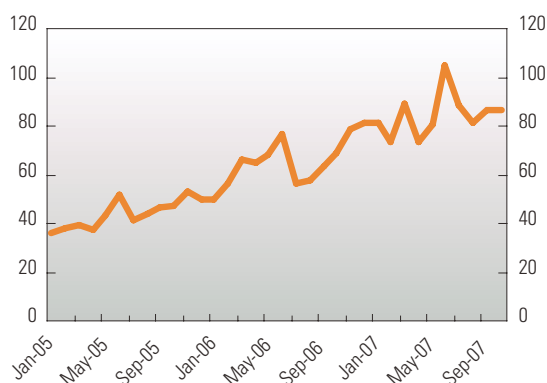
DnB NOR's interbank system

At the end of 2007, DnB NOR settled on behalf of 103 banks. This is one less than the previous year. The turnover in DnB NOR's interbank system has increased in recent years (see Chart 2.7). The increase was 13 per cent from 2006 to 2007. Some of this is derived from liquidity transactions.

While Norges Bank provides its participants with credit against collateral, DnB NOR grants credit facilities to the participants in its interbank system on the basis of an assessment of the individual bank. In the second half of 2007, the participating banks reduced their total daily borrowing (see Chart 2.8). At the same time, they increased their deposits in DnB NOR.

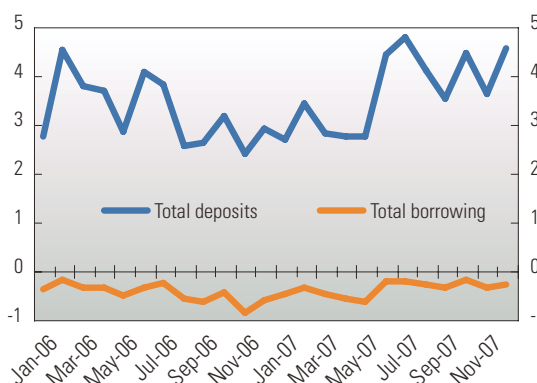
NICS clears the participating banks' positions and sends accounting data to DnB NOR. The operational stability of DnB NOR's settlement system is therefore dependent on the stability of NICS. In DnB NOR's own interbank system, nine errors were registered in 2007. This is half as many as in 2006.

Chart 2.7 Monthly turnover in DnB NOR's interbank system. NOK billions. 2005 – 2007



Source: DnB NOR

Chart 2.8 Participants' total daily deposits and borrowing at DnB NOR. Monthly average. NOK billions. 2006 – 2007



Source: DnB NOR

²¹ Core Principle V states that a system in which multilateral netting takes place should, at a minimum, be capable of ensuring the timely completion of daily settlements in the event of an inability to settle by the participant with the largest single settlement obligation.

In Payment Systems 06 it was pointed out that agreements with certain participating banks were not revised after the merger between DnB and Gjensidige NOR. As a result of this, DnB NOR did not fully observe the Core Principle concerning the legal basis of the system. The agreements have now been put in order and the Core Principle is thus regarded as observed. No amendments have otherwise been made that affect the assessment of DnB NOR's interbank system.

Private settlement banks contribute to the overall efficiency of the interbank system. This is due partly to the fact that lack of liquidity at a bank with settlement in a private settlement bank will not disrupt the settlement in Norges Bank. Lesser disruptions of DnB NOR's interbank system are of little consequence for the interbank system as a whole. Risk in DnB NOR's settlement system is viewed as being at a satisfactorily low level.

The securities settlement (VPO)

VPO, the securities settlement system of VPS, has been approved by Kredittilsynet (the Financial Supervisory Authority of Norway). Clearing and settlement in the system are therefore covered by the provisions concerning legal protection and security of the Payment Systems Act. In addition to this, VPS as securities depository has been

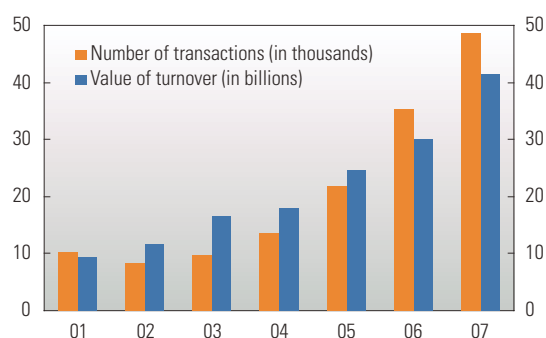
licensed by the Ministry of Finance, and is subject to the supervision of Kredittilsynet.²²

The securities settlement is important for financial stability (Norges Bank 2004). Norges Bank therefore oversees the settlement system. The oversight emphasises the importance of good risk controls, functioning contingency routines and a well founded legal basis. Particular attention is directed towards the monetary element of the settlement.

The bulk of the transactions in VPO derive from trade on the Oslo Stock Exchange. In recent years, the Oslo Stock Exchange has had an increasing number of transactions. In 2007, the daily turnover of equity instruments,²³ bonds and certificates was on average NOK 42bn (see Chart 2.9). In 2007, foreign investors accounted for 73 per cent of the value settled in the VPS settlement system (VPS 2008a). In 2007, the whole VPS system was available for 99.4 per cent of ordinary opening hours. The daily value of settlements in NBO in connection with VPO was on average NOK 5.1bn in 2007.

Norges Bank follows international recommendations in its assessment of VPO. A basic feature of a sound securities settlement system is that it is based on the delivery-versus-payment principle. This means that the ownership of securities is transferred from seller to buyer

Chart 2.9 Number of transactions (thousands) and value of turnover (NOK billions) on the Oslo Stock Exchange.¹ Daily average. 2001 – 2007



¹ Equity instruments, bonds and certificates.
Source: Oslo Børs

²² The requirement regarding authorisation is provided by Chapter 3 of the Securities Register Act Kredittilsynet's supervisory responsibility is provided by section 10-1 of the Securities Register Act and section 1-11 of the Financial Supervision Act.

²³ Equity instruments consist of shares, primary capital certificates, subscription rights, warrants and Exchange Traded Funds.

Merger between VPS and Oslo Børs

In June 2007, VPS and Oslo Børs (the Oslo Stock Exchange) decided to merge. The merger was approved by the Ministry of Finance in November 2007. The new company, Oslo Børs Verdipapirsentralen Holding ASA, will own Oslo Børs ASA, Verdipapirsentralen ASA and VPS Clearing ASA, which all provide services subject to licensing. One condition for the merger concession is that the companies are operated separately.

SWIFT

SWIFT^a is the largest supplier of services for transfer of financial information on the world market. A major part of SWIFT's activities are related to exchange of data between banks. The company's services include a global communications network and standardised messaging formats for exchange of payment data. A large and increasing number of systems in financial infrastructure, including a number of systems that operate across national borders, use communications services supplied by SWIFT. Norges Bank's new settlement system will make extensive use of these services. This will include the use of SWIFT as the communication channel for the most important transactions from individual banks, NICS and VPS.

The Bank of England (Haldane et al. 2007) has analysed the consequences of inaccessibility of the

SWIFT network. Banks' positions would not be settled on time, resulting in prolonged exposure. Trade volumes would be reduced owing to insecurity concerning positions and longer settlement times. In its turn, this would affect the banks' earnings. Reduced activity and reduced liquidity may result in increased volatility in the various markets. Protracted inaccessibility of SWIFT may weaken the securities market's functionality, increase the banks' need for financing and increase the associated risks for the banks. Prolonged absence of SWIFT services may weaken the banks' capital adequacy. High accessibility of these services is therefore important to financial stability.

A situation where the SWIFT network is totally inaccessible is regarded as unlikely. A principal measure for achieving high acces-

sibility is that SWIFT uses several independent operations centres. In this way, the services can be maintained even if operations at one of the centres should be interrupted. In 2007, the availability of SWIFT's message service was 99.987 per cent (SWIFT 2008). This was somewhat lower than the two previous years but higher than the target of 99.974 per cent for 2007. In March, availability was below the target figure. This was due to a major power outage at one of SWIFT's operations centres.

Individual institutions and systems may, by having several independent accesses to SWIFT, reduce the likelihood of not gaining access to SWIFT's network. Participants may also choose to have access to alternative communications solutions.

^a Society for Worldwide Interbank Financial Telecommunication.

European securities settlement

In Europe, cross-border trade in securities is often expensive, complicated and time-consuming. The industry and the authorities are therefore developing measures to promote efficiency in such trade. The measures are also of importance to the Norwegian securities market. Among other things, the industry has developed a standard for improving the efficiency of trade and settlement of securities (the European Code of Conduct for Clearing and Settlement). The standard includes better information on prices, rules on cross-border collaboration and technical links. In Norway, the Oslo Stock Exchange, VPS and VPS Clearing have all declared that they will follow up the purpose and content of the standard. (Oslo Stock Exchange et al 2007).

National implementation of the EU Directive on Markets in Financial Instruments (MiFID) was required by 1 November 2007 at the latest. The Norwegian authorities have altered Norwegian legal provisions in compliance with the Directive. A major goal of the Directive is to promote increased competition and more efficient cross-border

trade in and settlement of securities. The Directive provide, among other things, for regulated trade in financial instruments outside exchanges by means of so-called multilateral trading facilities (MTFs) that will compete with exchanges.

The European Central Bank (ECB) and the Eurosystem are considering establishing a centralised securities settlement for euro, TARGET2-Securities (T2S). The purpose of T2S is to help make cross-border securities settlement more efficient. The system is planned to be in operation by 2013. The system will settle securities trades in euro and possibly other currencies. ECB has invited all interested parties to participate in open meetings and consultations on the development of the T2S project. In many European countries, user groups have been established to assess and comment on the design of T2S. In Norway, there is an open user/consultation group consisting of VPS, the banking industry and the brokerage industry. Norges Bank is responsible for coordinating the work of the group. Consultative statements were given in summer

2007 and spring 2008. In summer 2008, it is planned that ECB's Governing Council will decide whether the project shall be implemented.

In April 2008, VPS and six other central securities depositories in Europe announced an agreement to form a jointly owned company called Link Up Markets. The purpose of the company is to improve efficiency and reduce the costs of cross-border settlement of securities trades. Each securities depository will work on the existing domestic infrastructure and retain its independence. Link Up Markets will enable investors to have both Norwegian and foreign securities registered in their securities accounts in VPS. The seven securities depositories cover almost half of the European securities market, and the new company considers that this measure may potentially reduce the cost of cross-border securities settlement by up to 80 per cent. Link Up Markets is planned to start operations in the first half of 2009 (VPS 2008b). The company is also open for inclusion of more central securities depositories.

if and only if money is transferred from buyer to seller and vice versa. Since the Norwegian system is based on delivery-versus-payment, no credit risk is imposed on the participants in connection with the settlement itself.

If a bank is placed under public administration, it is removed from the settlement. VPS will then execute a new clearing.²⁴ If VPO is carried out without a large participating bank, many trades will have to be postponed since there will not be cover in the settlement. This involves a market and liquidity risk. VPO therefore does not fully satisfy international recommendations.²⁵

In 2007, a working group with representatives from the banks, the brokers, VPS and Norges Bank conducted an assessment of the current VPO compared with the international recommendations. The findings of the working group and the market participants' preference for changes form the basis of further work on improving and developing potential new models for VPO.

2.2 Liquidity risk

Autumn and winter 2007–08 saw an increase in uncertainty in financial markets. The banks became more reserved about lending to each other. The value of many securities fell. It became more difficult and more expensive to obtain financing in the securities markets. This trend resulted in problems with liquidity in several banks, including Northern Rock in the UK.

Fluctuations in the banks' need for and access to liquidity may affect the completion of payment settlements. However, the settlement systems both internationally and in Norway have functioned well during the market turmoil, partly owing to loans from the central banks.

In this chapter we will consider some sources of liquidity risk in the Norwegian settlement system. We will also address changes in risk in 2007.

2.2.1 Liquidity risk in the Norwegian settlement system

In a settlement, liquidity risk is the risk that a payment will not be settled on the agreed time. The recipient bank has often included the payment in its liquidity management. If the payment is postponed, the bank may need to obtain fresh liquidity at short notice in order to meet its own payment obligations. This may be costly.²⁶ If the recipient bank does not succeed in obtaining sufficient liquidity to make the payments itself, the liquidity problems may spread to other banks. Then the liquidity risk has developed into systemic risk.

In Norges Bank's settlement system (NBO), individual transactions and clearings are settled immediately if the paying bank has sufficient liquidity. The banks' liquidity needs depend on the size and order of the transactions they send and receive. If a bank has too little deposits to be able to pay, it can borrow money from Norges Bank. The size of the borrowing facility depends on the value of securities the bank has pledged in Norges Bank. The bank can also borrow from other banks and thereby increase its deposit balance in Norges Bank. The sum of deposits and unused borrowing facility in Norges Bank constitutes the bank's liquidity in NBO. If the bank lacks liquidity, the payment is placed in a queue until sufficient liquidity is achieved.²⁷

The liquidity risk in the settlement system depends on the need for and access to liquidity. If a disruptive situation occurs, this will also affect the liquidity risk.

²⁴ Norges Bank has announced in Circular No. 4, 1 June 2006 that banks placed under public administration may not participate in settlements in Norges Bank (a similar rule also applied previously).

²⁵ The International Monetary Fund (IMF) has *inter alia* recommended that measures be implemented to reduce the market and liquidity risk in VPO (IMF 2005).

²⁶ Liquidity risk is different from credit risk – risk that incoming payments will be lost. In Norges Bank's settlement system, payments are settled immediately when accepted by the system. The banks do not credit their customers until they have received the funds themselves. The banks have therefore essentially no credit risk in relation to other banks in the NBO settlement.

²⁷ Payments in the queue can be netted against each other. This means that incoming and outgoing payments are settled simultaneously. This is known as "the gridlock mechanism", and helps to ensure more rapid settlement of payments.

2.2.2 Need for liquidity

Increased turnover in NBO will increase the banks' need for liquidity and, unless there are changes in other factors, increase the liquidity risk in the settlement. Chart 2.10 shows developments in the banks' structural liquidity, i.e. the banks' net deposits in Norges Bank without the addition of liquidity in connection with market operations. A distinctive Norwegian feature is that the banks need considerable liquidity in connection with the two annual due dates for petroleum tax.²⁸ High oil prices have resulted in particularly large payments of this tax in recent years.

We have calculated how much liquidity each bank needs throughout the day in order to complete the settlements in NBO.²⁹ On days with no large payments to the government, the banks have access to far greater liquidity than they need. On a random day of this kind (11.07.07) 17 of the 22 large and medium-sized banks had more than three times as much liquidity as they maximally needed during the course of the day.

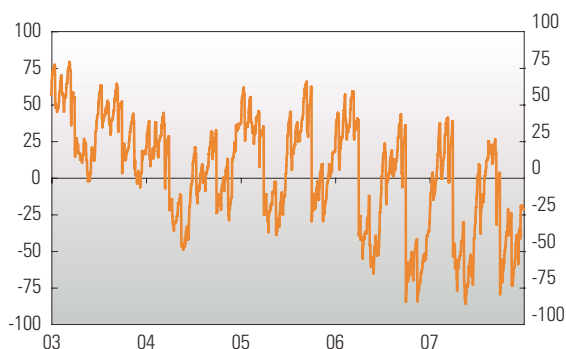
We have also calculated these banks' liquidity needs on the days in 2007 with the largest payments to the

government. For these days, we have examined the ratio between actual access to liquidity and maximum need for liquidity throughout the day. This "liquidity ratio" thus shows how many times more liquidity the banks have than they actually need. For each of the banks, we have chosen the day the bank had the lowest margin between access to and need for liquidity (see Chart 2.11). The banks are presented with a column each, with the liquidity ratio on the y axis.

The chart shows that, in connection with large payments to the state, some banks have rather a small margin between access to and need for liquidity.³⁰ The risk of inadequate liquidity for payment settlement is then higher than usual.

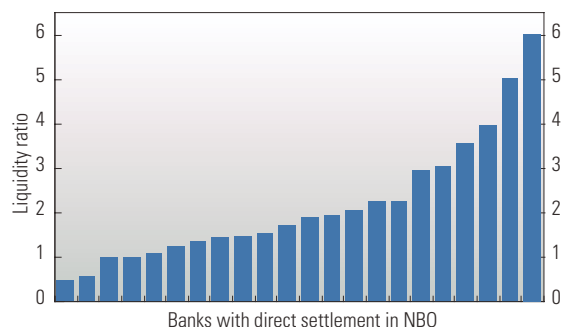
If the petroleum tax were divided between more payments each year, the banks' need for liquidity on each due date would be less. This would reduce the liquidity risk in the payment settlement. A proposal from the Ministry of Finance to increase the number of annual payments from two to six had a deadline for comments on 14 March 2008. Norges Bank has supported the proposal.

Chart 2.10 Structural liquidity. NOK billions. 2003 – 2007



Source: Norges Bank

Chart 2.11 Access to liquidity divided by the individual banks' maximum need for liquidity throughout the day (liquidity ratio)¹



¹ Day with lowest ratio selected for each bank. Simulation carried out for eight days in 2007 with large payments to the government.
Source: Norges Bank

²⁸ When companies, for example, pay tax to the state, they draw on their accounts in the banks. The amounts deposited by the banks in their accounts in Norges Bank are thus reduced. Payments from the state have the opposite effect. Because government fund in Norway is not allowed to remain in a private bank overnight, incoming and outgoing payments by the government result in fluctuations in the liquidity in the market.

²⁹ This is calculated by means of the Bank of Finland's liquidity simulator. For information on the simulator, see <http://www.bof.fi/en>.

³⁰ However, a liquidity ratio under one does not imply that the bank failed to settle its transactions on the day concerned. When a bank lacks liquidity for a transaction in Norges Bank, the transaction is placed in queue. The transaction is settled when the bank has obtained sufficient liquidity, either by providing more collateral or when it receives a transaction.

2.2.3 Access to liquidity

Loans from Norges Bank

The banks' borrowing facility depends on the value of the securities they have pledged with Norges Bank. If the market value of the securities falls, the banks' borrowing facility falls too. The borrowing facility will also fall if pledged securities are no longer accepted as collateral.

In recent years, the banks' borrowing facilities in Norges Bank have increased (see Chart 2.12). Since summer 2007, a number of the credit bonds that the banks used as collateral in Norges Bank have fallen in price. A small number of the pledged securities have been downgraded during the market unrest. Most of the pledged securities have a credit rating well above the minimum requirement.

The borrowing facility is affected by Norges Bank's rules for collateral. These rules were tightened somewhat from November 2007, but the effect on the banks' total borrowing facilities was limited.

Several of the largest banks that participate in NBO also have borrowing facilities in other countries' central banks. If the banks transfer collateral between central

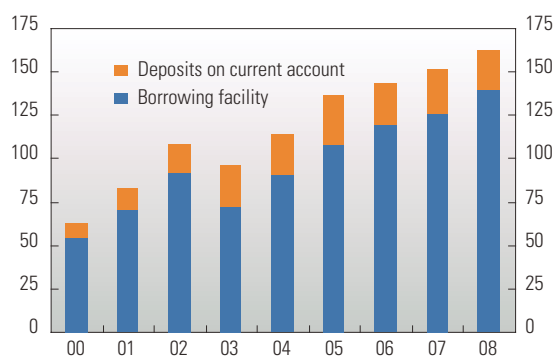
banks in connection with raising of loans, access to liquidity may fall in some of the settlement systems. There have not been abnormally large movements of collateral out of Norges Bank during the market turbulence in 2007-08.

Scandinavian Cash Pool

The "Scandinavian Cash Pool" (SCP) has been established by agreement between the central banks of Denmark, Sweden and Norway. The agreement entails that a bank in one of the countries may borrow from the country's central bank throughout the day secured by deposits that the bank/bank group has in one of the other central banks. SCP makes it easier for internationally active banks to control their liquidity at the group level. This normally helps to reduce the liquidity risk in the settlement systems.

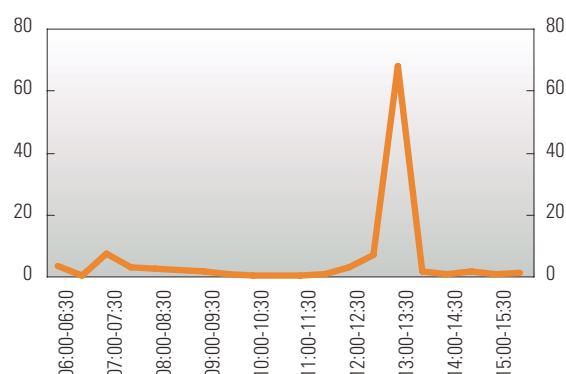
However, such an interconnection of systems also involves challenges. If a bank largely bases its payment activity on liquidity transfers between different settlement systems, it may have problems in making payments in the event of operational failure or liquidity problems in one of the systems. In this way, liquidity problems may spread.

Chart 2.12 Liquidity in NBO. Daily average. NOK billions. 2000 – 2008¹



¹ Liquidity for 2008 applies to January to March 2008.
Source: Norges Bank

Chart 2.13 Distribution of settled transactions in NBO in the course of the settlement day. Value in per cent



Source: Norges Bank

³¹ For a more detailed account, see Bakke, Sandal and Solberg (2007). Amendments to the rules were mainly decided in 2005.

SCP also entails that liquidity may rapidly disappear from one unit in a group if the group chooses to give priority to units in other countries. The banks' use of SCP has been stable and not particularly extensive in 2007.

Loan opportunities in the money markets

The banks can normally obtain liquidity by means of loans from other banks. During the autumn and winter of 2007, the banks were uncertain of their own and other banks' liquidity, and therefore showed more reservation as regards lending. This has resulted in less efficient than usual redistribution of liquidity in the money markets.

The uncertainty between the banks has been much greater internationally than in Norway, but there has been an increase in the interest on loans between Norwegian banks too. Neither internationally nor in Norway have developments in the money markets thus far resulted in problems with the completion of payment settlements.

The banks' liquidity buffers and credit lines

The banks' liquidity buffers consist primarily of deposits in other banks and portfolios of easily traded or pledged securities. The value of such portfolios depends both on the banks' asset management and developments in market values. The share of liquid assets increased somewhat in Norwegian banks in 2007. The banks may also establish credit lines in other banks – that can be drawn on at short notice. In the opposite case, banks that have issued credit lines may experience that their liquidity is weakened when the credit lines are drawn on.

2.2.4 Disruptive situations, etc.

Technical failure and other disruptive situations may result in the delay of settlements. Banks that had expected to receive payments may incur costs in connection with replacing this liquidity.

Possible technical failure at a participant in NBO

Technical failure at a bank participating in NBO may result in the bank being able to receive payments on its account, but unable to send payments to other banks. The bank will then accumulate considerable liquidity while making it more difficult for other banks to effect payments.

This may particularly result in problems if it occurs around one o'clock, the time of the day when most gross transactions are sent (see Chart 2.13). Technical failure at a participant in NBO will also affect SCP and CLS (see below).

When net settlements cannot be executed

NBO receives a number of clearings for settlement (see Part 2.1). Risk in such a settlement is associated with one or more of the participants becoming insolvent or illiquid. In such cases, a settlement will not be executed, which may cause a liquidity failure for other banks. In the following, we discuss liquidity risk associated with settlements of NICS retail clearings and securities clearings.

NICS retail clearing is settled twice daily. In the event of inadequate liquidity at one or more banks, the settlement is postponed. On postponement, a receiving bank will experience a liquidity failure corresponding to the bank's credit position in the clearing. If sufficient liquidity is not available within a given time limit, the clearing is rejected and a new clearing is executed without the transactions to and from the bank that caused the rejection.

The turnover in NICS retail clearing varies considerably from day to day. It is not unlikely that disruptive situations may result in liquidity problems. However, in the view of Bakke and Enge (2003), the liquidity failure that may follow from postponement or rejection of the settlement, would normally be quite small for most banks. NICS operations have been stable during 2007 (see Part 2.1).

In Payment Systems 06, Norges Bank expressed the view that the banks have chosen an appropriate solution for NICS retail clearing. Among other reasons, this is because the alternative of an ensured settlement would have imposed a credit risk on the banks that they do not have in the current solution.

If a bank is placed under public administration while a clearing is in progress in VPS, VPS must create a new clearing without the participant bank concerned. A delay and a changed clearing result entails a liquidity risk for the other participants in the securities settlement (VPO), see the description of VPO above. As mentioned in Part 2.1, work is in progress aimed at improving VPO. A new solution may reduce the liquidity risk in VPO.

Problems in the CLS settlement

The foreign exchange settlement bank CLS connects the settlement systems of the participating central banks (see box). CLS has an account in Norges Bank. All incoming and outgoing payments in NOK to and from CLS are made via this account. The volume of such payments was record high in 2007 (see Chart 2.14).

Use of CLS removes the participants' credit risk associated with foreign exchange trades. At the same time, participation in CLS involves some liquidity risk. If a bank is unable to pay the required amount, it will not be possible to settle transactions. This may increase the payment obligations of other participants. If settlement has taken place, but some payments have not been made, CLS will lack liquidity in one or more currencies. Other participants who make payments in these currencies have undertaken to provide liquidity to CLS in such a situation.

Operational problems in CLS or in the settlement system of one of the other currency areas are also potential sources of liquidity risk for banks in Norway. Although contingency solutions exist, delays may result in the liquidity being locked inside the system for longer than anticipated and in participants not receiving their payments according to plan.

In 2007, CLS had only a few minor settlement delays.

There were no cases where the participants making payments in NOK were unable to complete their payments. Payments into and out of CLS's account in Norges Bank are rather small compared with the participating banks' access to liquidity. It is therefore unlikely that the shortfall or delay of liquidity from CLS would have serious consequences for the Norwegian settlement system.

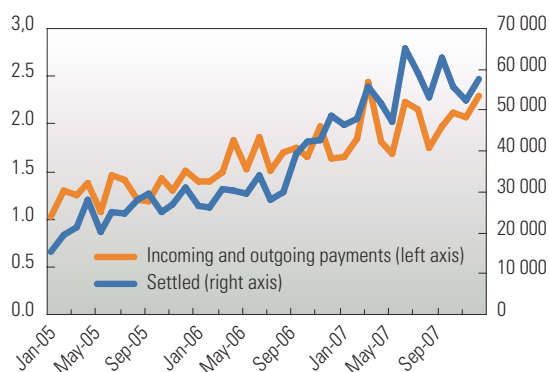
2.2.5 Conclusion

The above review shows that there are several potential sources of liquidity risk in the Norwegian settlement system. There are also factors that reduce the liquidity risk. Borrowing facilities in Norges Bank give the participants good access to liquidity. The banks have coordinated the sending of gross transactions, so that most of these transactions are settled within a short period. This results in reduced need for liquidity.

In recent years, operations in NBO have been stable and there have been few major delays. No particular problems have been experienced by the settlement system during the market turmoil. The banks have had sufficient liquidity to meet their needs. The likelihood of liquidity risk materialising in the settlement system therefore seems small. However, less efficient distribution of liquidity in the money market may have made the participants of the settlement system somewhat more dependent on the liquidity available from the central bank.

It is possible to reduce the liquidity risk still further. Firstly, an increase in the number of payments of the petroleum tax per year would reduce the banks' liquidity needs considerably. Secondly, a new solution for VPO might contribute to the ensured settlement of clearings, thereby reducing the liquidity risk in a situation involving default by a participant.

Chart 2.14 Value of daily settlement in CLS involving NOK and incoming and outgoing payments in NOK. Monthly average. USD billions. 2005 – 2007



Sources: Norges Bank and CLS Bank

2.3 Foreign exchange settlement risk

The foreign exchange turnover increases year by year. In 2007, BIS (2007) registered daily foreign exchange trades amounting to an average value of USD 3 200bn. This is 71 per cent more than in 2004. The turnover in the Norwegian foreign exchange market increased by 123 per cent during the corresponding period (see Chart 2.15).³² The Norwegian krone is the tenth most traded currency in the world (BIS 2007).

Risk associated with settlement of foreign exchange trades depends on the settlement method. In terms of value, one-third of trades are settled in a manner involving credit risk associated with the whole of the traded amount (CPSS 2008). Since foreign exchange trades often include parties from several countries, such settlements may contribute to the spreading of financial instability from country to country. For example, 79 per cent of Norwegian currency trading, measured in terms of the value of the trades, involves a foreign counterparty. Systemic risk across national borders has made central banks concerned that the banks reduce their risk

associated with settlement of foreign exchange trades.

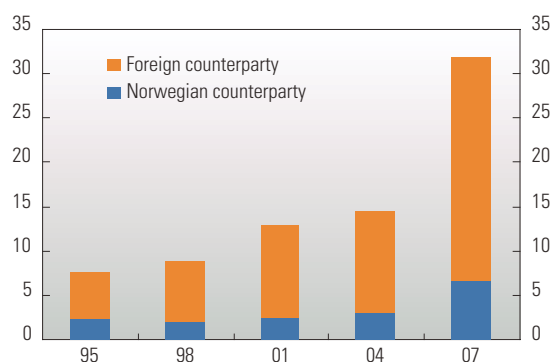
2.3.1 Considerable Norwegian foreign exchange trading

An international comparison shows that the currency trade in Norway is large viewed in relation to the banks' total assets (see Chart 2.16). This is partly due to structural factors specific to Norway.

Income from and taxation of oil production contributes to the currency trade. The sale of oil takes place in USD whereas petroleum tax is paid in NOK. On receipt, this is changed back into foreign currency for investment abroad through the Norwegian Government Pension Fund - Global.

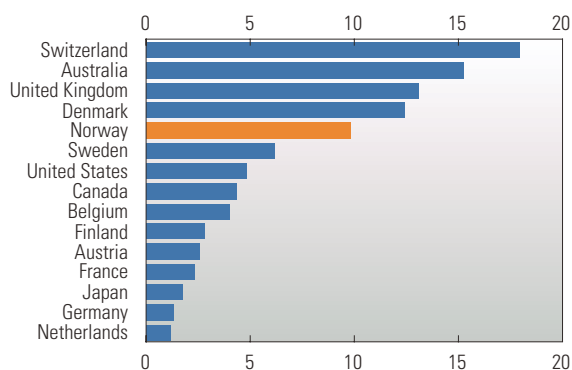
Norwegian institutions' investments and financing abroad also result in considerable trading in foreign currency. Norwegian insurance companies and pension funds invest large amounts abroad, and Norwegian banks and enterprises issue securities abroad in order to obtain financing. In both cases, rolling currency swap agreements are concluded in order to protect oneself against unforeseen exchange rate fluctuations. A currency swap

Chart 2.15 Foreign exchange trading in the Norwegian market. Daily average. USD billions. 1995 – 2007



Sources: Norges Bank and BIS (2007)

Chart 2.16 Average daily foreign exchange trading (April 2007) in per cent of the banks' total assets (2005)



Sources: Norges Bank, OECD and BIS (2007)

³² In terms of the value of trades involving NOK, the growth was 82 per cent.

agreement entails that the parties agree to trade back the currencies they trade at a later date.

Norwegian banks' NOK liquidity fluctuates considerably owing to petroleum tax. When the tax is due and in the period after, Norges Bank must provide considerable liquidity to the market. The distribution of liquidity between the banks mainly takes place by means of currency swap agreements between the banks. The fluctuations in the banks' NOK liquidity thus result both in a greater volume of foreign exchange trading and in a large share of the trade consisting of currency swap agreements (see Chart 2.17).

Owing to the considerable Norwegian foreign exchange trading, it is important that the banks limit their foreign exchange settlement risk.

2.3.2 What is foreign exchange settlement risk?

The most usual form of foreign exchange trading is an agreement between two parties to swap currency at an agreed price on an agreed date (settlement date).³³ The two parties involved both receive and provide currency.

Traditionally, foreign exchange trades have been settled by means of correspondent banks. A correspondent bank is a bank that provides services to banks that do not belong to the same currency area. A bank may agree with a correspondent bank that the latter shall receive and pay the foreign currency on behalf of the bank. The problem with this settlement method is that the correspondent bank's outgoing payment of sold currency is not contingent on the incoming payment of purchased currency. The bank trading the currency thus risks paying the currency it is selling without receiving the purchased currency. This risk is referred to as the foreign exchange settlement risk and it corresponds to the exposure of a bank when it provides unsecured credit to a counterparty.³⁴ Other risks associated with settlement of foreign exchange trades are described in the information box.

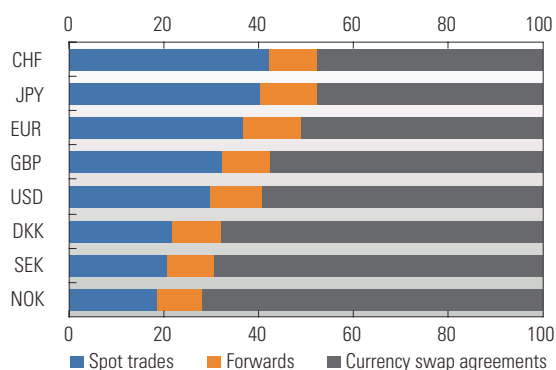
Various risks associated with settlement of foreign exchange trades

Foreign exchange settlement risk is the risk of paying the currency one has sold without receiving the currency one has purchased. This is a credit risk where the bank risks losing the principal.

Liquidity risk is the risk of loss in the event that the counterparty fails to settle when expected. The potential loss is not associated with the principal but with the cost of having to rapidly compensate for the trade that was not settled, perhaps at a less favourable price.

Correspondent bank risk is the risk of losing a deposit in a correspondent bank. As in the case of foreign exchange settlement risk, this is a credit risk. It may however be greatly reduced by better control of the counterparty and by means of maximum deposit limits. Banks can also make sure that they do not have overnight deposits in other banks.

Chart 2.17 Foreign exchange trading in different currencies by instrument. Per cent. April 2007



Source: BIS (2007)

³³ While most foreign exchange trading agreements involve exchange of principal, the settlement of some types of trade will take the form of a unilateral payment. Some instruments also involve several payments and/or exchanges. For an overview of foreign exchange market instruments, see Meyer and Skjolvik (2006).

³⁴ The most well known example of materialised foreign exchange settlement risk is from 1974. Bankhaus Herstatt was placed under administration after receiving German marks from US counterparties' correspondent banks in Germany, but before their own correspondent bank in the USA had paid what they owed in USD. When the bank was placed under administration, the correspondent bank in the USA stopped the planned payments for Bankhaus Herstatt, and its counterparties had thereby lost the principal.

2.3.3 Exposures

Because the turnover of currency is very high, the banks' exposures are often considerable. Moreover, owing to different time zones, the exposures are long-lasting. Exposures of over 24 hours are added to the exposures from the following day's trading. For example, when buying USD and selling NOK, it takes on average 27 hours from the expiry of the time limit for cancellation until the currency is received (CPSS 2008).³⁵ ³⁶ A bank's total exposure associated with settlement of foreign exchange trades may thus be higher than the value of one day's trades.

Calculations from CPSS (2008) show that the largest bilateral exposure exceeds 10 per cent of total capital for 12 per cent of institutions³⁷ on a daily average and for 23 per cent of institutions on a peak day basis.

2.3.4 How does one protect oneself against foreign exchange settlement risk?

A solution for avoiding foreign exchange settlement risk is that each side of the settlement is contingent on the other. This means that, if a bank delivers sold currency, it will either receive purchased currency or get back what it has delivered. In 2002, a system for settlement of foreign exchange trades called Continuous Linked Settlement (CLS) was implemented. When trades are settled using CLS, the two sides of the trades are made contingent on each other. See box for a description of CLS.

After CLS was launched, the share of foreign exchange trades settled with foreign exchange settlement risk has been considerably reduced. While, in 1997, approximately 85 per cent of trades were settled by traditional use of correspondent banks, in 2006 the corresponding share was 32 per cent (CPSS 1998, 2008). However, owing to the rapid growth of foreign exchange trading, it cannot necessarily be assumed that the absolute exposure has been reduced. Moreover, a study conducted in 2006 (CPSS

2008) shows that banks do not in general have a better understanding and control of their exposures than they had in 1997.

According to the CPSS study (2008), 22 per cent of foreign exchange trades involving NOK are settled by means of a settlement method involving foreign exchange settlement risk. This is 10 percentage points less than the average for the currencies surveyed.

2.3.5 Room for improvement

There are several reasons why a considerable share of trades is still carried out with foreign exchange settlement risk. According to CPSS (2008), both the range of settlement services and the banks' routines in connection with settlement of foreign exchange trades should be improved.

Potential improvements on the supply side are, among other things, associated with the fact that CLS is limited to settlement of trades involving 15 currencies. Furthermore, trades to be settled the same day as they are carried out cannot be settled by means of CLS. The banks for their part are criticised by the CPSS (2008) for preferring settlement methods involving more than optimal risk by not viewing risk as a cost. Their lack of understanding of their own exposures is also viewed as a problem. However, the Scandinavian banks surveyed seem to have a good understanding and control of their exposures.

CLS also provides for some trade with foreign exchange settlement risk. In order to reduce liquidity needs in the settlement, CLS offers the banks to trade down their positions within CLS. The currencies are traded back outside CLS the same day. The settlement outside CLS is carried out with foreign exchange settlement risk. However, the risk is limited because the participants themselves can select their counterparties and set bilateral limits for the exposures. Moreover, the sums traded down by the banks are calculated on the basis of

³⁵ The time limit for cancellation is the deadline for cancelling an outgoing payment to be made by a correspondent bank on behalf of the currency dealing bank.

³⁶ 85 per cent of trades carried out in Norway involve USD. NOK is involved in 61 per cent of trades, euro in 25 per cent and other currencies in 28 per cent. Since foreign exchange trades involve two currencies, the total percentage is 200 per cent.

³⁷ The sample used by the CPSS includes 109 institutions that were chosen so as to cover collectively more than 80 per cent of the foreign exchange market in 15 currency areas.

the banks' net settlement obligations to CLS. This makes the exposures considerably less than if trades had been settled gross. Despite the foreign exchange settlement risk, this solution may be better than the banks viewing liquidity needs in CLS as too great, and therefore returning to traditional use of correspondent banks.

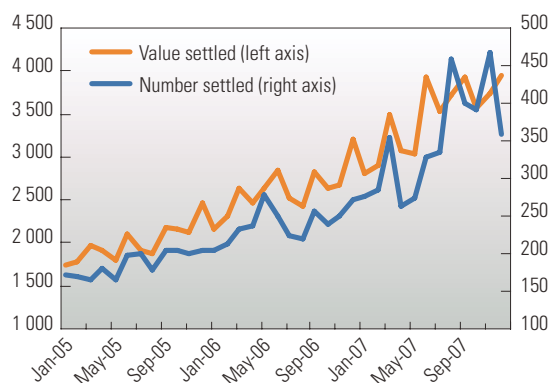
2.3.6 Concluding comments

In the last half of 2007 and the first half of 2008, the banks have had to pay more to borrow in the money markets. Increased costs from obtaining liquidity may motivate banks to choose settlement methods requiring less liquidity. In spite of the netting effect in CLS, some banks view CLS as liquidity-demanding. This is associated, among other things, with CLS requiring payments to be made at specific times. When settling via a correspondent bank, it is generally sufficient that payments are made on the right date.

Viewed in isolation, this might indicate that banks would choose not to use CLS in periods when liquidity is highly priced. However, this is compensated by the fact that turmoil makes the banks more unsure of their counterparties, and that they therefore wish to minimise their exposures by use of CLS. The fact that the turnover in CLS was high in autumn 2007 (see Chart 2.18) may indicate that the banks gave priority to low risk. The growth in the value of settled NOK in CLS fell during the last half of 2007. However, this appears to be largely due to lower growth in foreign exchange trading.

Banks in Norway have a generally low foreign exchange settlement risk and good control of their exposures. High and growing Norwegian foreign exchange trade causes Norges Bank to encourage increased use of settlement methods that do not involve foreign exchange settlement risk. This is particularly important in periods of financial turmoil.

Chart 2.18 Total transactions settled using CLS. Monthly average. Value in USD billions and number in thousand. 2005 – 2007



Sources: Norges Bank and CLS Bank

Continuous Linked Settlement (CLS)

CLS is a currency settlement system that provides settlement of foreign exchange trades in 15 currencies.^a The settlements are carried out trade by trade (gross), and the settlement of the one part of the trade is contingent on the other part.^b The settlement therefore involves no foreign exchange settlement risk. While trades are settled individually, payment obligations are cleared in each currency. As a result of this, the banks pay a much smaller amount than the value of the trades that are settled (see Chart 1).

Four banks in Norway participate in CLS.^c These send and receive NOK-payments to and from CLS's account in Norges Bank. They do this on behalf of themselves and a

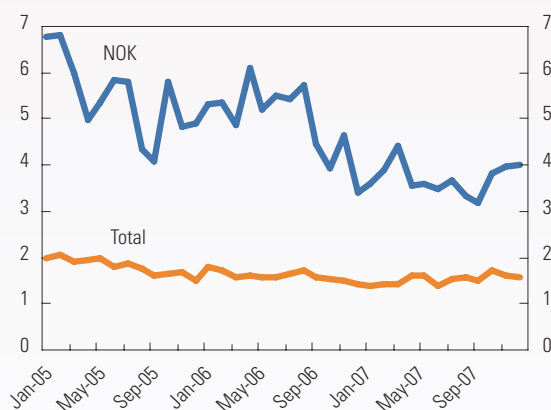
number of foreign CLS participants. There are considerable fluctuations in the value of settled trades involving NOK, but the trend is rising (see Chart 2). In September 2007, a new record of 874bn settled NOK was set for a day's trading. This was more than double the value of the transactions that were settled in NBO on the same day.

The size of the settlements makes CLS important for financial stability, as does the direct association CLS provides between settlement systems in different countries. If a participant lacks liquidity in the currency it is to pay in, this may disrupt the settlement in CLS with consequences for participants in other countries too. Operational

problems in a country's settlement system may create difficulties for incoming and outgoing payments to CLS for all participants who operate in the country's currency. This may ultimately result in exclusion of the currency from CLS for shorter or longer periods. This would not only deprive the country's banks of a secure form of settlement, it might also weaken the reputation of the country's currency and financial market. A currency's participation in CLS therefore strengthens the importance of a stable settlement system in the currency area.

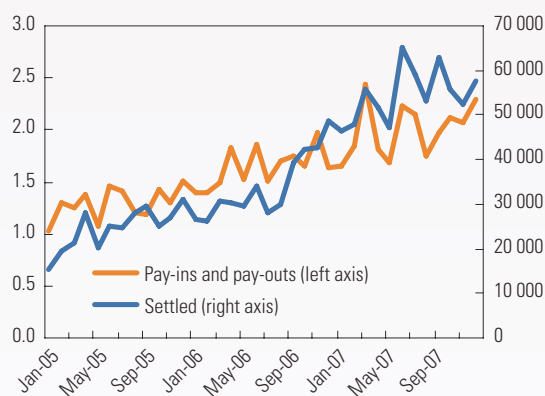
In autumn 2007, CLS set new records in both the number and the value of settled transactions. This is partly associated with high

Chart 1 Value of pay-ins to CLS as a percentage of value settled in CLS. Total and in NOK. 2005 – 2007



Sources: Norges Bank and CLS Bank

Chart 2 Value of daily settlement in CLS involving NOK and pay-ins and pay-outs in NOK. Monthly average. USD billions. 2005 – 2007



Sources: Norges Bank and CLS Bank

trade activity during autumn's turbulence in the international financial markets. The trade has become more automated than previously, and algorithms generate trades when the market moves in an unexpected direction. CLS has also gained in importance by offering settlement of new products. Since November 2007, users of CLS have been able to settle one-way payments associated with foreign exchange non-deliverable forwards (NDF)^d and credit derivatives.^e In 2008, CLS will also begin to settle foreign exchange option premiums.^f The possibility

is currently being considered of including more currencies in CLS, and of introducing more settlement cycles in the course of a day.^g Such enlargements would enable more trades to be settled in CLS, thereby laying the basis for fewer settlements with foreign exchange settlement risk.

^a AUD, CAD, CHF, DKK, EUR, GBP, HKD, JPY, KRW, NOK, NZD, SEK, SGD, USD and ZAR.

^b For an account of the mechanisms in CLS, see Andresen and Bakke (2004).

^c DnB NOR, Nordea, Fokus (branch of Danske Bank) and SEB

^d The payment is associated with the settlement of a forward contract, where only the difference between the agreed price

and the actual price is paid. This type of agreement is mainly used if a party wishes to take positions in relation to a currency not included in CLS, often a non-convertible currency, such as Chinese yuan).

^e Credit derivatives are financial contracts that transfer all or part of the credit risk associated with, for example, monetary claims from the buyer of insurance (seller of risk) to the seller of insurance (buyer of risk). CLS has arranged that both payments of premium and the payments in connection with a credit event can be settled by means of CLS.

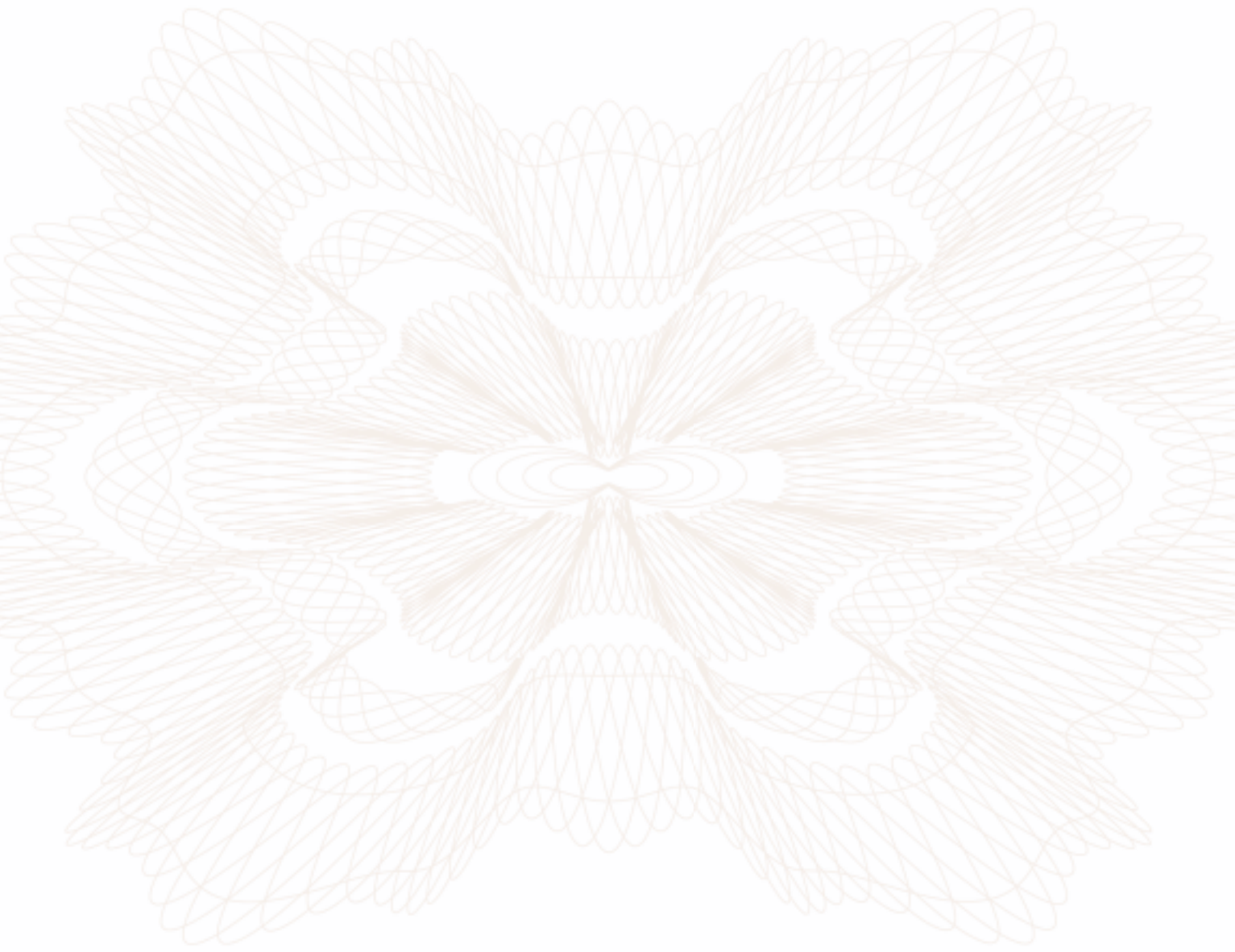
^f The purchaser of an option has the right but not the obligation to swap two currencies at a specific rate on an agreed settlement date. The purchaser pays a premium for this possibility.

^g Israeli shekel and Mexican peso are to be included in 2008. Other currencies are under assessment.

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Index of tables

General data

- Table 1: Basic statistical data for Norway
Table 2: Technological infrastructure in Norway

Settlement media in Norway

- Table 3: Settlement media used by the public (at year-end, in NOK million)
Table 4: Settlement media used by banks (in NOK million)
Table 5: Banknotes and coins. Annual average (in NOK million)

Payments infrastructure

- Table 6: Institutional infrastructure
Table 7: Number of agreements
Table 8: Number of issued cards (thousands), number of functions in issued cards (thousands) and number of terminals

Customer-oriented payment services

- Table 9: Use of payment services (in millions of transactions)
Table 10: Debit and credit transfers (giros) (in millions of transactions)
Table 11a: Payment cards: Use of cards (in millions of transactions)
Table 11b: Payment cards: Use of payment terminals (in millions of transactions)
Table 12: Cross-border transfers registered in the Register of Crossborder Transactions and Currency Exchange (in thousands of transactions)
Table 13: Use of payment services (in NOK billion)
Table 14: Debit and credit transfers (giros) (in NOK billion)

- Table 15a: Payment cards: Use of cards (in NOK billion)
Table 15b: Payment cards: Use of payment terminals (in NOK billion)
Table 16: Cross-border transfers registered in the Register of Crossborder Transactions and Currency Exchange (in NOK million)

Interbank

- Table 17: Average daily turnover in clearing and settlement systems (transactions)
Table 18: Average daily turnover in clearing and settlement systems (in NOK billion)
Table 19: Number of participants in clearing and settlement systems (at year-end)
Table 20: Participation in SWIFT
Table 21: SWIFT message traffic to/from Norway (in thousands of transactions)

Prices

- Table 22: Price list for participation in Norges Bank's settlement system (NBO), valid from 1 January 2008 (in NOK)
Table 23: Price list for banks' delivery and withdrawal of cash to and from Norges Bank's depot
Table 24: Prices for domestic payment transactions, receipt of payments and cash withdrawals.
Table 25: Prices in NOK for transfers from Norway to countries in the EU/EEA. Weighted average in selected banks
Table 26: Prices in NOK for receipt of payments from abroad. Weighted average in selected banks

General data

Table 1: Basic statistical data for Norway

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Population (per 1 Jan., million)	4,42	4,45	4,48	4,50	4,52	4,55	4,58	4,61	4,64	4,68
GDP, market value (NOK billion)	1 140,36	1 240,43	1 481,24	1 536,89	1 532,31	1 593,83	1 743,04	1 945,72	2 161,73	2 288,69
Mainland GDP, market value (NOK billion)	992,60	1 045,34	1 113,89	1 179,59	1 224,64	1 274,83	1 355,31	1 451,13	1 575,83	1 708,75
GDP per capita (NOK thousand)	258,14	279,04	330,63	341,53	339,01	350,29	380,58	422,06	465,89	488,92
1 USD in NOK (year-end)	7,60	8,04	8,85	9,01	6,97	6,68	6,04	6,77	6,26	5,41
1 euro in NOK (year-end. ECU to end-1998)	8,90	8,08	8,23	7,97	7,29	8,42	8,24	7,99	8,24	7,96

Table 2: Technological infrastructure in Norway

	1998	1999	2000	2001 (juli)	2002 (juli)	2003 (juli)	2004 (juli)	2005 (juli)	2006 (juli)	2007 (juli)
Fixed network telephone subscribers	2 475 490	2 445 734	2 400 785	2 362 625	2 316 556	2 268 183	2 205 902	2 147 998	2 084 456	2 030 282
PSTN	2 165 530	1 913 657	1 682 603	1 603 525	1 496 119	1 445 236	1 394 088	1 345 719	1 224 626	1 115 140
ISDN	309 960	532 077	703 843	741 600	800 451	798 751	768 785	682 742	564 428	477 092
Cable TV network telephone subscribers		:	14 325	17 500	19 986	23 301	23 155	22 037	16 332	11 819
Other types of fixed network links			14	:	:	895	19 875	97 500	279 070	426 231
Mobile telephone subscribers	2 106 414	2 744 793	3 339 936	3 411 962	3 699 471	3 869 792	4 295 042	4 615 337	4 886 755	5 210 608
Broadband subscribers				44 852	136 153	280 111	517 148	835 695	1 126 921	1 362 542

Settlement media in Norway

Table 3: Settlement media used by the public (at year-end, in NOK million)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
M1 + other short-term deposits (M2)	616 916	683 853	753 269	818 859	882 914	904 217	972 014	1 085 377	1 232 496	1 442 258
Narrow money supply (M1)	278 716	342 362	370 378	384 631	399 711	427 689	472 058	552 246	679 426	763 318
Banknotes and coins	42 142	43 366	42 523	42 038	40 282	41 685	43 340	46 530	48 247	49 542
Deposits in current accounts	236 574	298 996	327 855	342 593	359 429	386 004	428 718	505 716	631 179	713 776
Other deposits	292 820	295 820	326 350	370 171	409 704	407 457	423 185	435 529	471 941	558 525
Certificates of deposit + units in money market funds	45 380	45 671	56 541	64 057	73 499	69 071	76 771	97 602	81 129	120 415

Table 4: Settlement media used by banks (in NOK million)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Cash holdings in banks at year-end	4 395	5 116	4 879	5 290	5 063	4 980	4 649	5 733	6 987	6 527
Cash holdings, annual average	3 940	4 519	4 431	4 817	4 675	4 409	4 457	4 960	6 198	6 071
Banks' sight deposits in the central bank ¹ at year-end	4 716	18 330	11 540	17 438	33 348	22 117	35 240	30 854	19 459	48 603
Sight deposits, annual average	6 986	8 016	9 233	11 804	15 647	24 690	21 337	28 666	24 536	24 867
Central bank lending (F-loans + D-loans) at year-end	6 918	13 600	14 160	12 443	19	10 460	7	17 769	56 959	72 376
Lending (F-loans + D-loans), annual average	1 225	4 385	5 104	13 356	538	2 978	18 788	14 694	34 411	46 670
Banks' deposits from money-holding sector at year-end	13 421	13 594	15 774	16 633	16 027	19 982	18 383	21 437	32 022	43 344
Deposits from money-holding sector, annual average	15 830	18 538	18 173	20 420	16 737	23 148	23 897	22 723	28 605	41 605

¹ The figures show the daily average in the latter half of December.

Table 5: Banknotes and coins. Annual average (in NOK million)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total	43 578	43 837	43 571	42 947	41 767	41 562	43 728	45 887	49 218	50 439
Total banknotes	40 487	40 566	40 119	39 271	37 811	37 429	39 429	41 382	44 523	45 858
1000-krone	27 773	27 290	26 336	24 713	22 599	22 167	23 555	24 649	25 818	26 179
500-krone	4 875	5 588	6 107	6 921	7 626	7 732	8 278	9 060	10 374	11 213
200-krone	3 650	3 949	4 275	4 446	4 573	4 674	4 792	4 819	5 296	5 381
100-krone	3 473	3 027	2 684	2 464	2 270	2 091	2 012	2 021	2 119	2 121
50-krone	717	712	717	727	744	765	793	833	916	964
Total coins	3 090	3 271	3 452	3 676	3 955	4 132	4 299	4 506	4 695	4 581
20-krone	779	873	966	1 124	1 387	1 561	1 667	1 778	1 849	1 665
10-krone	1 030	1 046	1 087	1 111	1 085	1 051	1 049	1 076	1 145	1 214
5-krone	440	474	487	497	505	515	538	563	598	630
1-krone	561	590	617	641	666	686	718	753	799	845
0.5 krone	150	157	165	174	182	191	199	208	218	228
0.10 krone	131	130	130	130	130	129	128	128	86	:

Payments infrastructure

Table 6: Institutional infrastructure

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of banks					153	152	148	149	147	149
Savings banks					129	129	127	126	124	123
Commercial banks					16	15	13	14	15	16
Number of foreign bank branches in Norway					8	8	8	9	8	10
Number of bank branches	1 468	1 457	1 429	1 414	1 376	1 348	1 234	1 234	1 259	:
Number of Norway Post branches	1 280	1 257	1 261	1 320	1 433	1 480	1 504	1 523	1 511	1 487
Electronic money institutions						4	5	5	4	3

Table 7: Number of agreements

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Internet banking agreements			933 335	1 340 661	1 934 318	2 429 694	2 976 690	3 282 793	4 009 321	4 438 137
Internet banking agreements- retail customers			:	:	:	:	:	3 221 839	3 683 843	4 089 644
Internet banking agreements- corporate customers			:	:	:	:	:	60 954	325 478	348 493
Agreements to offer eFaktura - corporate customers			:	:	:	:	:	:	330	460
Agreements on receipt of eFaktura - retail customers			:	:	:	:	:	:	2 149 356	2 914 946
Company terminal giro agreements									27 904	28 707
Mail giro agreements			2 687 420	2 361 031	1 787 462	1 707 428	1 540 768	1 453 825	1 189 770	1 152 349
Direct debit agreements (Avtalegiro and Autogiro)			3 500 000	4 044 848	4 483 286	4 901 219	5 505 933	6 305 218	7 523 461	8 544 208
Avtalegiro - payees			6 041	6 473	6 883	7 194	7 905	8 761	9 554	10 373
Autogiro - payees			1 174	1 200	1 265	1 232	1 187	1 243	1 441	1 350

Table 8: Number of issued cards (thousands), number of functions in issued cards (thousands) and number of terminals

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of issued cards	4 768	5 220	5 611	6 081	6 395	6 931	7 616	7 872	9 187	9 222
Cards with a chip	:	:	:	:	:	:	:	:	1 235	2 540
Cards with a magnetic strip	:	:	:	:	:	:	:	:	7 953	6 682
Number of functions in issued cards	7 527	8 406	9 056	10 075	10 575	11 322	12 298	12 449	14 169	15 335
Debit functions	6 278	6 853	7 419	7 991	8 212	8 600	9 326	9 107	10 138	10 519
BankAxept	3 561	3 734	4 020	4 287	4 362	4 527	4 985	4 894	5 537	5 570
Payment cards issued by international card companies	2 717	3 119	3 399	3 704	3 850	4 073	4 341	4 214	4 601	4 949
Billing functions (payment cards issued by international card companies)	369	395	416	445	438	451	470	451	478	531
Credit functions	880	1 158	1 221	1 638	1 925	2 271	2 502	2 891	3 553	4 285
National credit cards	620	687	577	630	681	646	535	546	548	647
Payment cards issued by international card companies	260	471	644	1 008	1 244	1 624	1 967	2 345	3 005	3 638
Number of terminals that accept BankAxept cards	54 179	60 749	67 445	73 832	82 294	93 456	94 386	96 591	100 021	109 821
ATMs	1 944	2 007	2 119	2 144	2 188	2 217	2 180	2 184	2 250	2 272
Payment terminals (EFTPOS)	52 235	58 742	65 326	71 688	80 106	91 239	92 206	94 407	97 771	107 549
Owned by banks	46 849	:	55 208	59 184	65 374	66 207	68 197	66 786	74 303	75 460
Owned by others	5 386	:	10 118	12 504	14 732	25 032	24 009	27 621	23 468	32 089
Number of locations with payment terminals (EFTPOS) that accept BankAxept cards	38 029	42 164	47 434	49 328	52 705	59 100	63 976	73 242	78 656	85 490

Customer-oriented payment services

Table 9: Use of payment services (in millions of transactions)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total	634,1	695,3	760,9	848,3	960,4	1 039,3	1 144,9	1 235,5	1 341,0	1 478,1
Debit and credit transfers (Giro)	360,0	371,3	370,4	397,5	440,5	442,8	465,6	480,4	489,3	510,7
Electronic ¹	173,9	202,7	221,0	268,1	331,3	348,9	384,3	411,8	437,4	462,3
Paper-based	186,2	168,5	149,3	129,3	109,3	93,9	81,3	68,6	51,9	48,4
Payment cards (goods purchases)	264,6	317,7	386,5	448,0	517,8	595,0	678,1	754,2	851,0	966,9
Electronic	256,0	307,3	378,4	439,0	508,0	584,7	664,2	737,9	830,7	962,1
Manual	8,6	10,4	8,2	9,0	9,8	10,3	13,9	16,3	20,4	4,8
Cheques	9,4	6,3	4,0	2,9	2,0	1,5	1,2	0,8	0,7	0,5

¹ Number of electronic giros up to end-2001 does not include miscellaneous credit transfers, e.g. standing orders.

Table 10: Debit and credit transfers (giros) (in millions of transactions)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total	360,0	371,3	370,4	396,7	440,3	442,8	465,6	480,4	489,3	510,7
Credit transfers¹	305,6	318,3	320,9	343,5	393,9	395,5	418,2	431,6	439,6	453,5
Electronic	147,5	172,7	192,1	234,5	299,9	314,8	348,5	371,9	395,6	412,7
Company terminal giro	126,1	129,9	128,7	143,8	153,2	164,4	160,2	95,8	51,5	46,1
Internet banking	3,2	14,5	34,6	62,0	81,4	101,5	138,4	227,8	293,6	318,8
Internet banking solutions for retail customers	3,2	14,5	34,6	62,0	:	91,6	112,0	131,8	144,0	154,2
Internet banking solutions for corporate customers	-	-	-	-	:	9,9	26,4	96,0	149,6	164,6
Telephone giros	18,2	28,3	28,8	28,7	26,8	25,5	24,8	21,8	16,9	13,9
Miscellaneous other electronic credit transfers	:	:	:	:	38,5	23,4	25,1	26,4	33,6	33,8
Paper-based	158,1	145,6	128,9	109,1	94,0	80,6	69,7	59,8	44,0	40,8
Company terminal giros and Internet banking as money order	13,7	9,4	6,3	5,6	4,9	4,2	3,0	2,6	1,0	1,7
Mail giros	106,9	107,0	90,2	74,4	61,7	52,1	44,6	38,0	32,6	29,0
Giros delivered at the counter - account debits	24,5	29,2	32,4	28,3	27,1	24,4	22,0	19,2	10,4	10,1
Miscellaneous giros registered in banks ²	13,0	-	0,0	0,8	0,3	0,0	0,0	0,0	0,0	0,0
Direct debits	26,3	30,0	29,0	33,6	31,3	34,1	35,8	39,9	41,8	49,6
Giros delivered at the counter - cash payments	28,1	22,9	20,4	19,5	15,0	13,2	11,6	8,9	7,8	7,6

¹ Figures for credit transfers do not include miscellaneous credit transfers, including standing orders in the period 1998 - 2001.

² Miscellaneous giros registered in banks includes both cash payments and account debits.

Table 11a: Payment cards: Use of cards (in millions of transactions)¹

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total use of Norwegian cards (in Norway and abroad)	374,7	429,1	496,8	563,6	631,1	704,7	786,6	862,2	957,6	1 071,5
Goods purchases	264,6	317,7	386,5	448,0	517,8	595,0	678,1	754,5	851,0	967,0
Goods purchases without cashback	:	:	283,8	323,8	385,2	456,8	533,6	618,5	769,1	889,2
Goods purchases with cashback	:	:	102,7	124,2	132,6	138,2	144,6	135,9	81,9	77,7
Cash withdrawals without goods purchases	110,1	111,4	110,3	115,7	113,3	109,7	108,5	107,8	106,6	104,6
Use of Norwegian cards abroad	15,8	19,0	22,6	26,2	31,5	36,2	38,3	38,8	50,6	69,4
Goods purchases	11,3	13,2	16,3	19,0	23,2	27,0	29,8	30,6	42,3	57,5
Cash withdrawals	4,5	5,8	6,3	7,1	8,3	9,2	8,6	8,3	8,3	11,9
Use of Norwegian cards broken down by function										
Debit functions	358,0	410,0	473,7	536,5	601,4	669,5	743,6	809,2	904,2	1 000,4
BankAxept	338,0	385,0	441,1	496,7	548,3	615,3	681,7	745,7	817,4	895,1
Payment cards issued by international card companies	20,0	25,0	32,6	39,8	53,1	54,2	61,9	63,5	86,8	105,3
Billing functions (Payment cards issued by international card companies)	11,7	12,5	13,9	14,8	13,9	14,8	16,3	19,1	17,7	20,5
Credit functions	4,9	6,7	9,2	12,3	15,7	20,4	26,7	33,9	35,7	50,6
National credit cards	1,7	1,9	2,9	3,6	4,5	5,3	5,7	6,1	6,5	7,8
Payment cards issued by international card companies	3,2	4,8	6,3	8,8	11,2	15,1	21,0	27,8	29,2	42,8
Use of foreign cards in Norway	5,6	6,7	7,1	7,8	8,6	9,5	10,8	13,6	14,3	22,4
Goods purchases	4,3	5,1	6,0	6,5	7,3	8,1	9,3	12,4	12,6	15,5
Cash withdrawals	1,3	1,6	1,2	1,3	1,4	1,4	1,5	1,3	1,7	6,9

¹ Figures for the years 1999 - 2001 do not include the use of international payment cards and national credit cards in terminals owned by entities other than banks and oil companies. Figures for the use of international payment cards in payment terminals also includes the use of cards on the Internet.

Table 11b: Payment cards: Use of payment terminals (in millions of transactions)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Use of Norwegian terminals	:	:	514,8	578,3	633,3	709,6	780,9	857,3	941,1	1 044,9
Cash withdrawals from ATMs	107,2	107,4	106,1	109,0	103,5	102,1	99,3	98,7	99,8	99,5
Goods purchases in EFTPOS terminals that accept BankAxept	288,6	338,8	391,6	446,1	500,8	575,6	638,5	718,1	797,6	868,1
Of which BankAxept goods purchases with cashback	:	:	102,7	124,2	132,6	138,2	144,6	135,9	81,9	77,7
Goods purchases in other Norwegian payment terminals	:	:	17,1	23,2	29,0	31,9	43,1	40,5	43,7	77,3
Use of Norwegian cards in Norwegian terminals	:	:	471,4	534,1	591,2	665,8	743,5	819,0	902,5	1 002,1
Cash withdrawals from ATMs	:	:	103,3	107,7	102,1	100,3	99,2	98,8	98,1	92,6
BankAxept	103,2	102,3	98,6	102,0	96,6	95,6	93,2	91,7	88,7	85,7
National credit cards	0,8	0,9	1,0	1,2	1,0	1,4	1,1	0,8	1,1	0,9
Cards issued by international card companies	:	:	3,8	4,5	4,5	3,3	4,9	6,3	8,4	5,9
Goods purchases in payment terminals	:	:	368,1	426,4	489,0	565,5	644,3	720,2	804,4	909,5
BankAxept - goods purchases (including purchases with cashback) in EFTPOS terminals	234,8	282,7	342,5	394,7	451,7	519,7	588,4	654,1	728,7	809,4
National credit cards - goods purchases	:	:	1,3	2,0	3,0	3,8	4,1	4,8	5,3	6,7
Cards issued by international card companies - goods purchases	:	:	24,2	29,7	34,4	41,9	51,8	61,3	70,4	93,4

Table 12: Cross-border transfers registered in the Register of Crossborder Transactions and Currency Exchange (in thousands of transactions)

	2006	2007
Transfers from Norway abroad	5 422,5	6 298,6
SWIFT	5 171,1	5 861,4
Foreign currency cheques	97,0	133,1
Other transfers (MoneyGram, Western Union, etc.)	154,5	304,1
Transfers to Norway from abroad	2 784,8	2 791,7
SWIFT	2 773,7	2 743,5
Foreign currency cheques	3,2	36,7
Other transfers (MoneyGram, Western Union, etc.)	7,9	11,5

Table 13: Use of payment services (in NOK billion)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total	4 781,9	5 875,4	5 894,4	5 951,8	6 225,1	6 934,7	8 963,5	8 247,9	9 301,6	10 867,9
Debit and credit transfers (giros)	4 464,6	5 572,4	5 627,7	5 695,1	5 943,5	6 653,3	8 656,0	7 909,5	8 904,8	10 428,8
Electronic ¹	3 223,2	4 444,4	4 720,0	5 156,0	5 457,2	6 242,0	8 283,6	7 662,1	8 680,1	10 212,2
Paper-based	1 241,4	1 127,9	907,7	539,0	486,3	411,3	372,4	247,4	224,7	216,5
Payment cards (goods purchases)	134,6	164,1	164,3	184,2	224,9	236,6	265,0	305,5	381,0	426,2
Electronic	125,3	151,2	156,2	175,4	215,4	227,9	254,1	289,5	365,1	420,3
Manual	9,3	12,9	8,1	8,9	9,5	8,7	10,9	16,0	15,9	6,0
Cheques	182,7	138,9	102,4	72,5	56,6	44,9	42,5	32,9	15,8	12,9

¹ Figures for electronic giros to end-2001 do not include various credit transfers, e.g. standing orders.

Table 14: Debit and credit transfers (giros) (in NOK billion)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total	4 464,6	5 572,4	5 627,7	5 695,1	5 943,5	6 653,3	8 656,0	7 909,5	8 904,8	10 428,8
Credit transfers¹	4 194,2	5 265,1	5 314,2	5 410,5	5 714,4	6 431,5	8 396,5	7 612,6	8 624,8	10 149,4
Electronic	3 079,4	4 281,0	4 517,9	4 971,2	5 308,0	6 077,4	8 105,1	7 449,2	8 456,6	9 992,5
Company terminal giros	3 041,1	4 185,7	4 372,2	4 716,2	4 678,4	5 225,3	6 553,4	2 976,6	2 294,1	2 921,4
Internet banking	7,3	39,7	93,3	197,3	409,1	650,7	1 351,8	4 272,8	5 772,4	6 496,3
Internet banking solutions for retail customers	7,3	39,7	93,3	197,3	:	332,6	436,4	517,3	585,4	650,1
Internet banking solutions for corporate customers	-	-	-	-	:	318,1	915,4	3 755,6	5 187,0	5 846,2
Telephone giros	31,0	55,6	52,5	57,6	54,3	51,0	48,4	43,8	37,5	31,0
Various other electronic credit transfers	:	:	:	:	166,3	150,4	151,5	155,9	352,6	543,8
Paper-based	1 114,9	984,1	796,2	439,3	406,4	354,1	291,4	163,5	168,2	156,9
Company terminal giros and Internet banking as money order	30,6	56,5	44,0	42,0	36,8	33,4	27,2	4,5	11,7	15,7
Mail giros	649,8	597,6	527,7	195,5	175,7	184,6	161,1	103,0	81,7	72,0
Giros delivered at the counter - account debits	308,5	330,1	224,6	189,0	190,0	136,1	103,1	55,9	74,7	69,2
Miscellaneous giros registered in banks ²	126,0	-	0,0	12,9	3,9	0,0	0,0	0,0	0,0	0,0
Direct debits	143,8	163,5	202,0	184,8	149,2	164,6	178,5	212,9	223,5	219,7
Giros delivered at the counter - cash payments	126,5	143,8	111,5	99,7	79,8	57,2	81,0	83,9	56,5	59,7

¹ Figures for credit transfers do not include various credit transfers, including standing orders in the period 1998 - 2001.

² Miscellaneous giros registered in banks include both cash payments and account debits.

Table 15a: Payment cards: Use of cards (in NOK billion)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total use of Norwegian cards (in Norway and abroad)¹	242,6	277,1	315,9	355,7	382,9	411,6	440,0	480,8	510,8	557,4
Goods purchases	134,6	164,1	164,3	184,2	224,9	236,6	265,0	305,4	352,2	398,1
Cashback from EFTPOS terminals	:	:	36,9	44,7	47,5	48,3	48,3	49,4	28,8	28,1
Cash withdrawals without goods purchases	108,0	113,0	114,6	126,8	110,4	126,6	126,7	126,0	129,8	131,2
Use of Norwegian cards abroad	15,8	19,5	23,3	25,6	29,3	33,6	34,4	35,5	40,5	57,6
Goods purchases	9,4	11,1	13,8	15,0	17,4	20,4	21,8	23,5	28,5	40,1
Cash withdrawals	6,5	8,4	9,5	10,6	11,9	13,3	12,6	12,0	12,0	17,4
Use of Norwegian cards broken down by function										
Debit functions	219,9	251,2	283,4	320,0	344,5	371,0	393,5	429,1	447,3	482,5
BankAxept	204,4	232,3	259,8	291,8	309,7	335,7	354,1	386,9	398,0	421,0
Payment cards issued by international card companies	15,5	18,8	23,6	28,2	34,8	35,4	39,4	42,2	49,2	61,5
Billing functions (payment cards issued by international card companies)	14,3	15,3	17,2	18,1	17,5	16,9	17,8	19,7	19,0	22,9
Credit functions	8,4	10,8	15,4	17,6	20,8	23,8	28,8	32,0	44,5	52,0
National credit cards	4,5	5,1	6,7	7,4	8,3	7,5	7,6	5,3	8,7	9,5
Payment cards issued by international card companies	3,9	5,7	8,7	10,3	12,5	16,2	21,1	26,7	35,8	42,4
Use of foreign cards i Norway²	4,4	5,5	5,4	5,8	5,9	6,9	8,5	9,6	10,2	15,2
Goods purchases	3,0	4,0	3,9	4,1	4,2	5,0	6,3	7,7	7,9	9,5
Cash withdrawals	1,5	1,5	1,5	1,7	1,7	1,9	2,2	1,8	2,4	5,7

¹ Figures for the years 1999 - 2001 do not include the use of international payment cards and national credit cards in terminals owned by entities other than banks and oil companies. Figures for the use of international payment cards in payment terminals also include the use of cards on the Internet.

² Figures for the use of international payment cards in EFTPOS terminals to end-2005 also include the use of cards on the Internet.

Table 15b: Payment cards: Use of payment terminals (in NOK billion)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Use of Norwegian terminals	:	:	:	:	367,0	395,1	419,7	454,8	483,1	522,3
Cash withdrawals from ATMs	102,1	105,6	106,3	115,8	114,0	115,0	113,1	112,0	119,2	119,1
Goods purchases in EFTPOS terminals that accept BankAxept cards	127,1	:	:	:	183,5	211,2	231,2	272,6	305,8	319,7
Cashback with goods purchases with BankAxept cards	:	:	36,9	44,7	47,5	48,3	48,3	49,4	28,8	28,1
Goods purchases at other Norwegian payment terminals	:	:	15,9	18,3	21,9	20,5	27,1	20,8	29,3	55,4
Use of Norwegian cards in Norwegian terminals	:	:	288,1	324,9	346,0	375,6	401,0	439,2	462,5	496,8
Cash withdrawals from ATMs	:	:	103,6	114,3	112,4	112,6	112,8	112,1	116,9	113,4
BankAxept	97,2	99,2	97,9	107,0	105,0	105,7	104,2	101,9	103,1	102,1
National credit cards	0,9	1,1	1,4	1,4	1,4	2,1	1,7	1,3	1,6	1,4
Cards issued by international card companies	:	:	4,4	5,9	6,0	4,9	7,0	8,9	12,2	9,9
Cashback with goods purchases with BankAxept cards	:	:	36,9	44,7	47,5	48,3	48,3	49,4	28,8	28,1
Goods purchases in payment terminals	:	:	147,5	165,8	186,0	214,6	239,8	277,7	316,8	355,3
BankAxept - goods purchases in EFTPOS terminals	107,2	133,1	125,0	140,1	157,2	181,6	201,7	235,4	266,1	290,9
National credit cards - goods purchases	:	:	2,7	3,2	4,3	5,0	5,1	5,7	5,9	6,8
Cards issued by international card companies - goods purchases	:	:	19,8	22,5	24,6	28,0	33,1	36,6	44,8	57,6

Table 16: Cross-border transfers registered in the Register of Crossborder Transactions and Currency Exchange (in NOK million)

	2006	2007
Transfers from Norway abroad	5 791 415,9	
SWIFT		5 153 211,7
Foreign currency cheques	766 231,6	636 924,4
Other transfers (MoneyGram, Western Union, etc.)	619,9	1 279,9
Transfers to Norway from abroad	4 047 007,9	
SWIFT		4 039 782,9
Foreign currency cheques	5 184,0	7 149,6
Other transfers (MoneyGram, Western Union, etc.)	42,7	75,4

Interbank

Table 17: Average daily turnover in clearing and settlement systems (transactions)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
NICS										
SWIFT Gross/RTGS		331	282	303	300	596	611	532	547	593
SWIFT Net		4 258	4 344	4 719	4 925	5 155	4 480	4 744	5 301	5 908
NICS Retail (million)		2-3	3,0	3,4	3,7	4,0	4,3	4,7	5,1	5,5
NBO										
NICS SWIFT RTGS									547	593
RTGS Gross transactions outside of NICS									200	242
NICS SWIFT Net									47	45
NICS Retail									119	119
VPO									87	91
VPS Clearing									12	11

Table 18: Average daily turnover in clearing and settlement systems (in NOK billion)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
NICS		165-170	175,1	211,4	212,5	248,7	195,7	200,8	224,8	254,5
SWIFT Gross/RTGS		127,0	123,0	151,2	149,5	187,8	129,4	135,5	155,3	176,8
SWIFT Net		18,0	16,9	16,1	16,2	12,6	5,2	5,7	6,7	7,6
NICS Retail		20-25	35,1	44,1	46,8	48,3	61,1	59,6	62,8	70,1
NBO		ca 147,2	144,0	172,1	169,2	206,8	152,3	160,8	185,2	222,7
NICS SWIFT RTGS		127,3	123,2	150,7	149,5	187,7	128,9	135,5	155,3	176,8
RTGS Gross transactions outside of NICS		8,3	9,3	6,9	4,8	7,2	11,1	12,1	16,1	31,1
NICS SWIFT Net		5,2	3,8	5,3	5,5	2,1	1,0	0,9	1,0	1,2
NICS Retail		ca 4	5,5	6,8	6,9	6,7	7,6	8,5	8,1	8,1
VPO and VPS Clearing (formerly NOS)		2,4	2,2	2,3	2,5	3,1	3,7	3,8	4,7	5,5
VPO									4,4	5,1
VPS Clearing									0,3	0,4

Table 19: Number of participants in clearing and settlement systems (at year-end)

	2006	2007
Norges Bank's settlement system (NBO)	23	23
DnB NOR	104	103
Sparebank 1 Midt-Norge	17	18
Norwegian Interbank Clearing System (NICS)	146	146
The Securities Settlement System (VPO)	91	101

Table 20: Participation in SWIFT

	2003		2004		2005		2006		2007	
	Norwegian	Total	Norwegian	Total	Norwegian	Total	Norwegian	Total	Norwegian	Total
Total	34	7 527	34	7 667	32	7 863	32	8 103	32	8 386
Members	22	2 312	14	2 280	14	2 229	13	2 289	13	2 268
Sub-members/domestic users covered by members abroad	7	3 051	12	3 019	11	3 060	11	3 124	10	3 209
Participants	5	2 164	8	2 368	7	2 574	8	2 690	9	2 909

Table 21: SWIFT message traffic to/from Norway (in thousands of transactions)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of messages sent		8 124	9 238	10 521	11 239	12 931	18 590	22 060	30 090	42 300
Number of messages received		6 051	6 920	8 163	8 747	10 391	13 650	13 500	15 250	17 300
Global SWIFT traffic		1 058 836	1 273 913	1 533 906	1 817 444	2 047 564	2 299 074	2 518 290	2 864 540	3 501 200

Prices

Table 22: Price list for participation in Norges Bank's settlement system (NBO), valid from 1 January 2007 (in NOK)

Annual fees	Basic price for participation	Retail settlement	SWIFT settlement	Securities settlement	Derivative settlement	Basic fee for collateral for loans	Supplementary fee for collateral deposited abroad	Scandinavian Cash Pool
Participant category								
Banks with total assets over NOK 100 billion	550 000	100 000	90 000	120 000	80 000	210 000	200 000	15 000
Banks with total assets between NOK 40 and 100 billion	450 000	80 000	70 000	100 000	60 000	160 000	175 000	15 000
Banks with total assets between NOK 10 and 40 billion	350 000	60 000	50 000	80 000	40 000	110 000	150 000	15 000
Banks with total assets under NOK 10 billion	150 000	50 000	40 000	70 000	30 000	60 000	125 000	15 000
Investment firms	20 000	40 000	30 000	60 000	20 000	25 000	125 000	15 000
Money brokers				120 000				

Participant category	Transaction prices		Prices for pledging collateral			
	STP transactions	Manual gross transactions	Changes in collateral registered in VPS	Changes in collateral registered abroad	Application for approval of new securities (ISIN) in VPS	Application for approval of new securities (ISIN) abroad
Banks	1	60	200	400	1 500	3 000

Participant category	Initial charge
Banks / Investment firms / Money brokers	50 000

Table 23: Price list for banks' delivery and withdrawal of cash to and from Norges Bank's depot

Type of fee/charge¹	Delivery	Withdrawal
Handling fee, fixed share		
Banknotes, per transaction	150	150
Coins, per transaction	150	150
Handling fee, variable share		
Banknotes, per packet of 500 notes	10	10
Coins, per standard unit (150 rolls)	50	50
Incorrect sorting, error in delivery charge²		
Too many good notes delivered as damaged notes	0	
Counterfeit notes	0	

¹ Prices do not apply to exempt exchange transactions or delivery of banknotes and coins not fit for circulation.

² Charges will possibly be introduced at a later date.

Table 24: Prices for domestic payment transactions, receipt of payments and cash withdrawals. Weighted average (in NOK) in selected banks on 1 January each year for customers other than programme customers¹

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Payment transactions											
Electronic giro services											
Telephone giros	2,33	2,31	2,38	2,45	2,44	2,38	2,14	2,15	2,19	2,23	2,29
Internet banking - solutions for retail customers											
Payment with CID	1,98	2,03	1,94	1,91	1,88	1,95	1,95	2,03	2,08	2,04	2,01
Payment with notification										2,37	2,87
Direct debits (Avtalegiro)							2,09	2,03	2,14	2,07	2,08
Direct Remittance without notification	1,64	1,59	2,07	2,73	2,82	2,85	2,99	3,28	3,27	3,40	:
Direct Remittance with notification	3,53	3,44	4,02	4,25	4,78	4,88	5,19	5,46	5,53	5,43	:
Direct Remittance with CID	1,02	0,99	1,03	1,31	1,38	1,38	1,47	1,52	1,57	1,58	:
Other company terminal giro without notification	1,26	1,20	1,91	1,96	2,07	2,03	1,62	2,78	1,71	2,51	:
Other company terminal giro with notification	3,08	3,03	3,14	3,58	3,61	3,68	3,80	3,62	3,74	3,85	:
Other company terminal giro with CID	0,91	0,92	0,88	0,98	0,99	1,01	1,03	1,55	1,82	1,21	:
Internet banking - solutions for corporate customers											
Payment of wages									1,25	1,49	1,50
Payment without notification									1,66	1,61	1,50
Payment with CID									1,43	1,07	1,11
Payment with notification									3,55	3,62	4,08
Paper-based giro services											
Mail giros	4,04	4,25	4,84	5,14	5,67	6,36	6,52	6,85	6,87	6,87	7,03
Giro, account debits	13,30	15,28	16,92	18,59	25,10	26,01	29,99	33,17	33,37	33,62	33,63
Giro, cash payment	18,46	23,40	26,11	27,18	31,69	32,50	41,93	40,89	42,00	42,49	46,33
Direct Remittance sent as money order	23,12	25,72	27,78	30,01	32,64	33,70	35,69	46,65	46,54	51,97	:
Other company terminal giro sent as money order	23,41	25,01	26,06	30,11	32,61	33,58	35,27	46,06	37,31	44,44	:
Corporate Netbank sent as money order									47,62	50,40	50,70
Payment cards											
BankAxept cards in payment terminals (EFTPOS)	2,13	2,07	2,19	2,24	2,07	2,07	2,11	2,44	2,32	2,35	2,32
Cheques											
Personal cheques	10,72	12,30	15,00	20,07	20,70	21,13	20,64	27,58	27,32	28,54	:
Business cheques	10,46	12,31	15,13	22,05	22,79	23,94	24,01	27,58	27,24	28,46	:

Receipt of payments

Electronic giro services

Direct debits (Avtalegiro) (without notification from the bank)	1,60	1,51	1,38	1,42	1,42	1,42	1,52	1,38	1,37	1,37	1,34
Optical Character Recognition (OCR) - File	0,80	0,79	0,89	1,13	1,15	1,17	1,16	1,22	1,23	1,22	1,22
GiroFax										0,02	0,21
GiroMail										0,02	0,03

Paper-based giro services

Optical Character Recognition (OCR) - Return	2,40	2,12	3,72	3,63	3,70	3,85	3,93	4,05	4,39	4,50	:
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Cash withdrawals

ATMs

Own bank's ATMs outside opening hours	3,49	3,79	3,78	4,28	3,76	3,69	3,89	4,07	3,86	3,87	3,76
Other banks' ATMs in opening hours	2,25	2,19	2,64	4,00	3,89	4,09	4,72	5,14	6,38	6,45	6,58
Other banks' ATMs outside opening hours	4,44	4,46	4,32	4,81	4,79	4,91	5,49	5,53	6,78	6,84	6,81

¹ For estimated prices in customer programmes, see section 1.2.

Table 25: Prices in NOK for transfers from Norway to countries in the EU/EEA. Weighted average in selected banks

	Electronic payment order/ wholly automated processing				Electronic payment order/ Bank performs some operations manually				Manual payment orders			
	01-01-05	01-01-06	01-01-07	02-01-08	01-01-05	01-01-06	01-01-07	02-01-08	01-01-05	01-01-06	01-01-07	02-01-08
Ordinary SWIFT transfer in NOK												
Without BIC and IBAN, NOK 2 500	66,9	59,9	64,7	64,7	82,7	81,4	84,5	96,7	132,8	136,4	136,4	145,8
With BIC and IBAN, NOK 2 500	55,9	40,6	45,6	45,4	86,8	73,3	86,6	90,5	121,9	125,0	128,6	131,0
Ordinary SWIFT transfer in euro												
Without BIC and IBAN, equivalent to NOK 2 500	66,9	59,9	63,4	63,6	82,7	81,4	84,1	91,3	132,8	136,4	136,4	145,8
With BIC and IBAN, equivalent to NOK 2 500	35,3	32,5	33,9	29,9	86,8	66,4	76,6	80,4	105,2	110,1	122,6	126,5
SWIFT express transfer in NOK												
Without BIC and IBAN, NOK 150 000	311,0	299,2	348,0	332,7	311,0	328,4	331,5	339,3	377,7	381,1	381,6	387,7
With BIC and IBAN, NOK 150 000	300,6	289,9	305,7	300,3	300,6	353,5	368,3	364,3	367,3	371,5	373,9	373,0
SWIFT express transfer in euro												
Without BIC and IBAN, equivalent to NOK 150 000	311,0	299,2	348,0	333,2	311,0	328,4	331,5	330,5	377,7	381,1	381,6	387,8
With BIC and IBAN, equivalent to NOK 150 000	300,6	282,4	303,4	298,0	300,6	346,0	360,6	356,7	367,3	362,3	373,9	372,4
Cheques to other countries												
Equivalent to NOK 2 500	-	-	-	-	159,2	162,0	164,7	165,9	205,7	202,5	204,6	207,1

Table 26: Prices in NOK for receipt of payments from abroad. Weighted average in selected banks

	Receipt of payments from countries in the EEA				
	01-12-04	01-01-05	01-01-06	01-01-07	02-01-08
Receipt of payments in euro					
Without BIC and IBAN, equivalent to NOK 25001	97,5	96,4	86,4	80,8	80,8
Without BIC and IBAN, equivalent to NOK 150 000	97,5	97,9	93,0	85,1	84,6
With BIC and IBAN, equivalent to NOK 25001	97,5	21,6	13,2	12,6	10,4
With BIC and IBAN, equivalent to NOK 150 000	97,5	95,8	29,6	12,6	10,4
Receipt of payments in other currencies					
Without BIC and IBAN, equivalent to NOK 25001	97,5	97,9	96,5	92,9	90,6
Without BIC and IBAN, equivalent to NOK 150 000	97,5	97,9	96,5	98,0	96,4
With BIC and IBAN, equivalent to NOK 25001	97,5	95,8	96,5	92,3	90,2
With BIC and IBAN, equivalent to NOK 150 000	97,5	95,8	96,5	95,2	94,5

Definitions and abbreviations

Autogiro: An electronic collection procedure whereby companies can debit outstanding claims directly from customers' accounts when they fall due (see also direct debit).

Avtalegiro (Agreement-based giro): The bank automatically debits payment of regular bills from customers' accounts on the due date (see also direct debit).

BankAxept card: A debit card that is issued by Norwegian banks and linked to a bank account for use in Norway.

BBS: Bankenes Betalingsentral (Banking and Business Solutions)

BIC (Bank Identifier Code): Code that is used to identify a bank by means of the bank's SWIFT address.

BIS (Bank for International Settlements): International organisation that has the purpose of promoting cooperation among the central banks.

Charge card: Payment card that is not linked to a bank account. The user receives an invoice for all use in a given period at regular intervals and pays using another payment instrument. The user has a certain amount of credit in the form of delayed payment, whereas the payee receives settlement from the card company.

CID (Customer Identification Number): A series of digits that uniquely identifies the payer. Several pieces of information about the payer can be contained in the CID.

Clearing: Several transactions are offset against each other, and for each bank a net position is calculated.

CLS (Continuous Linked Settlement): System for the

settlement of trading in foreign currency. CLS ensures payment versus payment and thereby removes the credit risk associated with the settlement.

Combined payment cards: Payment cards with more than one of the following three functions: BankAxept card, domestic credit card and/or payment card issued by an international card company.

Company terminal giro: Payment solutions for businesses. The solutions require installation of software in the user's/business' computer system. Used for individual payments, retail payments to payees with and without accounts, etc.

CPSS (Committee on Payment and Settlement Systems): CPSS is a forum for the central banks in the G10 countries. The purpose of CPSS is to promote robust, efficient payment systems.

Credit card: Payment card with a credit limit that is repaid according to an agreed repayment plan, regardless of use.

Credit transfer: Money transfer that is initiated by the payer.

Debit card: Payment card that makes it possible for the owner of the card to access deposits and credit in the bank account to which the card is linked. The user's account is debited each time the card is used.

Debit transfer: Money transfer initiated by the payee.

Direct debits: Autogiro and Avtalegiro. Up to and including 2001, the term also included DataGiro Direkte Trekk, DataGiro Terminbetaling and DataGiro Medlemsbetaling.

Direct remittance: Service that is equivalent to the company terminal giro established by BBS.

ECB: European Central Bank

eFaktura: Electronic billing (e-invoice) that is completed with a CID, account number, etc. and sent to the customer's Internet bank.

EFTPOS (Electronic Funds Transfer at Point Of Sale): Payments and withdrawals of cash by means of payment cards at electronic payment terminals in shops, etc.

e-money: A monetary value in the form of a claim on the issuer that is stored on an electronic medium, issued on receipt of funds and a recognised means of payments by enterprises other than the issuer.

FAO (Expert Committee for Clearing and Settlement): Advisory body for FU.

FNH: Norwegian Financial Services Association

FNS: The Finance Industry's General Services Office

FU (The Joint Committee for Payment Transactions): The banking industry's supervisory committee for matters related to payment transactions.

Functions for cards: Payment cards are classified both according to whether they function as BankAxept cards, national credit cards or international payment cards and according to whether they function as debit cards, charge cards or credit cards.

Giro as money order: Paper-based giro without the payee's account number. The form must be presented in a bank in order to receive payment.

Giro: Credit and debit transfers from one bank account to another.

Gross settlement: Transactions are settled individually, without prior clearing. When this is done in real time, the system is called an RTGS system (Real Time Gross Settlement System).

IBAN (International Bank Account Number): Identifies the payee bank and account number. This kind of number contains three elements: the bank account number, the country code and the bank code.

IMF (International Monetary Fund): The IMF shall foster global monetary cooperation, provide loans to countries with payment difficulties and work for international financial stability.

Internet banking: Payment solutions for persons (Nettbank Person) and enterprises (Nettbank Bedrift) over Internet. Payments can be registered using a PC or company terminal or a mobile telephone

M1: The money-holding sector's holding of Norwegian banknotes and coins, as well as the sector's deposits in current accounts in Norges Bank and commercial and savings banks (in NOK and foreign currencies).

Mail giro: The payer sends a paper-based giro in an envelope directly to BBS rather than delivering the form to his/her bank.

Means of payment: Money in the form of cash or deposit money.

NBO: Norges Bank's Settlement System

NICS Operations Office: The NICS Operations Office is the operator of NICS; cf. Chapter 2 of the Act relating to payment systems, etc. The NICS Operations Office is responsible for the organisation and operation of NICS and is the addressee for any instructions from Norges Bank.

NICS: Norwegian Interbank Clearing System

OCR (Optical Character Recognition): Giro with a special code bar that makes it possible for the payee to register the amount and to invoice electronically.

Oil company cards: Cards that can only be used for payments in the oil companies' own terminals.

One off direct debit: Like Autogiro, but where the account holder authorises an enterprise to make a single charge.

Payment cards established by international card companies: Payment cards that are issued on the basis of a direct licence from an international card company (Visa/MasterCard/American Express/Diners Club).

Payment cards: Debit cards, charge cards and credit cards.

Payment instrument: A payment instrument is used to gain access to means of payment. Cash is a payment instrument and a means of payment.

RTGS: Real Time Gross Settlement

SWIFT (Society for Worldwide Interbank Financial Telecommunication): A company that operates a global communications network for payment transactions. SWIFT offers both a message format and a transaction route.

Telephone giros: Transfers from one account to another, initiated by telephone.

Various other electronic credit transfers: Local payment solutions used for standing orders, downpayment of loans, etc.

VPO: Securities settlement system

VPS: Verdipapirsentralen ASA (The Norwegian Central Securities Depository)

Guide to the tables

The following section provides an explanation of sources for figures, data quality, calculation methods for averages and further details concerning the contents of the tables. Statistics that concern general data, means of payment in Norway, clearing and settlement have been prepared by Norges Bank, while the other statistics have been prepared by Statistics Norway (SSB).

In 2006, the procedures for data collection were revised, and new tables with new contents were established. This has resulted in revision of some of the data in relation to the data presented in the Annual Report on Payment systems in previous years. There are also breaks in some time series. Norges Bank asks to be stated as the source when data from this report is used for other purposes.

Sources

- Information about cash in Norway: Norges Bank.
- Information about clearing and settlement: Norges Bank, NICS Operations Office, SWIFT and DnB NOR.
- General data: Statistics Norway, Norwegian Post and Telecommunications Authority and Kredittilsynet, the Financial Supervisory Authority of Norway.
- Information about giros, cheques, BankAxept cards, ATMs and payment terminals: the Norwegian Financial Services' Association (FNH), the Norwegian Savings Banks' Association, the Norwegian Banks' Payment and Central Clearing House (BBS), EDB Business Partner ASA, SDC Udvikling NUF, Terra-Gruppen AS, Nordea Bank Norge ASA, DNB NOR Bank ASA, Fokus Bank ASA, Danske Bank NUF, SEB Merchant Banking AB Oslo branch, Cultura Bank, Teller A/S, SEB Kort AB, Ikano Finans AS, Handelsbanken, Elavon Financial Services Norway Branch, DnB NOR Kort, GE Money Bank, Entercard Norway AS, Statoil AS, YX Energi Norge AS, A/S Norske Shell and ConocoPhillips Jet AS. Information about withdrawals from ATMs using domestic credit cards and payment cards established by international card companies to end-2005 was provided by the

owners of the ATMs, while information about withdrawals in 2006 and 2007 was provided by the card issuers.

- Information about cross-border payments other than those that are executed with payment cards: The Register of Crossborder Transactions and Currency Exchange (the Norwegian Directorate of Customs and Excise).
- Information about banks' income from the payment system: Database for public financial reports from banks and finance companies (ORBOF database at Statistics Norway).
- Information about prices in the payment system for customers that are not in bank loyalty programmes is based on a survey comprising 24 commercial and savings banks. The banks in the survey accounted for 86 per cent of the market measured in deposits in current accounts on 30 November 2007. The prices were taken from the banks' price lists on 1 January.

Comments on individual tables

Table 7 – Number of agreements

- The number of agreements to offer and receive electronic invoices concerns agreements linked to the use of the BBS service eFaktura.

Table 8 – Number of issued cards, number of functions in issued cards and number of terminals.

- The number of physical cards is lower than the number of functions in the cards. This is due to the high number of combined cards (i.e. cards with several functions, see Definitions).
- The statistics for the number of payment terminals only include EFTPOS terminals that accept BankAxept cards. To end-1999, these terminals were owned by either banks or oil companies. Terminals owned by FINA were not included in the statistics. FINA was bought out by Shell on 4 March 1999. From 1999 onwards, others, designated as "retail chains", have also owned these terminals, but the distribution between banks and other owners was unknown until 2000. The number of locations with payment terminals refers to each shop, each post office branch, etc.

Tables 10 and 14 – Debit and credit transfers (giro)

- Various other electronic credit transfers are not included in the statistics prior to 2002.
- The figures for miscellaneous giros registered in banks include both cash payments and account debits. Figures for cash payments in 2005 have been in part estimated by Norges Bank and BBS. Turnover figures (Table 15) for company terminal giros to end-2002 and money orders to end-2005 are in some cases based on estimates from Norges Bank.

Tables 11a and 15a – Payment cards. Use of cards.

- The figures for cashback withdrawals are for cashback in EFTPOS terminals that accept BankAxept cards, whereas the figures for other cash withdrawals are for cash withdrawals at the counter and from ATMs. The turnover (Table 15a) for the use of Norwegian cards for goods purchases in the period from 1997 to 1999 includes cashback from payment terminals, whereas the turnover from 2000 onwards only includes goods purchases.
- The figures for the use of Norwegian cards abroad and foreign cards in Norway refer primarily to payment cards issued by international card companies, including Visa, Eurocard, MasterCard, Diners, American Express and JCB cards (Japan Credit Bureau). There is some uncertainty attached to the figures for cards used across national borders in 2004 – 2006. From 2006, the use of BankAxept cards in Norwegian owned terminals has been included in figures for the use of Norwegian cards abroad. In 2006 and 2007, respectively 6.8 per cent and 4.5 per cent of transactions and 4.6 per cent and 3.7 per cent of the turnover constituted such use of cards abroad. To end-2006 cross-border payments were made with bank cards in the Eufiserv network, but these transactions amounted to less than one per cent of the total number of transactions.
- The distribution of the use of Norwegian cards in Norway and abroad from 2004 onwards and the distribution of cash withdrawals and goods purchases for American Express to end-2004 have been based on estimates prepared by Norges Bank.

Tables 11b and 15b – Payment cards. Use of payment terminals.

- The statistics for the total use of domestic terminals give an overview of the use of Norwegian and foreign cards, including the oil companies' cards in ATMs and payment terminals.
- There is some uncertainty attached to the figures for use of foreign cards in 2006.
- The statistics for the use of Norwegian payment cards in domestic terminals do not include cards issued by oil companies.
- The figures for goods purchases in EFTPOS terminals that accept BankAxept cards for 1999–2001, do not include the use of domestic credit cards and payment cards issued by international card companies in terminals owned by entities other than banks and oil companies.
- Figures for cashback to end-2006 are based on estimates from BBS and Norges Bank. The low numbers for 2006 and 2007 only include registered cashback.
- Figures for the use of payment cards in other Norwegian payment terminals apply to domestic credit cards and international payment cards in EFTPOS terminals that do not accept BankAxept cards and the use of various payment cards over the Internet.

Tables 12 and 16 - Cross-border transfers using SWIFT, foreign currency cheques, foreign currency giros, MoneyGram and Western Union.

- The statistics include payments registered in the Register of Crossborder Transactions and Currency Exchange in 2006 and 2007. New routines for reporting these payments resulted in insufficient information for some banks for 2006 that was subsequently reported to the Register of Crossborder Transactions and Currency Exchange, and there is some uncertainty attached to the figures for both 2006 and 2007.

Table 17-18 – Average daily turnover in NBO and NICS.

- The figures for 1999 only cover the period May–December 1999. The figures for 2000 and later cover the whole year.
- There is some uncertainty attached to the statistics for NICS retail settlement.

Table 24-26 – Prices for domestic payment transactions, receipt of payments and cash withdrawals and prices of cross-border transactions.

- The statistics show average prices in banks for payment transactions and receipt of payments. The figures have been calculated from price lists that apply to customers not participating in customer programmes or receiving other types of discount. The average prices have been calculated by weighting the price per payment and/or receipt in each bank with the bank's share of deposits in current accounts.
- For domestic payments, the prices that are paid by the payees are added to the prices that are debited the payers.
- The price of a mail giro refers to each form sent in. Postage for each sending is an additional charge.
- For agreement-based giros (Avtalegiro), prices per payment received refer to direct debits without notification.
- Cross-border prices refer to fixed sum transfers in the EEA both with and without BIC and IBAN. Prices do not include additional costs for cash payments, third country currency, confirmations or costs that the payer must cover for the payee.

Standard symbols in the tables

- : Incomplete information/will not be published
- Zero
- 0 Less than (the absolute value of) 0.5 of the unit used



Annual Report on Payment Systems

2007