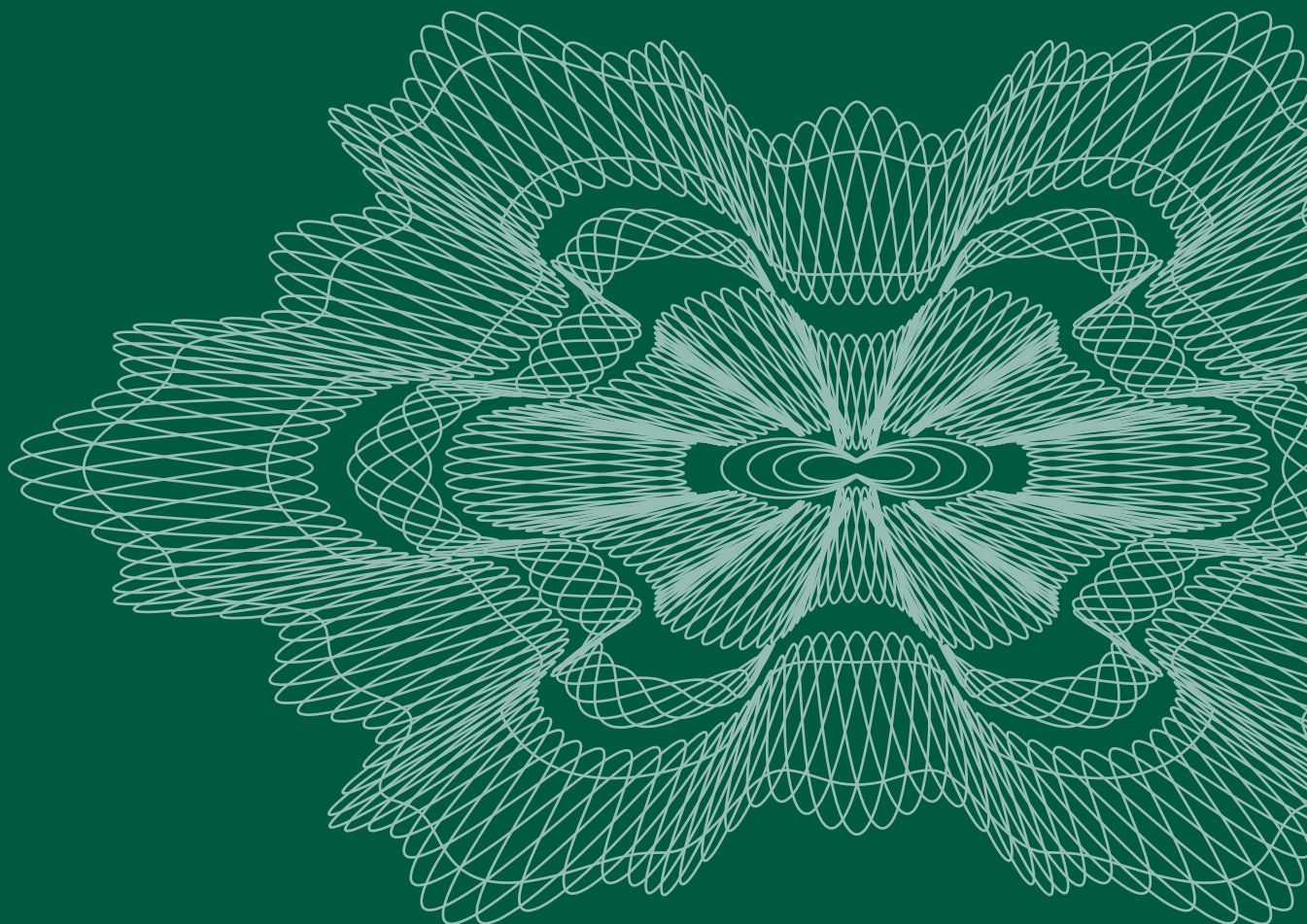




# Economic Bulletin

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October



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# Do Norwegian payment systems satisfy the new BIS recommendations?

Kjetil Watne, Head of Section in the Department for Financial Infrastructure and Payment Systems<sup>1)</sup>

**A long-standing concern of central banks has been the risks in payment systems. One concern has been that the systems are organised so that one participant's financial problems could spread to other participants, and that the problems could intensify to the extent that they threaten financial stability. Under the Act of 1999 relating to Payment Systems, Norges Bank is responsible for authorising and supervising systemically important payment systems. A thorough analysis of the risks associated with the systems is a key element in evaluating the applications for authorisation. In this connection, Norges Bank evaluated whether the systems satisfy the most recent recommendations of the Group of Ten Committee on Payment and Settlement Systems under the Bank for International Settlement (BIS).**

## 1 Introduction

Efficient payment systems are important for the development of a modern economy. These systems make it possible to effect payments for goods and services in a secure and efficient manner, and are thus a precondition for efficient credit and financial markets. IT developments have increased the speed and reduced the costs associated with processing payment transactions. This has paved the way for increased turnover in financial markets. However, as a result of increased speed and turnover, the adverse effects of a system's failure may also be greater. If the systems do not have an appropriate structure, participation in the systems may entail substantial risk for financial institutions, and the disruption may spread to different parts of financial markets or to other participating institutions.

Central banks have a long tradition in the oversight of payment systems. Over the last 10-15 years, a clear understanding has been gained as to the risks that may be associated with participation in such systems, and central banks have intensified their efforts to shed light on the risks and to contain them. Most central banks have a responsibility under the law to promote more efficient payment systems. Efficiency in the payment system normally means in this context that payment transactions are carried out rapidly and safely at a low cost. As a rule, a trade-off must be made between these three main considerations. Even though most central banks have primary responsibility for ensuring efficiency, there are very few that have a legal basis to intervene directly to influence the structure of the system. The Norwegian Act of 1999 relating to Payment Systems gives Norges Bank the authority to authorise and supervise interbank systems, which make up the core of the payment system.

As the importance of these systems is now widely recognised, international organisations working in this field have also been focusing on risk in this area over many years, culminating in a set of international recommendations on standards to reduce risk. Among the most important are two reports from the BIS G10 Committee on Payment and Settlement Systems (CPSS). The first

report (the Lamfalussy Report, BIS 1990) included six recommendations for multicurrency netting systems. In 2001 a new report was published with core principles for systemically important payment systems (BIS 2001). The principles are referred to as the Trundle requirements or the BIS core principles. The core principles are further discussed in an article in *Economic Bulletin* 2/2000 (Lund and Watne 2000). In 1998 the EU adopted, partly as a result of the BIS work, the Settlement Finality Directive to strengthen the legal basis for the systems. The Norwegian Act relating to Payment Systems is based on international recommendations and implements the above EU directive in Norwegian law.

The most recent BIS report also includes four recommendations on how central banks should follow up the implementation of the recommended core principles. This article is structured to reflect these recommendations. Section 2 provides a brief overview of Norges Bank's role in the payment systems and the aims of its work in this field. A new role for the Bank is authorisation and supervision, and the first applications for authorisation have recently been approved. Section 3 presents the main elements in evaluating authorisation applications and provides an overview of the systems that have been authorised and which have been granted exemptions from the authorisation requirement. Section 4 presents the authorised systems and Norges Bank's own settlement system in relation to the BIS core principles. Section 5 concludes with a description of the cooperation and division of responsibilities between Norges Bank and the Banking, Insurance and Securities Commission in this field, and lists of Norges Bank's most important international contacts in this area.

## 2 Norges Bank's tasks, role and objectives in the field of payment systems

The first BIS recommendation is that the central bank should define clearly its payment system objectives and

<sup>1)</sup> With thanks to May Helle Lund, Legal Department of Norges Bank, for useful comments on previous drafts.

should disclose publicly its role and major policies with respect to systemically important payment systems. This section describes Norges Bank's objectives and most important functions and roles with respect to the Norwegian payment system. Norges Bank is responsible for ensuring appropriate framework conditions and the stable operation of a well-functioning payment system, in its role as licensing and supervisory authority for interbank systems, as supreme settlement bank in the Norwegian payment system and as issuer and distributor of Norwegian banknotes and coin.

The overriding objective of Norges Bank's work in the area is to promote robust and efficient payment systems. Normally, a trade-off must be made between safety and robustness, on the one hand, and cost-effectiveness on the other. An important part of the work is to find solutions for organising the Norwegian payment system in a way that yields an optimal trade-off between these considerations. The formal framework for Norges Bank's responsibilities for payment systems and the financial infrastructure is set out in the Act on Norges Bank and the Monetary System and the Act relating to Payment Systems.

Under the Act on Norges Bank and the Monetary System, Norges Bank shall promote an efficient payment system domestically as well as vis-à-vis other countries. In order to accomplish this task, Norges Bank collects and compares statistics on developments in and the use of different payment services as a basis for its analysis and assessments of the risks and efficiency of the Norwegian payment system. The aim of the assessments is to promote a safe and a efficient payment system.

Under the Act relating to Payment Systems, Norges Bank is given responsibility for the authorisation and supervision of Norwegian interbank systems, which are systems for settlement and clearing of transactions between credit institutions. Such systems are encompassed by the authorisation requirement to the extent they are of importance for financial stability. Authorised systems are subject to supervision, and if necessary Norges Bank may require changes to the systems. Section 3 below provides further details concerning the object of the Act, the authorisation arrangement and the guidelines applying to Norges Bank as licensing authority.

Like most other central banks, Norges Bank is the central settlement bank in the Norwegian payment system. All banks in Norway have an account in Norges Bank, and the banks' business or transactions arising from payment orders from the banks' customers can be settled by transfers between these accounts. The primary merits of a system where the central bank acts as settlement bank are that these settlements do not imply any credit risk and that central bank money is highly liquid. This reduces the risk borne by participants in cases of financial unrest, thereby bolstering financial stability. The design of the settlement system is also of importance for the conduct of monetary policy. As settlement bank, Norges Bank

shall provide a safe means of settlement for the efficient execution of settlements and lay the basis for effective implementation of monetary policy. Norges Bank also carries out securities settlement at broker level.

Under the Norges Bank Act, the Bank has the sole right and obligation to issue Norwegian banknotes and coin. This role covers the actual production of banknotes and coin, the distribution of new ones and the redemption and destruction of defective and expired notes and coin. Norges Bank is also responsible for taking deposits/surplus holdings from banks and placing these in the banks' accounts in Norges Bank and supplying and recording banknotes and coins to banks when needed. Norges Bank shall maintain public confidence in Norwegian banknotes and coin and through its activity in the area of cash handling shall lay the basis for efficient distribution and handling of cash.

### 3 Authorisation procedures with respect to Norwegian interbank systems

The second BIS recommendation to central banks is that the central bank should ensure that the systems it operates comply with the core principles. The third recommendation is that the central bank should oversee compliance with the core principles by systems it does not operate and it should have the ability to carry out this oversight.

Norges Bank has used the international recommendations as guidance in its work on designing and reducing risk in its own settlement system for some time. A concrete assessment of whether this system complies with the ten BIS core principles is provided in section 4. The new Act relating to Payment Systems provides Norges Bank with instruments for supervising the systems that are not operated by the central bank, and the basis for imposing any changes deemed necessary to comply with the object of the Act and thereby also the BIS core principles. This section describes Norges Bank's authorisation procedures for payment systems and provides an overview of the systems that have been authorised and those that have been granted exemptions from the authorisation requirement. In addition to Norges Bank's settlement system, section 4 also assesses whether the authorised systems outside Norges Bank comply with the core principles.

#### *The Act relating to Payment Systems and authorisation procedures*

The Act of 17 December 1999 no. 95 relating to Payment Systems, etc. came into force on 14 April 2000. As mentioned, the Act gives Norges Bank responsibility for the authorisation and supervision of interbank systems in Norway. The purpose of the Act is to ensure that interbank systems are organised to secure financial stability.



Interbank system means a system based on common rules for clearing, settlement or transfer of funds between credit institutions. Interbank systems in operation at the time of entry into force of the Act had to apply for authorisation by the end of 2000, while new systems must be authorised before establishment and operation.

Norges Bank may grant exemptions to the authorisation requirement for systems whose operations are limited to the extent that they are assumed to have no significant effect on financial stability. Such systems will not be subject to supervision under the Payment Systems Act. Under the Act, the Banking, Insurance and Securities Commission is responsible for elements such as safety, efficiency and coordination of the parts of the payment system that directly affect customers. Hence, Norges Bank is not responsible for these aspects.

The Payment Systems Act is a framework act that gives Norges Bank the authority to lay down further requirements with respect to the systems within the scope of the Act. In preparing the legislation, it was emphasised that the authorisation arrangement is to complement and not replace the banking industry's self-regulation of the payment system. Even if a system is subject to authorisation and supervision, responsibility for operation of the system lies with the operator of the individual system. The Act does not set out concrete requirements as to detailed design of the systems. For example, there is a requirement stipulating that there shall be one operator responsible for the system, but the operator's organisational structure is not specified. Furthermore, the Act specifies a number of elements that shall be agreed between participants, but there are no requirements as to the concrete content of the contractual clauses. Norges Bank's responsibility for authorisation is thus limited to evaluating the systems in relation to the purpose of the Act, including whether the organisation and agreements promote the objects clause. If this is not the case, changes may be required by law. The operator is responsible for ensuring that the operation and development of the system falls within the scope of the Act, and any significant changes shall be notified to Norges Bank before they are implemented.

Norges Bank received a total of 7 applications, of which 3 were for authorisation and 4 for exemptions from the authorisation requirement. The first step of the authorisation procedures was to determine which systems were subject to the authorisation requirement, and which systems could be exempted from the requirement. The evaluation was essentially based on the size of the system in terms of number of participants, the size of the participating banks and the turnover in the system.

For the systems that were perceived as being so important for financial stability that they should be subject to public supervision, the next step was to conduct a comprehensive assessment of the risk level in the system. Applicants were required to register the exposures that arose

between participants in the system in a representative month and enclose this data in the application. On the basis of the exposures registered, Norges Bank conducted an analysis of the consequences for other participants should a liquidity or solvency failure occur at the worst possible time with respect to the largest exposure to the other participants.

The analysis included an assessment of both liquidity and credit risk. An indication of liquidity risk was the estimated consequences for a participant's liquidity situation of an expected settlement not occurring at the expected time. An indication of credit risk was an analysis of the consequences for participants' solvency should such a maximum inflow be considered to be lost, i.e. the extent to which such a loss would reduce capital.

The analysis showed that no exposures in the registration period were of an order that would give rise to systemic risk as a result of liquidity or solvency failure on the part of a participant. It should be noted that the exposures were registered in an approximately normal period. It is assumed that substantially larger exposure could arise in the event of financial unrest or if the systems are exposed to extreme strains. In the two latter cases, exposures between participants are likely to be substantially larger than indicated in our analysis. However, the systems are equipped to handle situations involving default on the part of a participant, which reduces the risk to which other participants are exposed.

An example of such risk-reduction mechanisms is legal protection of agreements between participants that allow clearing and settlement to be executed even if insolvency proceedings are instituted against one of the participants. For banks in Norway, this means being placed under public administration. In systems with such agreements, exposures between insolvent participants will in most cases be reduced, as participants normally have both incoming and outgoing transactions with each other, and because the agreement ensures that it is the difference that shall be settled. Other examples of risk-reduction mechanisms are unwinding solutions, which is a feature of some systems, and routines ensuring that the payee is not credited before settlement between the payer bank and the receiving bank is effected. Delayed crediting limits the participating banks' credit risk in the system, thereby reducing the risk of losses. A third example is credit assessment procedures and surveillance of the participants' liquidity situation, operations and accounts.

On the whole, the design of the approved interbank systems is not considered to carry any systemic risk in the event of liquidity or solvency failure on the part of participants. This implies that there is no risk of disruptions spreading through the systems, between different segments of financial markets or between participating institutions should, for example, a participant be affected by liquidity or solvency failure.

## Approved systems and systems exempted from the authorisation requirement

On the basis of the review of the organisation of the systems, the analysis of the risk level and an assessment of the systems' ability to handle liquidity or solvency problems, Norges Bank decided on 14 March 2001 to authorise the operation of two interbank systems, while four systems were exempted from the authorisation requirement. The systems subject to authorisation are the banking industry's joint clearing system (Norwegian Interbank Clearing System - NICS) and the settlement and clearing system for Union Bank of Norway. On 6 June 2001, Norges Bank authorised Den norske Bank to establish and operate a planned settlement system for smaller banks. Norges Bank considers these systems to be of such substantial importance to the financial sector and the payment system in general that they should be subject to public authorisation and supervision. NICS processes the bulk of the large financial transaction between financial institutions and foreign sectors, and estimates interbank positions resulting from payments using giros, bankcards, etc. Union Bank of Norway settles payment transactions between the vast majority of Norwegian savings banks. The DnB system is due to be established within the second half of 2001 and will compete with the established clearing banks to provide clearing services for smaller banks. In its evaluation of applications for authorisation, Norges Bank has placed emphasis on whether the systems satisfy international recommendations.

Norges Bank may grant exemptions to the authorisation requirement for systems whose operations are limited to the extent that they are assumed to have no significant effect on financial stability, including on efficiency and general confidence in the overall Norwegian payment system. In concrete terms, few participants, low

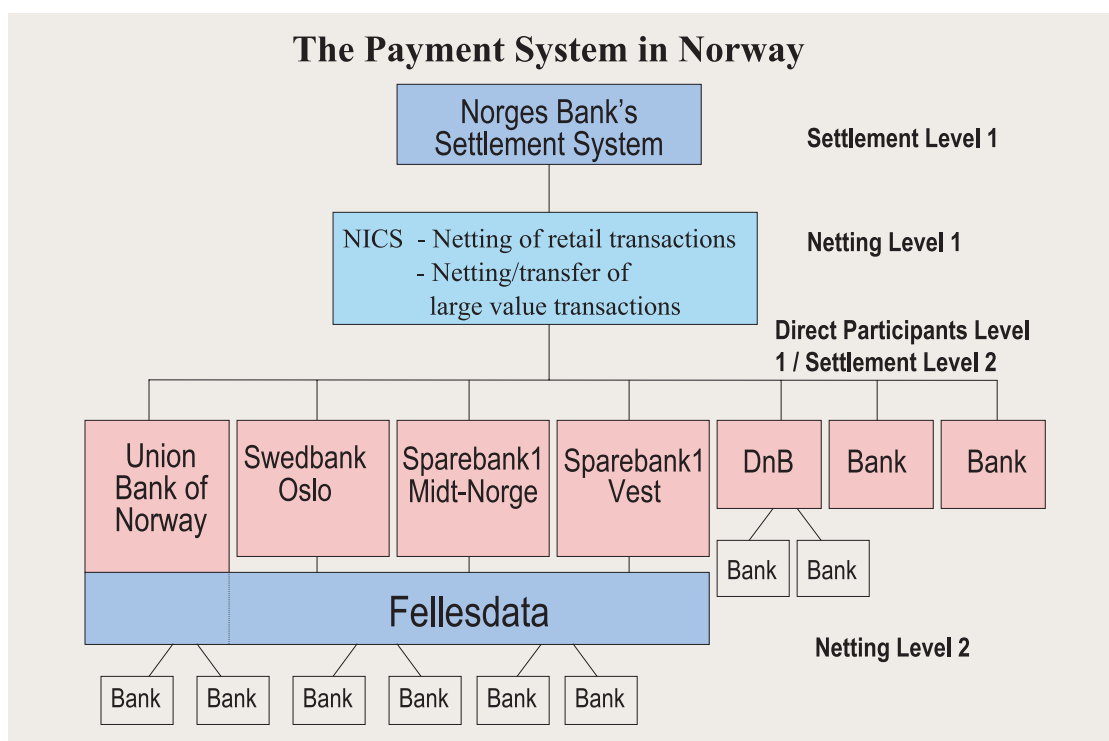
turnover and low risk would imply exemption (see Lund and Watne, 2000). Norges Bank decided to exempt the settlement systems of Swedbank Oslo, Sparebank1 Midt-Norge and Sparebank1 Vest from the authorisation requirement. In addition, the EDB Fellesdata AS clearing system for estimating positions for the aforementioned settlement system was exempted from the authorisation requirement. The exemptions imply no assessment of these systems' qualities or risk, or of their organisation in relation to the principles underlying the law.

A change in the scale of these systems could have implications for financial stability. If so, Norges Bank will reconsider authorisation.

## 4 Norwegian payment systems satisfy the BIS core principles

As mentioned, the BIS recommends that systemically important interbank systems should observe the ten core principles. Norges Bank considers the banking industry's joint clearing system - NICS - and the central bank's own settlement system to be payment systems of particular importance for financial stability in Norway. Furthermore, the interbank systems in Den norske Bank and Union Bank of Norway are considered to be of substantial importance for financial stability and the efficiency of the payment system, and should also be subject to public supervision. These systems should accordingly satisfy international recommendations, including the BIS core principles.

The presentation below is based on the evaluations applied in connection with the authorisation of the systems, and Norges Bank's evaluation of its own settlement system. The bulk of the settlement positions between the banks estimated in NICS are settled in Norges Bank. A smaller



portion is settled in Union Bank of Norway or in the settlement systems that are exempted from the authorisation requirement. The interbank systems in NICS and Norges Bank are partly integrated in technical terms. As a result, the organisation of Norges Bank's settlement system could have an influence on risk for banks participating in NICS, and the reverse. Normally, the development and implementation of risk-reducing measures for the two systems will be coordinated. In many cases, the systems can be evaluated together in relation to the core principles.

### *I The system should have a well-founded legal basis under all relevant jurisdictions*

Norwegian payment systems are governed by both private and official rules that have been considerably refined in recent years, partly through the adoption of the Act relating to Payment Systems and the Act relating to Financial Agreements. The Act relating to Payment Systems transposes the EU Settlement Finality Directive into Norwegian law and is also based on international recommendations. The Act requires that interbank systems include their rules in agreements with participants, and permits participants to agree that settlement and clearing can be executed even when a participant is placed under public administration. On the whole, Norway has made considerable regulatory progress in the field of payment systems compared with other countries. Norges Bank considers that Norwegian payment systems have a well-founded legal basis in line with the BIS principles.

### *II Participants are to have a clear understanding of the system's impact on each of the financial risks they incur through participation in it.*

Participation in the important systems is subject to agreements between participants and the operator. These agreements specify the rights and obligations associated with participation, and the systems' arrangements for handling situations with operating problems or liquidity or solvency failure. For this reason among others, banks must have an understanding of the financial risks associated with participation. This principle is thus satisfied.

### *III The system should have clearly defined procedures for the management of credit risks and liquidity risks, which specify the respective responsibilities of the system operator and the participants and which provide appropriate incentives to manage and contain those risks.*

NICS and Norges Bank have collaborated on the development of an information interface that provides the banks with access to real time information about the liquidity situation of their settlement accounts in Norges Bank. Similar information systems are also in place in Union Bank of Norway and will be part of the system in Den norske Bank. For transactions to be settled in Norges Bank, liquidity must be available on the account at the time of settlement, and a cover control is made before settlement. Furthermore, banks participating in RTGS have laid down guidelines for coordinated submission of transactions for settlement, which reduces participants' liquidity risk.

The agreements for participation in Norges Bank's settlement systems and NICS and in the systems in Den norske Bank and Union Bank of Norway stipulate the rights and obligation associated with participation in connection with the settlement. The systems have procedures and arrangements for handling and limiting the risk a participant imposes on other participants or the system. Norges Bank considers this principle to be satisfied.

### *IV The system should provide prompt final settlement on the day of value, preferably during the day and at a minimum at the end of the day.<sup>2)</sup>*

In the Norwegian payment systems, for all practical purposes the day of value coincides with the settlement day. Settlement transactions that are carried out by transfers between participants' settlement accounts, including transactions that are settled through the day in real time, are settled with finality. All settlement systems in Norway satisfy principle IV.

### *V 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.<sup>2)</sup>*

Of the four interbank systems that are evaluated in this connection, netting is only executed in NICS and Union Bank of Norway's system. Both systems are organised to handle situations with insufficient funds or insolvency. They are either subject to agreements providing for legal protection, which also ensure the execution of settlement and netting in the event of insolvency, or provide for reversal of a settlement with a participant that does not have sufficient funds to cover his position or is insolvent. The reversal solution means that transactions from

<sup>2)</sup> Systemically important payment systems should seek to exceed the minima in principles IV and V.

the relevant participant are withdrawn before a further netting round takes place. In order to avoid credit risk in relation to the problem banks in this situation, the main rule is that the payee is not credited before the interbank settlement is finalised.

Norges Bank finds that the procedures and arrangements in systemically important payment systems in Norway are satisfactory in terms of ensuring that settlement is carried out also in cases where one or several participants with the largest single settlement obligations are unable to settle. This principle is thus satisfied.

*VI Assets used for settlement should preferably be a claim on the central bank; where other assets are used, they should carry little or no credit risk and little or no liquidity risk.*

The bulk of the turnover in NICS is settled through transfers over the largest banks' accounts in Norges Bank. Union Bank of Norway is the settlement bank in its interbank system, and Den norske Bank will be the settlement bank in its planned system. Claims on central banks are not shrouded with credit and liquidity risk, while in principle there could be some risk of this type associated with deposits in private settlement banks. The risk linked to settlement in the form of claims on Union Bank of Norway and Den norske Bank is in practice of no importance. Norges Bank considers that this principle is satisfied.

*VII The system should ensure a high degree of security and operational reliability and should have contingency arrangements for timely completion of daily processing.*

Norges Bank is the operator for its own settlement system, including contingency arrangements that ensure that daily settlements are executed even if the ordinary system should fail to function. Both NICS and Union Bank of Norway have concluded agreements with other enterprises to operate their systems. These systems also feature contingency solutions that ensure operation, settlement and clearing should the ordinary system fail to function. DnB intends to operate its own system, which will be subject to the contingency plan requirements in the Payment Systems Act. Norges Bank finds that the systems' contingency solutions satisfy core principle VII.

*VIII The system should provide a means of making payments, which is practical for its users and efficient for the economy.*

An efficient payment solution should be based on an appropriate balance between cost-effectiveness, speed and security. It may be difficult to determine whether a solution represents an appropriate balance between these elements. Norges Bank's analyses show that the liquidity and credit risk in the systems is manageable. The systems have procedures for following up disruptions with a view to finding a defined goal for operational stability. Moreover, today's competition for payment and settlement services should be sufficient to generate the incentives necessary to provide cost-effective payment solutions. Compared with other countries, the Norwegian payment system has come far, for example with respect to the development and use of cost-effective electronic services. Against this background, Norges Bank finds that the payment solutions in the Norwegian payment systems are efficient and practical.

*IX The system should have objective and publicly disclosed criteria for participation, which permit fair and open access.*

Under the Payment Systems Act, credit institutions that are authorised to engage in business in this country have the right to become members of interbank systems and to participate in accordance with established rates and on ordinary commercial terms. The Act also requires that the systems shall suspend a participant if continued participation threatens financial stability. Norges Bank evaluated the systems' participation and suspension criteria in connection with the authorisation procedure, and considers that the criteria satisfy core principle IX.

*X The system's governance arrangements should be effective, accountable and transparent.*

The Payment Systems Act stipulates that interbank systems shall appoint an operator, and that the system shall be organised and operated efficiently, safely and in accordance with the purpose of the Act. In evaluating the applications for authorisation, Norges Bank has assessed the organisation of the systems and found that the organisation of authorised systems satisfies core principle X.

## 5 Norges Bank cooperates with other central banks and relevant domestic and foreign authorities in the field of payment systems

The fourth BIS recommendation is that central banks shall cooperate with each other and other relevant domestic and foreign institutions in the work on implementing the



core principles. In the following, a description is provided of the cooperation and division of responsibility between Norges Bank and the Banking, Insurance and Securities Commission, followed by a brief overview of cooperation with other central banks with respect to the follow-up of the BIS recommendations and other aspects of payment systems.

### *Relationship with the Banking, Insurance and Securities Commission*

The Payment Systems Act delegated responsibility to both Norges Bank and the Banking, Insurance and Securities Commission. This division of responsibility has given rise to the need for a further clarification of the division of responsibility and for procedures for cooperation and exchange of information between the institutions. The following areas in particular require clarification:

#### *1) The linkage between interbank systems and systems for payment services*

In view of the Act's definition and the division of the payment systems, further clarification of the system concepts is needed. As mentioned, Norges Bank is responsible for authorising and supervising the interbank systems, which are systems that are based on common rules for clearing, settlement and the transfer of funds between credit institutions. The Banking, Insurance and Securities Commission has been assigned responsibility for systems for payment services, which are based on standard terms for the transfer of funds between customer accounts in banks or financial undertakings when the transfer involves the use of payments cards, numerical codes or other forms of independent user identification issued to an undefined group.

It may be difficult to draw a clear dividing line between an interbank system and a system for payment services. As a rule, these system elements will be interdependent, and in some cases integrated in the same IT system. Against the background of the Act's purpose, assessments of the risks in the systems have been a key element of Norges Bank's evaluation of the application for authorisation. A salient feature of participation in a payment system is the credit risk that arises if a participating bank undertakes an obligation to transfer payments to its customers before the bank itself has received settlement. The risk in the system may then stem from sources outside the clearing house or the settlement bank, for example if the banks act as payment intermediaries. In Norway, this applies in particular to payment card systems, where the card user's bank is obliged to pay the user site's bank as soon as the card is accepted by the payment terminal and before the interbank settlement has been completed. There are also other types of payment transfers, which involve substantially larger amounts than card payments, where crediting takes place before settlement.

Assessments of the interbank systems have included an evaluation of the systems' agreements and procedures for commitments arising between participating banks, also where the commitments arise when bank customers initiate the payment order. This part of the system will normally be perceived as lying outside the interbank system. As these conditions could have implications for the risks in the interbank system, Norges Bank must take them into account when evaluating the authorisation of these systems. The central bank's intervention provisions under its supervisory responsibility must also apply to these conditions, and this is consistent with the monitoring responsibility for the systems for payment services assigned to the Banking, Insurance and Securities Commission.

#### *2) Supervisory responsibility for securities settlement systems*

Chapter 4 of the Payment Systems Act stipulates that systems can agree that clearing and settlement shall also be executed if one of the participating banks is under insolvency proceedings. The Banking, Insurance and Securities Commission is responsible for approving *securities settlement systems* that are subject to these provisions. Securities settlement system means a system based on common rules for clearing, settlement or the transfer of financial instruments. The wording of the Act and the preparatory work do not provide a clear answer as to whether the system for settling the cash leg of the security trades shall be defined as an interbank system or as part of a securities settlement system. The risks in the securities settlement systems depend partly on the linkage between the settlement of securities and funds. A lack of clarity may also arise if a system has to deal with two authorities with shared responsibility for what could be perceived as one and the same activity.

In the interest of clarity and effective supervision, the Banking, Insurance and Securities Commission and Norges Bank have agreed that "cash clearing associated with security settlement systems" shall also be included in "securities clearing and settlement systems". This means that the cash settlement systems, where settlement takes place outside of Norges Bank, are subject to the supervision of the Banking, Insurance and Securities Commission. The Ministry of Finance has been informed of this interpretation.

Securities settlement is currently executed at broker level in Norges Bank's settlement system. Norges Bank primarily performs its task of securing financial stability by organising clearing and settlement of securities transactions in its capacity as settlement bank. Securities settlement in Norges Bank is exempt from the approval arrangement in the Banking, Insurance and Securities Commission and is not encompassed by the division of responsibility that follows from the interpretation in this paragraph.

The Securities Registration Bill provides for new solutions with other settlement banks and institutions that engage in the registration of securities. However, it is highly unlikely that the establishment of such settlement systems outside Norges Bank will have any significant implications for financial stability, at least in the short term. If such systems develop to the extent that they could have implications for financial stability, the question of how Norges Bank is to fulfil its responsibility in this area will be reassessed.

### 3) Supervision of operational risk

As described above, systemically important payment systems according to BIS core principle 7 shall be equipped with contingency solutions that ensure the execution of daily settlements should the ordinary system fail to function. Norges Bank and the Banking, Insurance and Securities Commission are, with different legal bases, responsible for supervising the operational risk of important payment systems, and there is a need for cooperation in this area. Under the Payment Systems Act, the operator for interbank systems is required to indicate in the application for authorisation the procedures in place for securing continued technical operation, for example in the event of operational failure. Norges Bank's supervision of approved systems also applies to the operator's follow-up of the operational risk in the system.

However, the IT regulation of the Banking, Insurance and Securities Commission also applies to interbank systems authorised by Norges Bank under the Payment Systems Act. The regulation includes provisions requiring plans for activities necessary to re-establish and perform IT functions should ordinary systems fail to function as a result of a catastrophe. The Banking, Insurance and Securities Commission has its own procedure for inspections and reporting with respect to IT conditions under these provisions.

Norges Bank and the Banking, Insurance and Securities Commission will inform each other of planned follow-up measures with respect to the systems for which both institutions have a supervisory responsibility. In addition, supervisory reports of importance to the execution of authority by other institutions with regard to operational risk will be exchanged.

### 4) Notification of suspension or insolvency proceeding

Under the Payment Systems Act, the operator is obliged to submit suspension cases to the extent possible to Norges Bank before a final decision is taken. Norges Bank shall notify the EFTA Surveillance Authority (ESA) of the institution of insolvency proceedings against participants in systems that have approved agreements on legal protection and security for clearing and settlement agreements.

In the light of the two institutions' responsibility for the financial sector and financial stability, procedures for Norges Bank and the Banking, Insurance and Securities Commission regarding notification and contingency plans in the event of solvency difficulties have already been established. These procedures will also be applied if an interbank system is considering the suspension of a participant.

### Cooperation with Nordic and Baltic central banks

In 1998-1999, Norges Bank participated with the Banking, Insurance and Securities Commission in a Nordic working group appointed by the Nordic Ministerial Council to prepare a joint Nordic implementation of Council Directive 98/26/EC on settlement finality in payment and securities settlement systems.

The Nordic and Baltic central banks subsequently introduced an arrangement with annual meetings and seminars on payment systems issues, where interpretation questions relating to the follow-up of the BIS report on "Core Principles for Systemically Important Payment Systems" have been an important topic. Norges Bank also has frequent bilateral meetings with Nordic central banks in particular, but also with other central banks, to discuss developments in payment and settlement systems, including how the systems should be designed to satisfy international requirements and recommendations.

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# Model for analysing credit risk in the enterprise sector

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**When banks' overall risk is evaluated, their credit risk exposure to the enterprise sector is a key element. In analyses of banks' credit risk in the enterprise sector, both a macroeconomic and a business economics approach are generally applied, the latter based on corporate earnings, liquidity and financial strength. In this article, we present a new model that predicts enterprise-specific bankruptcy probabilities. On the basis of these probabilities, both aggregate bankruptcy probabilities and the magnitude of accompanying losses for banks can be estimated.**

## 1 Introduction

For many years Norges Bank has used the Sebra model <sup>2)</sup> in its analyses of banks' credit risk exposure to the enterprise sector. The new model is based on the same business economics approach and the same data input. Unlike the Sebra model, however, the new model was developed with a view to statistical analysis and therefore represents a quantitative supplement.

The new model predicts individual bankruptcy probabilities as a function of age, size, industry characteristics and accounts variables that can provide an indication of corporate earnings, liquidity and financial strength. An aggregation of individual bankruptcy probabilities provides a picture of the overall risk in the enterprise sector, thereby providing a basis for predicting developments in the near future. It is also possible to predict banks' potential loan losses in NOK.

Section 2 contains a brief explanation of the background for Norges Bank's analyses of credit risk in the enterprise sector and the reasoning underlying the analyses. Section 3 presents the new model, while section 4 evaluates the estimation results. Section 5 discusses the use of the model and a summary follows in section 6. A technical description of the model is presented in the annex.

## 2 General comments on the analysis of credit risk in the enterprise sector

Many countries have experienced banking crises during the past decade. The experiences of Norway, Finland and Sweden show that the socio-economic costs of banking crises are substantial. In the first half of the 1990s, most major banks in these countries incurred such significant losses that it was not possible to continue operations without government intervention. Problems in parts of the financial sector spread to other parts of the sector, resulting in what can be called a systemic crisis. A very high proportion of banks' losses was ascribable to losses on loans to Norwegian enterprises. The authorities are therefore concerned about this risk.<sup>3)</sup>

Credit risk refers to a credit institution's risk of a borrower's payment default on payment of interest and principal due to the borrower's unwillingness or inability to service the debt. The higher the credit risk an institution is exposed to, the greater the losses may be. For banks and most other credit institutions, credit risk is considered to be the form of risk that can most significantly diminish earnings and financial strength.

Norges Bank uses both microdata and aggregated data from the national accounts in its analyses of credit risk in the enterprise sector. Depending on the source, the analyses are concentrated on enterprises' earnings and debt-servicing capacity. For the central bank, the aim is to monitor developments in credit risk in the enterprise sector at an aggregated level.

The following provides a description of the reasoning underlying the Sebra model and the new quantitative credit risk model. The data input for the analyses is the annual accounts for all limited companies in Norway starting in 1988. In addition to the accounts, Norges Bank has information about industries and geographical locations. This allows us to monitor developments in enterprises' credit risk by industry and geographical area. Most Norwegian banks have similar models. In addition to evaluating credit risk, these are often used for pricing loans, selecting priority areas and assigning priorities for the resources to be used in lending activities.

### *Key factors in the analysis of credit risk*

In the long term, corporate earnings must be reasonable relative to payment obligations. If this is not the case, liquidity will be weakened. Without satisfactory earnings, it will also be difficult for an enterprise to raise other types of capital, such as loan capital and new equity. Our analyses are therefore concentrated on corporate earnings. However, there are many ways to represent earnings in an analytical model. In the Sebra model, we have chosen the variable *annual profit before depreciation and write-downs after tax as a percentage of long-term debt*. The minimum earnings requirement is that it covers dividends, repayments of principal, part of the investment in fixed

<sup>1)</sup> We are grateful to Kjersti-Gro Lindquist, Terje Lensberg and Arild Lund for their useful suggestions and comments.

<sup>2)</sup> See Eklund and Knutsen (1997) and Sæther and Larsen (1999) for a description of the Sebra model.

<sup>3)</sup> In Norway, the Ministry of Finance, the Banking, Insurance and Securities Commission and Norges Bank are jointly responsible for the authorities' efforts to secure financial stability. The Ministry of Finance has primary responsibility, while the Banking, Insurance and Securities Commission is responsible for the supervision of each market participant. Norges Bank is responsible for fostering robust and efficient payment systems and financial markets, ie promoting financial stability.

assets and any need for increased working capital. In the analysis of each enterprise, the requirement can be set on the basis of dividend policy, repayment schedules for long-term debt and estimated working capital requirements. Eklund and Knutsen (1997) provide such an analysis.

A shortage of liquidity is often the factor that triggers bankruptcy. One or more variables that can explain the level of and changes in the enterprise's liquidity should therefore be included in a credit risk model. Again, there are a number of variables that can be used. In the Sebra model, we have chosen the variable *liquid assets less short-term debt as a percentage of operating revenues*. This variable has been chosen because a shortage of liquidity may be reflected in either reduced liquid assets or higher short-term debt. Applied to the individual enterprise, the liquidity requirement must be set on the basis of adaptations made by the enterprise in relation to, for example, liquidity reserves, credit period for customers, its inventory policy and the choice of short-term forms of financing.

An enterprise's ability to withstand losses is often assessed on the basis of its financial strength measured by its equity ratio. With a high equity ratio, the enterprise is better equipped to cope with difficult periods, partly because it will be easier to raise capital through the sale of assets without encumbrances and also obtain new loans because better collateral can be offered. Generally, a high equity ratio also implies lower current expenses for interest and principal. However, it is not difficult to find reasons why these elements are not always relevant. The most important reason for representing financial strength in a model is that, in our view, the model accumulates information about the enterprise's historical earnings. An enterprise with a high equity ratio has as a rule procured a substantial portion of its equity through retained earnings in earlier years. It has demonstrated the ability to make a profit, a factor that provides some support for the assumption that it will continue to be able to generate earnings in the period ahead. It should be pointed out that there are several problems associated with measuring an enterprise's financial strength, particularly asset valuation.

An alternative concept to models based on accounts data is to use market information (ie information on equity/ bond prices) in the model. So far, however, Norges Bank has chosen to use models based on accounts data, partly because there are few listed companies in Norway and even fewer companies that are traded regularly. The market information available for analytical purposes is therefore very limited. Analysts and investors also use accounts information in their analyses as a basis for recommendations and trading.

### 3 The new quantitative credit risk model

Ideally, a credit risk model should estimate bankruptcy/default probabilities for each enterprise. Since individual estimates can be directly linked to enterprises' debt, this

model can be used to predict the risk exposure of the debt. Moreover, the model can be used for pricing commitments and for determining how much capital should be set aside for each commitment. As a result of the desire to produce individual probability estimates, we decided to use a variant of logistical regression (see the annex).

The model is estimated using the entire population of enterprises in Norges Bank's accounts database for the period 1990-1996.<sup>4)</sup> The total database consists of about 400 000 enterprise observations. There are some limitations associated with the accounts database. Originally, we wanted to estimate the probability of default. As a result of data limitations, however, we decided to estimate the probability of bankruptcy. Because banks also incur costs as a result of deferment of payment, default, debt restructuring and winding-up, we cannot capture all costs related to credit risk. Another limitation is that a fairly high proportion (about 15 per cent) of the enterprises disappear from the database without going bankrupt. This may be because they wind up operations (voluntary or compulsory winding-up), fail to submit accounts or merge/are taken over. We have no information as to what has happened to these enterprises. Moreover, some enterprises are temporarily absent from the base for unknown reasons. It is also important to point out that a substantial proportion of enterprises that go bankrupt are newly established enterprises that go bankrupt before they are included in the database.

A key criterion for the choice of model is that it shall be based on the reasoning discussed in section 2. This means, for example, that corporate earnings, liquidity and financial strength shall play a key role. It should be pointed out that it is difficult to capture these elements in a totally satisfactory manner in a model that is only based on accounts data. Moreover, a precondition has been that the model shall be transparent so that others can assess the model's predictive ability and results.

#### *Choice of explanatory variables*

In order to reduce the probability of excluding explanatory variables that are both relevant in business economics terms and statistically significant, we carried out an extensive search process.<sup>5)</sup> A large number of explanatory variables and combinations of variables were tested. Against the background of the criteria underlying the choice of model, we selected the following explanatory variables<sup>6)</sup>:

#### **Earnings:**

- Earnings<sup>7)</sup> as a percentage of total assets (tkr)

#### **Liquidity:**

- Liquid assets less short-term debt as a percentage of operating revenues (lik)
- Unpaid indirect taxes as a percentage of total assets (ube)

<sup>4)</sup> The database includes all limited companies in Norway for the period 1988-1999. One criterion for being included in the database is that the enterprise has submitted valid accounts to the Brønnøysund registers and that the accounts have passed the tests of our data supplier, Dun & Bradstreet. We have excluded enterprises with total assets of less than NOK 200 000.

<sup>5)</sup> Among other things, we used a method based on genetic programming (see McKee et al., forthcoming). Two of the explanatory variables in the new model were found with the aid of this method.

<sup>6)</sup> The designation in brackets is the name of the variable used in the estimation process (see annex).

<sup>7)</sup> Profit before extraordinary items plus depreciation and write-downs and minus tax.



### **The various explanatory variables**

In section 2, we discussed the background for our view that a credit risk model should include variables that reflect corporate earnings, liquidity and financial strength. In the new model, we have included some additional explanatory variables. This box provides a brief discussion of why we believe these variables can contribute to explaining bankruptcy.

#### **Unpaid indirect taxes as a percentage of total assets**

It is often the tax authorities that file a petition for bankruptcy for an illiquid enterprise. Enterprises are aware of this and are therefore diligent with regard to paying direct and indirect taxes in time. If taxes are not paid in time, and thereby reach a disproportionately high level, it may be an indication that the enterprise's liquidity is weak.

#### **Trade accounts payable as a percentage of total assets**

For some enterprises, liquidity problems result in a disproportionately high level of trade accounts payable. The test results indicate that the relative size of trade accounts payable makes a contribution in addition to the other two liquidity variables in the model.

#### **Book equity less than paid-in equity capital (dummy variable)**

By looking at the composition of equity it is possible to provide some indication of to what extent a given equity ratio is due to accumulated earnings or paid-in equity capital. If book equity is less than paid-in equity capital, it shows that the enterprise has a book loss, which in turn indicates it has not been run well enough. The opposite is the case if book equity is higher than paid-in equity capital.

#### **Dividend payments the last accounting year (dummy variable)**

It is realistic to assume that responsible owners do not take out dividends if the enterprise in some way or another is struggling or has unfavourable future prospects.<sup>8)</sup> If the owners have recently taken out dividends, it may be an indication that the enterprise is solid and that future prospects are favourable.

#### **Industry average for the variable 'equity as a percentage of total assets'**

Bankruptcy frequency is normally lower in industries with a high average equity ratio than in industries with a low equity ratio. One possible explanation may be that the former are characterised by relatively little competition and hence relatively high profits. It is not unrealistic to assume that the bankruptcy frequency in such industries is lower than in industries with stronger competition. Moreover, it may be the case that lenders impose stricter equity ratio requirements on enterprises that operate in industries with a high average equity ratio. The threshold for starting up in these industries may therefore be

higher, with an 'elimination' of less serious and weak enterprises before they raise loans.

#### **Industry average for the variable 'trade accounts payable as a percentage of total assets'**

It appears that bankruptcy frequency is greater in industries with a high average level of trade accounts payable, such as restaurants and retail trade. It is not inconceivable that these industries feature more 'speculative' activity than other industries. By funding activities with trade accounts payable instead of bank loans, it is easier to avoid credit assessment and follow-up.

#### **Industry standard deviation for the variable 'earnings as a percentage of total assets'**

There is reason to assume that there is greater risk associated with operating in an industry that features considerable fluctuations in earnings than in industries with stable earnings. Considerable uncertainty associated with the industry's general earnings may make it difficult for enterprises to plan and initiate necessary measures. It may also make it difficult to gain access to external financing. Moreover, industries with a wide variation in earnings often have a large upside potential. The potential for high earnings may mean that the industry attracts enterprises that are more willing to take risks and/or enterprises that are less serious. A large element of such enterprises will increase bankruptcy frequency in the industry.

#### **Number of years since establishment**

Both our test results and studies in a number of countries<sup>9)</sup> show that bankruptcy frequency is greater among newly established enterprises than among established enterprises. One reason may be that it usually takes time to develop relevant expertise in such key areas as financial and cash flow management, organisation, purchasing, sales, production, etc. Moreover, it is often difficult for newly established and young enterprises to gain access to the equity and loan capital market, as well as establishing favourable business ties to suppliers and customers. In some cases, newly established enterprises may not have the 'right to exist', for example because the market is not large enough or it is not possible to produce the products in a sufficiently efficient manner. It is often the case that enterprises do not discover this until one or two years have passed.

#### **Total assets**

Bankruptcy frequency is generally higher among small enterprises than among large enterprises. Small enterprises often operate within a limited geographical area and have a limited product range. This means that they have few or perhaps only one leg to stand on and are thus vulnerable to individual events. Moreover, small enterprises are often newly established and hence exposed to many of the

<sup>8)</sup> According to the Companies Act and Accounting Act, dividends may not be distributed to owners if the enterprise's financial strength is weak.

<sup>9)</sup> See, for example, Audretsch (1991) and Audretsch et al. (1994).

same problems facing young enterprises (see above). The test results indicate, however, that bankruptcy frequency<sup>10)</sup> among the very smallest enterprises is lower than among the next smallest.<sup>11)</sup> One reason may be that there is little to be obtained from the bankrupt estate of the smallest enterprises and that they are therefore declared bankrupt to a lesser extent. We have taken this into account by using a variable function that reduces bankruptcy probability if the enterprise's assets are less than NOK 2 million. The variable is included in logarithmic form.

### *Comments on the industry variables*

The industry classification is based on Statistics Norway's five-digit industry code. We have, however, chosen a rougher classification in which each industry group contains at least 1000 observations. We nevertheless operate with a large number of industry groups and have therefore confined the study to the calculation of aspects of the model's key variables for these groups.

- Trade accounts payable as a percentage of total assets (lev)

#### **Financial strength:**

- Equity as a percentage of total assets (eka)
- Dummy variable for book equity less than paid-in equity capital (taptek)
- Dummy variable for dividend payments the last accounting year (div)

#### **Industry:**

- Industry average for the variable 'equity as a percentage of total assets' (meaneka)
- Industry average for the variable 'trade accounts payable as a percentage of total assets' (meanlev)
- Industry standard deviation for the variable 'earnings as a percentage of total assets' (sdtkr)

#### **Age:**

- Dummy variable for number of years since establishment (a1,a2,...a8)

#### **Size:**

- Total assets (size)

### *Model structure*

Analyses of the data set show that there is a considerable lag for a high percentage of bankrupt companies between the time the last accounts were submitted and the time at which bankruptcy proceedings are initiated.<sup>12)</sup> Against this background, we deemed it most appropriate to define the variable we model as the event 'last year with submitted accounts and bankruptcy is registered within three years'.

We attempted to estimate time-specific effects directly in the model in order to capture cyclical effects. This was not successful, partly because we have a limited number of years in the estimation sample and partly because the data set is influenced by time-specific sample problems. Accounts data and bankruptcy data have different sources, and it is likely that the quality of the bankruptcy data varies somewhat over the years. The relationship between the explanatory variables and the bankruptcy event

is assumed to be constant over time, and the coefficients therefore represent 'average effects' over the business cycle. It appears that a high portion of the cyclical variation in bankruptcy risk is captured in the explanatory variables (see Table 1), which shows that there is a relatively stable relationship between predicted and actual probability of bankruptcy, irrespective of the cyclical phase. Cyclical variation can also be captured as shown in Chart 1a, where a variable aggregated over the predicted bankruptcy probabilities is used to explain banks' loan losses, or as shown in Chart 1b, where the variable based on predicted bankruptcy probabilities is supplemented by a macro-variable.

The model structure permits non-linear transformations of individual variables (see Annex). This makes the model more flexible, as the marginal effect of a variable is explicitly permitted to depend on the level of the variable. With this structure, the compensation rate between the two variables will not necessarily be constant.<sup>13)</sup> This is a useful property for the model. For example: to what extent earnings must be increased in order to keep the risk unchanged when liquidity falls marginally should depend on the initial level of earnings and liquidity. The model structure implies that the marginal effect of a given variable gradually approaches zero as the variable takes on extreme values. This means that the predictions are to a lesser degree marked by extreme observations.

All the variables are included with a level of significance of at least 0.1 per cent. With stepwise inclusion, all the variables make significant contributions to the model's explanatory power. See the Annex and Bernhardsen (2001) for a more detailed description of the model.

## 4 Evaluation of the estimation results

In Table 1, the enterprises are divided into groups on the basis of predicted bankruptcy probability. By looking at the percentage of enterprises in the various groups that actually went bankrupt, we gain an impression of the model's predictive ability. There is close accord between predicted probabilities and actual bankruptcy frequencies. For example, the average predicted bankruptcy probability

<sup>10)</sup> But not necessarily the frequency of winding up in another way.

<sup>11)</sup> Statistical tests show that bankruptcy frequency decreases when the assets are less than NOK 2 million.

<sup>12)</sup> About 25 per cent of the enterprises that go bankrupt are registered as bankrupt the year after the last accounts were submitted, while about 55 and 20 per cent are registered as bankrupt two and three years, respectively, after the last accounts were submitted.

<sup>13)</sup> This problem is discussed in Laitinen and Laitinen (2000). The model structure proposed in this article, however, is not the same as that presented here.

**Table 1. Predicted bankruptcy probabilities and actual bankruptcy frequencies<sup>1)</sup>**

	Grouped according to predicted bankruptcy probabilities					
	Group 1 p>20%	Group 2 10%<p<=20%	Group 3 5%<p<=10%	Group 4 2%<p<=5%	Group 5 1%<p<=2%	Group 6 p<1%
1990	27.8	16.9	11.7	6.3	3.9	1.1
1991	27.0	15.6	9.8	5.1	3.0	0.9
1992	23.7	11.8	7.2	4.0	2.5	0.6
1993	26.0	13.2	7.8	4.1	2.4	0.7
1994	23.4	11.8	7.0	3.2	2.1	0.5
1995	23.0	12.8	8.0	4.1	2.2	0.5
1996	26.7	14.5	9.5	5.2	3.3	1.0
Average for actual bankruptcy frequencies <sup>2)</sup> (standard deviation)	25.4 (1.96)	13.8 (1.94)	8.7 (1.69)	4.6 (1.03)	2.8 (0.64)	0.8 (0.25)
Average for model's predicted bankruptcy probabilities <sup>3)</sup>	26.7	14.1	7.1	3.2	1.4	0.2

1) Bankruptcy within 3 years. The figure for Group 1 in 1990, for example, shows that on the basis of the accounts for 1990, 27.8 per cent of the enterprises estimated to have a bankruptcy probability of more than 20 per cent went bankrupt in the period 1991-1993.

2) Average bankruptcy frequency and standard deviation over the period 1990-1996.

3) Average predicted bankruptcy probability (registered bankruptcy within 3 years) over the period 1990-1996.

**Note to the table:**

Whereas the model predicts the probability of the composite event: 'last year of submitted accounts and bankruptcy proceedings initiated within 3 years', actual bankruptcy frequencies show the event 'bankruptcy proceedings initiated within 3 years'. The difference between the concepts is greatest for the least risk-exposed enterprises, with the result that the predicted bankruptcy probability is reduced somewhat. The concept was chosen because (for bankrupt enterprises) it is easier to find a date for the last submitted accounts before bankruptcy than to predict the exact date for the initiation of bankruptcy proceedings. The choice of this definition also provides a quantity that can be added up over a period of years in an appropriate manner, which is important when the macro picture is to be analysed.

Source: Norges Bank

for the group that was most exposed to risk was 26.7 per cent in the period 1990-1996, while the average actual bankruptcy frequency was 25.4 per cent.

Bankruptcy frequency in the various groups varies relatively little in the 1990s. This indicates that a high proportion of cyclical developments was captured in the enterprises' accounts. In other words, a given set of accounts does not appear to be associated with particularly greater risk during a cyclical downturn than during an upturn. Cyclical developments are reflected in changes in the percentage of enterprises in the various risk categories.

Another way to evaluate the estimated model is to look at the percentage of bankrupt enterprises for which bankruptcy was predicted and the percentage of non-bankrupt enterprises that are predicted non-bankrupt at various levels of bankruptcy probability. With an optimal level of bankruptcy probability, we achieve a rate of accuracy of about 83 in both categories. If we had estimated the model for a designed sample, it would probably have been possible to achieve a higher rate of accuracy. In order to construct a model that is as stable and robust as possible, however, we have chosen to estimate the model for the entire population of enterprises.

We have also tested the model by estimating it on data for the years 1990-1993 and then used it to predict bankruptcy in 1996. By choosing an optimal level of bankruptcy probability, we achieve an accuracy rate of about 82 for both bankrupt and non-bankrupt enterprises. This rate of accuracy is almost as high as when the model is estimated and tested on the same sample.

We have also divided the data set into two equally large sets (random drawing) and estimated the model on the one set and tested it on the other. The results show

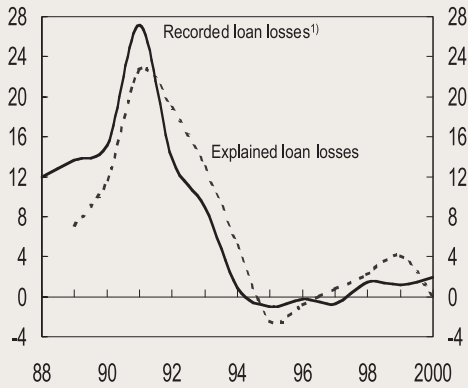
that the model is just as accurate for this test sample as for the estimation sample. Moreover, there are no significant differences in the coefficient estimates. See the annex for a further evaluation of the model.

## 5 Use of the model

Because the model generates individual probability estimates, it can be used in a number of areas related to credit risk analysis. Multiplying the debt of individual enterprises by the bankruptcy probability and adding up the figures for all enterprises provides an estimate of risk-weighted debt. This variable may be considered an estimate of banks' expected loan losses, given the absence of realised collateral. By including one or more variables that can provide some information about the value of banks' collateral, it is possible to provide an estimate of the level of loan losses in the short run. An attempt is made in Charts 1a and 1b to explain loan losses by means of the previous year's estimate of risk-weighted debt alone and the previous year's estimate of risk-weighted debt and the change in an index variable<sup>14)</sup>, which attempts to capture changes in expectations associated with the realisation value of collateral. The fit for these two simple models is relatively good (see annex for a further description). The exact distribution of recorded loan losses over time will largely depend on banks' expectations. In particular, the distribution may have been influenced by changes in procedures for bank's assessment of credit risk in the period surrounding the banking crisis. Here, it must be pointed out that there is a difference between being able to explain loan losses in retrospect and being able to provide estimates of future losses.

<sup>14)</sup> The change in real house prices between September and September, measured by the ECON index, is used as an index variable.

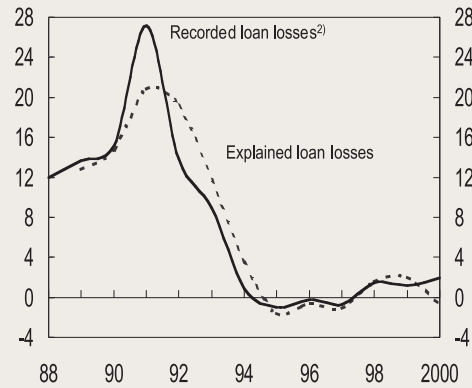
**Chart 1a** Loan losses explained through previous year's estimate of risk-weighted debt. Recorded loan losses<sup>1)</sup>. In billions of 1999 NOK



<sup>1)</sup> Recorded losses and loss provisions adjusted for reversal of previous years' loss provisions. The figures cover all types of loans

Source: Norges Bank

**Chart 1b** Loan losses explained through previous year's estimate for risk-weighted debt and changes in house prices<sup>1)</sup>. Recorded loan losses<sup>2)</sup>. In billions of 1999 NOK



<sup>1)</sup> Current year's change. Source: ECON/NEF and Norges Bank

<sup>2)</sup> Recorded losses and loss provisions adjusted for reversal of previous years' loss provisions. The figures cover all types of loans

Source: Norges Bank

By projecting the model's variables, it is possible to provide some indication of developments in risk-weighted debt in the longer term. At the moment, Norges Bank is evaluating the possibility of linking the model's key variables to projections of selected macroeconomic variables in the Rimini model<sup>15)</sup> in order to be able to provide some information about developments in credit risk and loan losses in the future based on forecasts for key macroeconomic variables.

The risk-weighted debt can also be summed up across industries and regions. It is thereby possible to shed light on potential diversification gains by investing in different industries or regions. The model indicates that most of the main industries in Norway move in tandem with regard to credit risk (see Charts 2a and 2b).

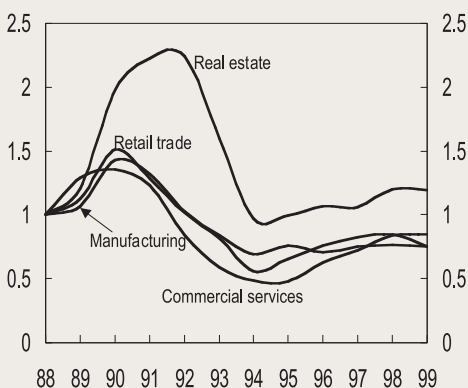
The model can also be used to study the movement between different risk groups over time. This allows us to provide more general information about developments in the enterprise sector. A cyclical upturn, for example, will be marked by net migration from the groups that are most exposed to risk to less exposed groups, and vice versa during a cyclical downturn.

Moreover, the model can be used for sensitivity analyses. By looking at various scenarios for the model's key variables, it is possible to indicate the factors required for credit risk to rise to a 'critical' level (for example, to the level just before the banking crisis). As it is very difficult to provide indications of developments in the future, these 'what if' analyses may make a useful contribution to the analysis of financial stability. We would also refer to Norges Bank's report Financial Stability 1/2001, in which the model is used in the assessment of credit risk for banks' exposure to the enterprise sector.

## 6 Summary

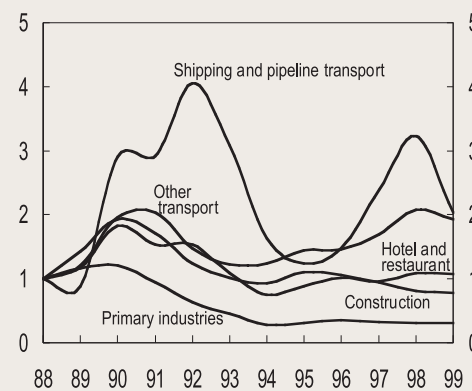
Norges Bank has developed a new quantitative model for analysing banks' credit risk in the enterprise sector. The new model predicts individual bankruptcy probabilities as a function of age, size, industry characteristics and accounts variables that can provide an indication of corporate earnings, liquidity and financial strength. The estimation results show that there is close accord between

**Chart 2a** Risk-weighted debt in selected industries. Index: 1988=1



Source: Norges Bank

**Chart 2b** Risk-weighted debt in selected industries. Index: 1988=1



Source: Norges Bank

<sup>15)</sup> Norges Bank's macroeconomic model (see Eklund and Gulbrandsen, 2000).



predicted probabilities and actual bankruptcy frequencies. By aggregating individual bankruptcy probabilities, we obtain an indication of overall risk in the enterprise sector. The model also allows us to shed light on the level of banks' loan losses in the short run. The Bank is currently considering the possibility of linking the model's key variables to projections of selected macroeconomic variables. If this is successful, it will be possible to provide an indication of developments in credit risk and loan losses in the longer term.

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## Annex:

The predicted bankruptcy probabilities can be expressed:

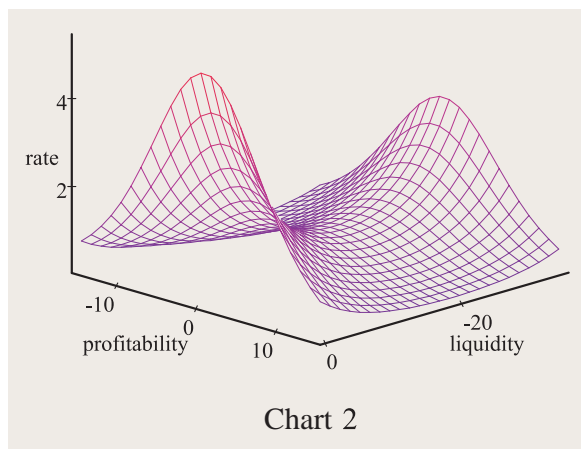
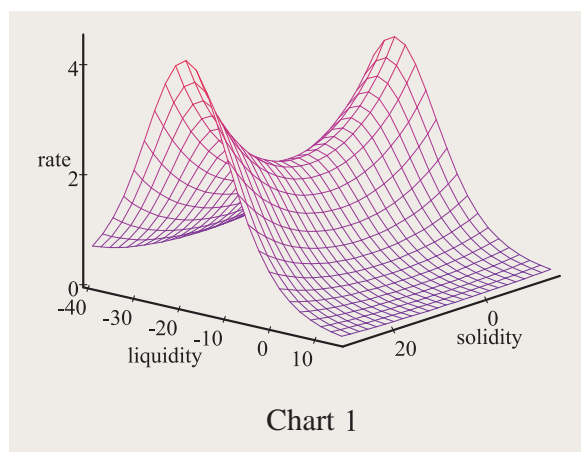
$$(1) \quad \hat{\beta} = \frac{1}{1 + e^{-\hat{v}}}$$

$$(2) \quad \hat{v} = \hat{\beta}_0 + \hat{\beta}_1 T_1(x_1) + \hat{\beta}_2 T_2(x_2) + \dots + \hat{\beta}_k T_k(x_k)$$

$$(3) \quad T_i(x_i) = \frac{1}{1 + e^{-\left(\frac{x_i - \alpha_i}{\delta_i}\right)}}$$

where the variables  $x_1, x_2, \dots, x_k$  are financial key figures calculated from the enterprises' annual accounts. The coefficient vector  $\beta$  and the variable-specific scaling parameters  $\alpha$  and  $\delta$  are estimated alternately by means of an iterative maximum likelihood procedure<sup>1)</sup>. Given the scaling parameters, the structure results in a logit model in the transformed variables  $T_i(x_i)$ ,  $i = 1, 2, \dots, k$ . If the equation (3) is replaced by  $T_i(x_i) = x_i$ , the compensation rate between the two variables  $x_i$  and  $x_j$  will be constant.

$$(4) \quad \frac{\partial x_i}{\partial x_j} \Big|_{dp=0} = -\frac{\beta_j}{\beta_i}$$



<sup>1)</sup> We have used  $\alpha_i = 0$ ,  $\delta_i = 1$ ,  $i=1,2,\dots,k$  as initial values.

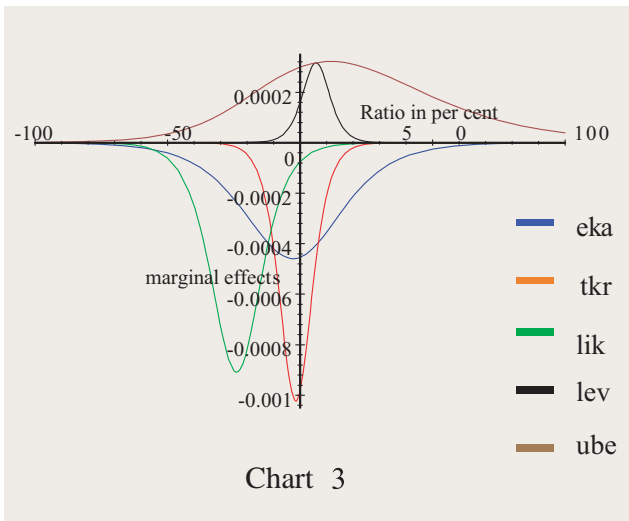


Chart 3

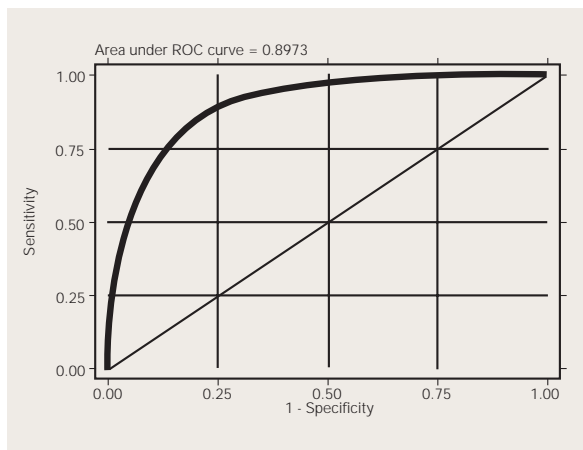


Chart 4: Ability to discriminate

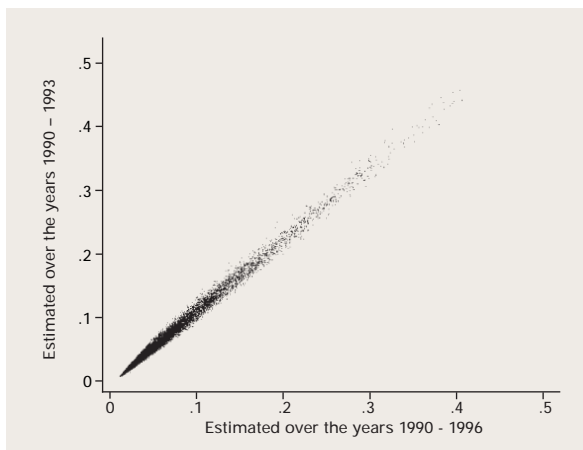


Chart 5: The stability of the model

The change required in variable  $x_i$  to maintain constant risk when variable  $x_j$  increases marginally is thus assumed to be independent of the levels of variables  $x_i$  and  $x_j$ . In the structure given by equations (1)-(3) the compensation rate will generally vary:

(5)

$$\frac{\partial x_i}{\partial x_j} \Big|_{dp=0} = -\frac{\beta_j T_j(x_j)(1-T_j(x_j))\delta_i}{\beta_i T_i(x_i)(1-T_i(x_i))\delta_j} \equiv -g_{ij}(x_i, x_j) \frac{\beta_j \delta_i}{\beta_i \delta_j}$$

Table 1. Model estimates

variable	$\beta$	s.e.	$\alpha/\delta$	s.e.	$1/\delta$	s.e.
eka	-1.4459	0.0604	0.4464	0.0977	0.0782	0.0049
tkr	-1.0948	0.0386	0.1216	0.1274	0.2096	0.0190
lik	-1.4925	0.0421	-2.9618	0.1977	0.1529	0.0087
lev	0.4968	0.0486	1.5224	0.4142	0.2895	0.0660
ube	6.8069	0.2019	-1.1474	0.0243	0.0362	0.0017
a1	0.8380	0.0438	.	.	.	.
a2	0.9707	0.0382	.	.	.	.
a3	0.8310	0.0398	.	.	.	.
a4	0.6729	0.0429	.	.	.	.
a5	0.5282	0.0468	.	.	.	.
a6	0.3189	0.0528	.	.	.	.
a7	0.2689	0.0575	.	.	.	.
a8	0.2076	0.0638	.	.	.	.
div	-1.0639	0.0742	.	.	.	.
taptek	0.5386	0.0419	.	.	.	.
size	-0.0543	0.0064	.	.	.	.
meanlev	1.0404	0.1692	.	.	.	.
meanek	-3.9690	0.2273	.	.	.	.
sdtkr	1.8229	0.3319	.	.	.	.
konstant	-7.0131	0.2786	.	.	.	.

The more  $x_i$  deviates from  $a_i$  and the less  $x_j$  deviates from  $a_j$ , the larger the function  $g_y(x_i, x_j)$  will be. Otherwise the compensation rate between  $x_i$  and  $x_j$  is independent of all  $x_r$ ,  $r \neq i, j$ . Charts 1 and 2 below show the compensation rates for liquidity/solidity and earnings/liquidity as estimated in the model.

If the parameter  $\delta_i$  is large enough,  $T(x_i)$  will be virtually linear over a given variation range for  $x_i$ . The model estimates are shown in Table 1. The variables are measured as percentages. The coefficient estimates cannot be considered in isolation from the scaling parameters. In particular, a high  $\delta_i$  (high degree of linearity) will scale up  $\beta$ , all else being equal. Chart 3 shows partial simulations of the marginal effects of the variables. In each graph, all variables other than the plotted one are kept constant at their average values. The chart has been plotted for an enterprise three years old which has not paid a dividend in the current year and has not lost any equity since its formation.

The curve in Chart 4 provides a range of choices between the percentage of correct predictions for bankrupt firms and the percentage of incorrect predictions for non-bankrupt firms. The area under the curve is regarded as a measure of the model's ability to discriminate. This measure will lie between 0.5 and 1.

It is difficult to draw any definite conclusions about the model's stability over time. In Chart 5, two sets of predictions for 1996 are plotted against one another. The model is estimated on the basis of accounts up to and including 1993 and up to and including 1996. The predictions generally, and the ranking of enterprises in particular, do not appear to depend much on this broadening of the range of estimates. Because the bankruptcy data are more strongly influenced by time-specific registration errors than the annual accounts, however, it is an advantage to estimate the model over a number of years.

# Commemorative coins for the 100th anniversary of the Nobel Peace Prize

On 13 August Norges Bank issued two commemorative coins, one gold and one silver, to mark the 100th anniversary of the Nobel Peace Prize. The Peace Prize was awarded for the first time to Henry Dunant, founder of the Red Cross, in 1901.

The gold coin (917/1000 Au) will be minted in an issue limited to 7 500 coins, and the silver coin (925/1000 Ag) will be minted in an issue limited to 50 000 coins.

The obverse side of the coin bears a portrait of HM King Harald V from the right, and the legend HARALD V NORGES KONGE. Under the portrait is the nominal value of the coin, 1500 KR. To the left are the pick and hammer forming the mintmark of Den Kongelige Mynt AS (the Royal Norwegian Mint) and the engraver's initials, ØH. On the right are the initials, JEJ, of the Director of the Mint (Jan Erik Johansen).

On the reverse is the symbol of unity, three men with their arms entwined, taken from Gustav Vigeland's gold medal, which is presented to all winners of the Peace Prize. The legend is NOBELS FREDSPRIS 1901-2001. There is a microscript inscription, G. Vigeland sc., to the right of the motif.

The obverse of the silver coin features the Norwegian lion and the legend NORGE 100 KR 2001. Underneath to the left are the initials, JEJ, of the Director of the Mint, and to the right the engraver's initials, ØH and the pick and hammer of the Royal Norwegian Mint.

On the reverse of the silver coin is a portrait of Alfred Nobel, from the medal by Gustav Vigeland that is presented to winners of the Nobel Peace Prize. The legend is NOBELS FREDSPRIS 1901-2001. Under the portrait is a cross, and in microscript G. Vigeland sc.

The coins were modelled by Øyvind Hansen, former chief coin engraver at the Mint.

Coin data:	Gold coin	Silver coin
Nominal value	NOK 1500	NOK 100
Diameter	27 mm	39 mm
Weight	16.96 g	33.8 g
Alloy	917/1000 Au	925/1000 Ag
Edge	plain	plain

*1500-krone gold coin*



*Obverse*

*Reverse*

*100-krone silver coin*



*Obverse*

*Reverse*

# Statistical annex

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# Financial institution balance sheets

**Table 1. Norges Bank. Balance sheet. In millions of NOK**

	31/12 2000	31/5 2001	30/6 2001	31/7 2001	31/8 2001
<b>FINANCIAL ASSETS</b>					
<b>Foreign assets</b>	<b>646 120</b>	<b>733 495</b>	<b>759 403</b>	<b>752 495</b>	<b>767 968</b>
International reserves <sup>1) 2)</sup>	245 863	247 522	223 075	223 743	229 445
Investment of Government Petroleum Fund	386 126	472 261	522 675	515 709	525 394
Other foreign assets	14 131	13 682	13 653	13 043	13 129
<b>Claims on Norwegian financial institutions</b>	<b>22 194</b>	<b>25 943</b>	<b>16 451</b>	<b>11 202</b>	<b>155</b>
Loans to private banks	21 158	25 010	16 010	10 050	0
Other assets in the form of deposits, securities, loans and overdrafts	1 036	933	441	1 152	155
<b>Claims on central government</b>	<b>13 909</b>	<b>11 897</b>	<b>11 168</b>	<b>12 341</b>	<b>12 491</b>
Bearer bonds	10 743	8 896	8 972	8 887	8 948
Other securities	2 776	2 774	1 941	3 140	3 185
Other claims	390	227	255	314	358
<b>Claims on other Norwegian sectors</b>	<b>1 306</b>	<b>972</b>	<b>1 102</b>	<b>1 055</b>	<b>1 178</b>
Securities and loans	576	587	595	589	609
Other claims	730	385	507	466	569
<b>Stock, production units</b>	<b>26</b>	<b>33</b>	<b>21</b>	<b>21</b>	<b>17</b>
<b>Fixed assets</b>	<b>1 939</b>	<b>1 907</b>	<b>1 882</b>	<b>1 838</b>	<b>1 836</b>
<b>Valuation adjustments</b>	<b>0</b>	<b>7 856</b>	<b>22 199</b>	<b>31 725</b>	<b>45 180</b>
<b>Expenses</b>	<b>0</b>	<b>7 627</b>	<b>8 254</b>	<b>9 437</b>	<b>10 620</b>
<b>Total assets</b>	<b>685 494</b>	<b>789 730</b>	<b>820 480</b>	<b>820 114</b>	<b>839 445</b>
<b>LIABILITIES AND CAPITAL</b>					
<b>Foreign liabilities</b>	<b>74 998</b>	<b>68 785</b>	<b>53 792</b>	<b>55 993</b>	<b>52 690</b>
IMF debt in NOK	14 107	13 657	13 628	13 017	13 103
Other foreign liabilities	60 891	55 128	40 164	42 976	39 587
<b>Notes and coins in circulation</b>	<b>46 952</b>	<b>42 350</b>	<b>43 608</b>	<b>42 839</b>	<b>42 026</b>
<b>Domestic deposits</b>	<b>505 837</b>	<b>592 836</b>	<b>618 864</b>	<b>625 754</b>	<b>628 652</b>
Treasury	96 083	107 863	77 467	91 772	72 965
Government Petroleum Fund	386 126	472 261	522 675	515 709	525 394
Other public administration (excl. municipalities)	293	4 334	4 892	4 288	4 327
Private banks	21 647	6 951	12 556	12 821	24 455
Other financial institutions	1 591	1 336	1 171	1 057	1 410
Other Norwegian sectors	97	91	103	107	101
<b>Accrued interest to the Treasury</b>	<b>0</b>	<b>2 426</b>	<b>196</b>	<b>566</b>	<b>975</b>
<b>Other domestic debt <sup>3)</sup></b>	<b>10 955</b>	<b>21 139</b>	<b>29 768</b>	<b>10 812</b>	<b>17 415</b>
<b>Calculated value of SDRs in IMF</b>	<b>1 934</b>	<b>1 968</b>	<b>1 944</b>	<b>1 926</b>	<b>1 904</b>
<b>Capital</b>	<b>44 818</b>	<b>44 818</b>	<b>44 818</b>	<b>44 818</b>	<b>44 818</b>
<b>Valuation adjustments</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Revenues</b>	<b>0</b>	<b>15 408</b>	<b>27 490</b>	<b>37 406</b>	<b>50 965</b>
<b>Total liabilities and capital</b>	<b>685 494</b>	<b>789 730</b>	<b>820 480</b>	<b>820 114</b>	<b>839 445</b>
<b>Off balance-sheet items :</b>					
Foreign currency sold forward	32 595	71 980	28 093	33 236	33 735
Foreign currency purchased forward	25 699	101 681	29 810	35 653	35 549
Derivatives sold	77 743	204 863	105 877	96 112	109 239
Derivatives purchased	83 094	233 580	135 826	114 493	128 576
Allotted, unpaid shares in the BIS	314	314	314	314	314

<sup>1)</sup> International reserves include bonds subject to repurchase agreements.

<sup>2)</sup> Securities and gold are valued at fair value as from December 1999.

<sup>3)</sup> The Transfer Fund is classified as "Other domestic debt".

**Table 2. Norges Bank. Specification of international reserves.<sup>1)</sup> In millions of NOK**

	31/12 2000	31/5 2001	30/6 2001	31/7 2001	31/8 2001
Gold	2 275	2 371	2 385	2 297	2 287
Special Drawing Rights in the IMF	2 713	2 597	3 235	3 141	3 149
Reserve position in the IMF	5 166	5 950	5 738	6 175	5 868
Loans to the IMF	1 269	1 331	1 277	1 256	1 242
Banks deposits abroad	73 397	77 479	71 591	54 731	67 015
Foreign Treasury bills	-	-	-	-	-
Foreign bearer bonds <sup>2)</sup>	157 893	154 858	120 745	133 192	128 168
Foreign shares	-	-	15 524	20 402	19 075
Accrued interest	3 190	2 979	2 591	2 604	2 715
Short-term assets	-40	-13	-12	-54	-73
<b>Total</b>	<b>245 863</b>	<b>247 552</b>	<b>223 075</b>	<b>223 743</b>	<b>229 445</b>

1) Securities are valued at fair value as from December 1999.

2) Includes bonds subject to repurchase agreements.

Source: Norges Bank

**Table 3. State lending institutions. Balance sheet. In millions of NOK**

	30/6 2000	30/9 2000	31/12 2000	31/3 2001	30/6 2001
Cash holdings and bank deposits	2 632	2 602	3 007	3 000	2 697
Total loans	166 032	168 556	169 936	173 625	175 530
Of which:					
To the private sector and municipalities	164 185	166 698	167 921	171 582	173 514
Other claims on the Treasury	-	-	-	-	-
Other assets	7 337	8 352	6 941	8 658	7 660
<b>Total assets</b>	<b>176 001</b>	<b>179 510</b>	<b>179 884</b>	<b>185 283</b>	<b>185 887</b>
Bearer bond issues	79	61	57	55	51
Of which:					
In Norwegian kroner	79	61	57	55	51
In foreign currency	-	-	-	-	-
Other loans	165 569	168 212	168 870	173 288	175 272
Of which:					
Treasury	165 569	168 212	168 870	173 288	175 272
Other liabilities, etc.	5 005	5 799	5 502	6 317	4 916
Share capital, reserves	5 348	5 438	5 455	5 623	5 648
<b>Total liabilities and capital</b>	<b>176 001</b>	<b>179 510</b>	<b>179 884</b>	<b>185 283</b>	<b>185 887</b>

Sources: Statistics Norway and Norges Bank

**Table 4. Commercial and savings banks.<sup>1)</sup> Balance sheet. In millions of NOK**

	30/6 2000	30/9 2000	31/12 2000	31/3 2001	30/6 2001
Cash	4 538	4 269	4 879	4 183	5 058
Deposits with Norges Bank	21 809	36 561	22 654	11 061	12 736
Deposits with commercial and savings banks	19 411	18 913	16 524	24 642	23 642
Deposits with foreign banks	46 908	34 797	49 487	52 540	64 199
Treasury bills	9 784	6 530	7 892	6 548	5 132
Other short-term paper	16 432	11 306	15 047	20 081	17 049
Bonds issued by govt. and by state lending inst.	9 978	6 990	9 211	9 209	6 351
Other bearer bonds	53 358	64 042	66 880	76 798	85 712
Loans to foreign countries	51 620	52 602	48 895	54 268	50 715
Loans to the private sector and municipalities	886 541	924 547	938 076	962 580	987 543
Of which:					
In foreign currency	71 484	87 961	80 361	78 522	83 082
Loans to pvt. mortgage and fin. cos., insurance etc. <sup>2)</sup>	61 769	67 795	69 587	71 693	76 772
Loans to central government and social security admin.	19 653	39 304	21 780	47 120	17 453
Other assets <sup>3)</sup>	86 631	97 588	81 818	95 988	96 294
<b>Total assets</b>	<b>1 288 432</b>	<b>1 365 244</b>	<b>1 352 730</b>	<b>1 436 711</b>	<b>1 448 659</b>
Deposits from the private sector and municipalities	626 993	634 566	646 066	657 159	683 858
Of which:					
In foreign currency	22 099	23 621	22 594	26 479	27 141
Deposits from commercial and savings banks	19 395	20 176	17 527	26 635	26 418
Deposits from mortgage and fin. comp. and ins. etc. <sup>2)</sup>	35 922	34 156	32 254	35 160	39 352
Deposits from central government social security admin. and state lending inst.	23 676	46 687	26 160	52 163	21 596
Funds from CDs	66 040	82 897	79 644	86 926	84 991
Loans and deposits from Norges Bank	2 549	1 260	24 676	4 494	16 640
Loans and deposits from abroad	165 524	170 514	158 654	170 876	11 519
Other liabilities	254 731	277 896	266 481	303 438	460 057
Share capital/primary capital	24 274	24 300	24 821	25 339	25 401
Allocations, reserves etc.	62 297	62 526	63 928	71 660	71 656
Net income	7 181	10 246	12 519	2 861	7 171
<b>Total liabilities and capital</b>	<b>1 288 432</b>	<b>1 365 244</b>	<b>1 352 730</b>	<b>1 436 711</b>	<b>1 448 659</b>
Specifications:					
Foreign assets	130 722	125 769	136 823	153 235	164 494
Foreign debt	309 170	337 555	327 849	352 616	340 168

<sup>1)</sup> Postbanken is included.

<sup>2)</sup> Includes mortgage companies, finance companies, life and non-life insurance companies and other financial institutions.

<sup>3)</sup> Incl. unspecified loss provisions (negative figures) and loans and other claims not specified above.

Sources: Statistics Norway and Norges Bank

**Table 5. Commercial and savings banks.<sup>1)</sup> Loans and deposits distributed by private sector and municipalities. In millions of NOK**

	30/6 2000	30/9 2000	31/12 2000	31/3 2001	30/6 2001
Loans to:					
Local government (incl. municipal enterprises)	14 021	13 588	14 421	12 514	12 482
Enterprises <sup>2)</sup>	314 187	333 175	331 323	346 454	351 578
Households <sup>3)</sup>	558 333	577 784	592 332	603 590	623 483
<b>Total loans to the private sector and municipalities</b>	<b>886 541</b>	<b>924 547</b>	<b>938 076</b>	<b>962 580</b>	<b>987 543</b>
Deposits from:					
Local government (incl. municipal enterprises)	37 778	36 149	42 741	38 893	46 609
Enterprises <sup>2)</sup>	189 424	199 872	203 199	206 068	202 920
Households <sup>3)</sup>	399 791	398 545	400 126	412 198	434 329
<b>Total deposits from the private sector and municipalities</b>	<b>626 993</b>	<b>634 566</b>	<b>646 066</b>	<b>657 159</b>	<b>683 858</b>

<sup>1)</sup> Postbanken is included.

<sup>2)</sup> Incl. private enterprises with limited liability etc., and state enterprises.

<sup>3)</sup> Incl. unincorporated enterprises, the self-employed and wage earners, etc.

Sources: Statistics Norway and Norges Bank

**Table 6. Private mortgage companies. Balance sheet. In millions of NOK**

	30/6 2000	30/9 2000	31/12 2000	31/3 2001	30/6 2001
Cash and bank deposits	5 460	8 137	3 606	3 927	6 083
Notes and certificates	4 891	13 686	6 114	14 236	12 730
Bonds issued by govt. and by state lending inst.	1 311	1 063	1 006	1 566	932
Other bearer bonds	31 466	31 216	26 861	38 673	48 284
Loans to:					
Financial enterprises	12 583	14 403	17 668	19 858	19 797
Private sector and municipalities	132 217	133 858	143 948	144 543	149 436
Other sectors	15 671	13 010	13 839	13 028	13 786
Other assets	2 586	751	-1 325	-2 593	-2 161
<b>Total assets</b>	<b>206 185</b>	<b>216 124</b>	<b>211 717</b>	<b>233 238</b>	<b>248 887</b>
Notes and certificates	28 562	33 145	21 453	42 397	38 455
Bearer bond issues in NOK <sup>1)</sup>	60 104	59 269	59 870	60 042	58 355
Bearer bond issues in foreign currency <sup>1)</sup>	63 903	58 490	67 861	65 081	81 561
Other funding	38 443	50 062	46 253	50 504	54 435
Equity capital	10 678	10 678	11 036	11 319	11 327
Other liabilities	4 495	4 480	5 244	3 895	4 754
<b>Total liabilities and capital</b>	<b>206 185</b>	<b>216 124</b>	<b>211 717</b>	<b>233 238</b>	<b>248 887</b>

<sup>1)</sup> Purchases of own bearer bonds deducted.

Sources: Statistics Norway and Norges Bank

**Table 7. Private finance companies. Balance sheet. In millions of NOK**

	30/6 2000	30/9 2000	31/12 2000	31/3 2001	30/6 2001
Cash and bank deposits	1 462	1 519	1 173	1 757	2 271
Notes and certificates	-	-	101	97	99
Bearer bonds	58	58	54	54	39
Loans <sup>1)</sup> (gross) to:	64 901	67 587	70 230	75 551	80 491
Private sector and municipalities (net)	62 163	64 487	66 813	72 080	75 348
Other sectors (net)	2 614	2 940	3 256	3 334	4 964
Other assets <sup>2)</sup>	2 003	2 414	1 936	2 601	2 694
<b>Total assets</b>	<b>68 424</b>	<b>71 578</b>	<b>73 494</b>	<b>80 060</b>	<b>85 594</b>
Notes and certificates	502	187	57	425	575
Bearer bonds	323	323	133	115	115
Loans from non-banks	8 906	8 054	9 517	10 403	9 618
Loans from banks	48 074	50 803	51 830	56 415	62 994
Other liabilities	4 758	6 389	5 957	6 293	5 726
Capital, reserves	5 861	5 822	6 000	6 406	6 566
<b>Total liabilities and capital</b>	<b>68 424</b>	<b>71 578</b>	<b>73 494</b>	<b>80 060</b>	<b>85 594</b>

<sup>1)</sup> Includes subordinated loan capital and leasing finance.

<sup>2)</sup> Includes specified and unspecified loan loss provisions (negative figures).

Source: Norges Bank

**Table 8. Life insurance companies. Main assets. In millions of NOK**

	31/3 2000	30/6 2000	30/9 2000	31/12 2000	31/3 2001
Cash and bank deposits	5 689	8 978	7 828	9 841	13 800
Norwegian notes and certificates	11 680	10 544	14 515	13 950	16 706
Foreign Treasury bills and notes	194	170	-	200	195
Norwegian bearer bonds	94 100	89 732	88 347	86 433	98 488
Foreign bearer bonds	68 163	68 195	72 397	74 702	77 259
Norwegian shares, units, primary capital certificates and interests	51 521	53 129	54 745	49 813	49 218
Foreign shares, units, primary capital certificates and interests	83 954	82 864	83 097	80 925	73 729
Loans to the private sector and municipalities	24 479	23 860	23 473	23 047	24 659
Loans to other sectors	921	916	941	867	1 034
Other specified assets	38 497	40 704	40 478	41 715	44 174
<b>Total assets</b>	<b>379 198</b>	<b>379 092</b>	<b>385 821</b>	<b>381 493</b>	<b>399 262</b>

Source: Statistics Norway



**Table 9. Private and municipal pension funds.<sup>1)</sup> Main assets. In millions of NOK.** *This table will not be updated hereafter, and after a period will cease to be published.*

	30/6 1999	30/9 1999	31/12 1999	31/3 2000	30/6 2000
Cash and bank deposits	6 043	5 872	5 533	3 797	4 909
Norwegian bearer bonds	47 077	47 553	47 253	44 770	45 510
Loans to the private sector and municipalities	5 270	5 340	5 350	6 010	4 970
Other specified assets	26 213	26 792	30 472	33 661	35 700
<b>Total assets</b>	<b>84 603</b>	<b>85 557</b>	<b>88 608</b>	<b>88 238</b>	<b>91 089</b>

<sup>1)</sup> Estimates based on a selection of institutions representing about 50% of aggregate total assets.

Source: Norges Bank

**Table 10. Non-life insurance companies. Main assets. In millions of NOK**

	31/3 2000	30/6 2000	30/9 2000	31/12 2000	31/3 2001
Cash and bank deposits	7 171	6 159	6 514	6 232	6 220
Norwegian notes and certificates	5 058	4 065	3 992	4 073	3 693
Foreign notes and certificates	246	238	293	225	200
Norwegian bearer bonds	13 555	13 985	13 923	13 402	13 601
Foreign bearer bonds	11 577	13 109	14 600	14 072	13 579
Norwegian shares, units, primary capital certificates, interests	10 934	11 203	11 180	10 843	10 583
Foreign shares, units, primary capital certificates, interests	16 052	13 432	12 955	11 807	10 900
Loans to the private sector and municipalities	1 328	1 305	1 187	1 649	1 686
Loans to other sectors	144	145	110	100	54
Other specified sectors	36 951	37 166	36 853	33 098	35 820
<b>Total assets</b>	<b>103 016</b>	<b>100 807</b>	<b>101 607</b>	<b>95 501</b>	<b>96 336</b>

Source: Statistics Norway

**Table 11a. Mutual funds' assets. Market value. In millions of NOK**

	31/3 2000	30/6 2000	30/9 2000	31/12 2000	31/3 2001
Bank deposits	5 015	5 186	6 019	3 977	4 348
Short-term securities issued by central government and state lending institutions	1 561	1 604	2 158	1 820	2 286
Short-term securities issued by other domestic sectors	12 443	15 498	18 024	18 728	18 574
Short-term securities issued by the rest of the world	-	-	-	-	-
Bonds issued by central government and state lending institutions	2 858	3 027	2 953	3 772	3 771
Bonds issued by other domestic sectors	15 969	13 706	14 087	17 871	20 662
Bonds issued by the rest of the world	1 942	1 995	2 167	2 114	1 944
Shares issued by other domestic sectors	48 421	48 248	49 187	43 910	41 202
Shares issued by the rest of the world	43 980	46 505	52 037	49 480	43 336
Other assets	1 354	1 423	1 692	1 652	1 465
<b>Total assets</b>	<b>133 542</b>	<b>137 151</b>	<b>148 325</b>	<b>143 324</b>	<b>137 588</b>

Sources: Norwegian Central Securities Depository and Norges Bank

**Table 11b. Stocks of mutual funds shares by holding sector. Market value. In millions of NOK**

	31/3 2000	30/6 2000	30/9 2000	31/12 2000	31/3 2001
Central government and social security administration	330	355	390	399	407
Commercial and savings banks	2 170	1 835	3 110	3 390	3 876
Other financial corporations	10 892	11 710	11 613	11 689	11 784
Local government corporations and municipal enterprises	5 078	5 046	5 038	5 424	5 906
Other corporations	28 346	28 230	30 680	30 224	28 113
Households	83 182	86 516	93 791	88 556	84 010
Rest of the world	2 444	2 357	2 603	2 542	2 393
<b>Mutual funds shares in total</b>	<b>132 441</b>	<b>136 049</b>	<b>147 224</b>	<b>142 224</b>	<b>136 488</b>

Sources: Norges Bank and the Norwegian Central Securities Depository

## Securities statistics

**Table 12. Stocks of shares registered with the Norwegian Central Securities Depository (VPS) by holding sector. Market value. In millions of NOK**

Holding sector	31/3 2000	30/6 2000	30/9 2000	31/12 2000	31/3 2001
Central government and social security administration	86 572	95 110	100 479	144 983	141 244
Norges Bank	0	0	0	0	0
State lending institutions	18	18	17	17	25
Savings banks	2 941	3 079	3 272	3 404	3 339
Commercial banks	10 153	11 327	12 104	8 869	10 942
Insurance companies	55 090	53 587	54 559	47 616	42 836
Mortgage companies	179	170	192	167	183
Finance companies	5	7	6	6	6
Mutual funds	47 387	48 371	50 009	43 782	40 815
Other financial enterprises	37 218	36 867	36 853	20 489	30 009
Local government incl. municipal enterprises	3 570	3 408	3 449	2 944	3 043
State enterprises	28 735	29 669	27 403	29 111	9 114
Other private enterprises	149 431	161 082	174 126	159 808	169 242
Wage-earning households	56 548	58 172	64 647	58 390	57 073
Other households	4 809	4 869	4 471	3 371	3 521
Rest of the world	198 671	210 026	243 594	259 156	252 512
Unspecified sector	1 940	1 298	1 540	1 832	1 760
Total	683 268	717 059	776 722	783 947	765 663

Sources: Norwegian Central Securities Depository and Norges Bank

**Table 13. Stocks of shares and primary capital certificates registered with the Norwegian Central Securities Depository by issuing sector. Nominal value. In millions of NOK**

Issuing sector	31/3 2000	30/6 2000	30/9 2000	31/12 2000	31/3 2001
Savings banks	8 905	8 965	8 981	8 986	8 986
Commercial banks	14 636	14 703	14 708	15 229	15 292
Insurance companies	978	978	978	1 018	886
Mortgage companies	1 955	1 955	1 955	1 955	1 955
Finance companies	64	64	64	64	64
Other financial enterprises	11 769	11 799	11 809	11 980	12 048
Local government incl. municipal enterprises	2	2	2	2	2
State enterprises	7 090	7 090	7 091	18 279	12 947
Other private enterprises	37 137	38 892	39 791	44 142	47 285
Rest of the world	5 318	5 909	6 427	6 210	6 668
Unspecified sector	0	0	0	2	0
Total	87 854	90 356	91 805	107 867	106 133

Sources: Norwegian Central Securities Depository and Norges Bank

**Table 14. Net purchases and net sales (-) in the primary and secondary markets of shares registered with the Norwegian Central Securities Depository, by purchasing, selling and issuing sector<sup>1)</sup>. Estimated market value. In millions of NOK**

Q1 2001	Purchasing/ selling sector																	Total <sup>2)</sup>
	Cent. gov't and social security	Norges Bank	State lending inst.	Savings banks	Commercial banks	Insur. companies	Mort. companies	Finance companies	Securities funds	Other financial enterpr.	Local gov't and munic. enterpr.	State enterpr.	Other private enterpr.	Wage-earning households	Other households	Rest of the world	Unspec. sector	
Issuing sector																		
Commercial banks	0	0	0	9	2	17	0	0	-15	-33	-1	0	-10	-110	-4	143	2	0
Insurance companies	0	0	0	0	0	0	0	0	0	0	3	0	-3	0	0	0	0	0
Mortgage companies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Finance companies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other financial enterprises	-36	0	0	15	332	-259	0	0	-79	114	27	16	104	46	-14	-183	10	92
Local government incl. municipal enterprises	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State enterprises	2 015	0	0	-9	326	-296	-2	0	296	32	5	-18	-138	135	1	-2 339	8	16
Other private enterprises	-232	0	0	-39	1 744	-1 065	8	0	-372	-1 532	49	-2 305	996	-773	116	3 430	128	154
Rest of the world	-59	0	0	-10	6 240	-695	-3	0	-1 172	-950	-5	2	303	-673	-12	-2 590	-33	342
Unspecified sector	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1 687	0	0	-35	8 644	-2 298	3	0	-1 342	-2 367	78	-2 305	1 253	-1 375	87	-1 539	115	604

<sup>1)</sup> Issues at issue price + purchases at market value – sales at market value – redemption value.

<sup>2)</sup> Total shows net issues in the primary market. Purchases and sales in the secondary market result in redistribution between owner sectors, but add up to 0.

Sources: Norwegian Central Securities Depository and Norges Bank

**Table 15. Stocks of NOK-denominated bonds registered with the Norwegian Central Securities Depository by holding sector. Market value. In millions of NOK**

Holding sector	31/3 2000	30/6 2000	30/9 2000	31/12 2000	31/3 2001
Central government and social security administration	32 552	30 063	28 200	29 283	28 274
Norges Bank	7 292	7 586	8 015	8 297	10 148
State lending institutions	291	275	282	266	257
Savings banks	20 691	20 834	23 379	24 987	26 602
Commercial banks	37 708	34 317	34 072	37 758	39 327
Insurance companies	158 297	156 451	154 775	150 773	153 860
Mortgage companies	15 152	14 932	14 482	15 276	15 831
Finance companies	10	10	5	5	5
Mutual funds	19 226	17 139	17 497	22 262	24 899
Other financial enterprises	3 673	2 149	1 510	1 347	1 711
Local government incl. municipal enterprises	10 096	10 420	10 030	10 668	10 556
State enterprises	2 709	2 777	2 729	2 923	3 098
Other private enterprises	22 314	22 785	24 175	22 663	23 418
Wage-earning households	5 965	7 581	8 394	12 831	11 092
Other households	4 179	3 932	4 392	4 246	4 270
Rest of the world	43 848	51 795	59 871	69 674	69 936
Unspecified sector	721	714	853	957	762
<b>Total</b>	<b>384 724</b>	<b>383 762</b>	<b>392 660</b>	<b>414 216</b>	<b>424 048</b>

Sources: Norwegian Central Securities Depository and Norges Bank

**Table 16. Stocks of NOK-denominated bonds registered with the Norwegian Central Securities Depository by issuing sector. Nominal value. In millions of NOK**

Issuing sector	31/3 2000	30/6 2000	30/9 2000	31/12 2000	31/3 2001
Central government and social security administration	134 072	139 635	141 511	144 163	148 052
State lending institutions	379	358	347	326	316
Savings banks	34 371	36 471	43 541	48 319	51 964
Commercial banks	58 692	51 917	52 036	57 105	56 147
Insurance companies	888	888	819	819	819
Mortgage companies	69 960	69 337	67 327	67 847	67 686
Finance companies	483	483	483	93	75
Other financial enterprises	2 400	2 400	1 900	2 300	2 300
Local government incl. municipal enterprises	41 888	41 149	41 189	47 225	49 211
State enterprises	15 208	15 911	17 607	18 509	14 904
Other private enterprises	21 167	21 811	23 437	22 507	29 471
Households	30	30	30	27	27
Rest of the world	4 993	6 355	7 122	6 892	6 931
Unspecified sector	90	0	0	0	0
<b>Total</b>	<b>384 622</b>	<b>386 747</b>	<b>397 349</b>	<b>416 132</b>	<b>427 901</b>

Sources: Norwegian Central Securities Depository and Norges Bank

**Table 17. Net purchases and net sales (-) in the primary and secondary markets of NOK-denominated bonds registered with the Norwegian Central Securities Depository by purchasing, selling and issuing sector.<sup>1)</sup> Estimated market value. In millions of NOK**

Q1 2001	Purchasing/selling sector																	Total <sup>2)</sup>
	Cent. gov't and social security	Norges Bank	State lending inst.	Savings banks	Com-mercial banks	Insur. com-pa-nies	Mort. com-pa-nies	Finance com-pa-nies	Securi-ties funds	Other finan-cial enterpr.	Local gov't and munic. enterpr.	State enterpr.	Other private enterpr.	Wage-earning house-holds	Other house-holds	Rest of the world	Unspec. sector	
Issuing sector																		
Central government and social security admin.	-1 169	1 912	0	-501	678	1 037	1 012	0	19	212	184	225	257	-19	-40	71	5	3 883
State lending institutions	0	0	-9	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	-11
Savings banks	411	0	0	343	1 038	389	-240	5	1 315	157	179	-13	11	81	96	-44	16	3 744
Commercial banks	-501	0	0	-299	-1 134	144	-174	0	332	-15	14	-21	12	402	-27	376	46	-845
Insurance companies	0	0	0	-5	0	0	0	0	-3	-4	0	0	7	0	5	0	0	0
Mortgage companies	15	0	0	78	559	-275	-327	-5	303	8	120	-35	115	-48	3	-654	3	-140
Finance companies	0	0	0	0	-5	0	0	0	-9	0	0	0	0	0	0	-4	0	-18
Other financial enterprises	0	0	0	-7	0	-3	0	0	7	0	4	0	0	0	0	0	0	0
Loc. gov't incl. mun. ent.	39	0	0	-90	599	690	297	0	14	28	-624	22	146	-2	25	841	2	1 986
State enterprises	-5	0	0	-9	-69	703	-32	0	1	20	0	512	46	0	8	119	0	1 295
Other private enterprises	264	0	0	698	57	124	27	0	729	-11	-110	-3	326	34	0	-98	28	2 064
Households	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rest of the world	0	0	0	26	0	-51	0	0	26	0	0	0	-1	0	0	1	0	0
Unspecified sector	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>-946</b>	<b>1 912</b>	<b>-9</b>	<b>232</b>	<b>1 722</b>	<b>2 757</b>	<b>563</b>	<b>0</b>	<b>2 733</b>	<b>396</b>	<b>-233</b>	<b>688</b>	<b>920</b>	<b>448</b>	<b>69</b>	<b>608</b>	<b>99</b>	<b>11 959</b>

<sup>1)</sup> Issues at issue price + purchases at market value – sales at market value – redemption value.

<sup>2)</sup> Total shows net issues in the primary market. Purchases and sales in the secondary market result in redistribution between owner sectors, but add up to 0.

Sources: Norwegian Central Securities Depository and Norges Bank

**Table 18. Stocks of NOK-denominated short-term securities registered with the Norwegian Central Securities Depository by holding sector. Market value. In millions of NOK**

	31/3 2000	30/6 2000	30/9 2000	31/12 2000	31/3 2001
Central government and social security administration	7 034	8 456	7 307	7 354	8 465
Norges Bank	2 995	2 246	2 626	2 816	3 010
State lending institutions	0	0	0	0	0
Savings banks	11 536	8 874	6 575	6 716	7 821
Commercial banks	18 458	19 132	12 483	16 662	23 814
Insurance companies	20 467	18 441	21 868	24 261	23 341
Mortgage companies	4 712	2 358	2 380	1 816	1 667
Finance companies	69	39	54	91	92
Mutual funds	14 104	17 575	20 616	21 157	21 482
Other financial enterprises	1 033	336	522	281	1 702
Local government incl. municipal enterprises	2 362	1 899	3 167	3 665	6 340
State enterprises	11 939	4 027	12 411	4 596	2 585
Other private enterprises	7 398	10 977	9 108	9 565	20 112
Wage-earning households	244	276	337	415	385
Other households	426	503	563	526	409
Rest of the world	6 806	5 876	3 648	7 632	10 147
Unspecified sector	760	635	641	233	865
<b>Total</b>	<b>110 341</b>	<b>101 651</b>	<b>104 308</b>	<b>107 786</b>	<b>132 236</b>

Sources: Norwegian Central Securities Depository and Norges Bank

**Table 19. Stocks of short-term securities by issuing sector.<sup>1)</sup> Nominal value. In millions of NOK**

	30/6 2000	30/9 2000	31/12 2000	31/3 2001	30/6 2001
Central government and social security sector	27 045	24 000	31 000	35 500	32 500
Counties	1 307	699	603	883	1 064
Municipalities	4 267	3 752	5 074	4 481	3 155
State lending institutions	0	0	0	0	0
Commercial banks	14 407	15 334	10 364	18 568	17 905
Savings banks	31 360	32 680	36 842	38 613	35 339
Mortgage companies	5 542	5 086	4 704	8 747	7 082
Finance companies	501	187	557	525	575
Other financial enterprises	0	0	0	0	0
State-owned enterprises	1 850	5 095	1 965	1 890	1 450
Municipal enterprises	5 797	7 085	8 243	9 841	10 264
Private enterprises	9 042	8 355	9 124	10 761	12 250
Rest of the world	500	650	1 000	1 230	2 540
<b>Total</b>	<b>101 618</b>	<b>102 922</b>	<b>109 476</b>	<b>131 039</b>	<b>124 124</b>

<sup>1)</sup> Comprises stocks of short-term securities issued in Norway in NOK by domestic sectors and foreigners and in foreign currency by domestic sectors.

Source: Norges Bank

## Credit and liquidity trends

**Table 20. Inter-company loans. Amounts outstanding. In billions of NOK. This table will not be updated hereafter, and after a period will cease to be published.**

	30/9 1999	31/12 1999	31/3 2000	30/6 2000	30/9 2000
Guaranteed by:					
Private finance companies	0.1	0.1	0.1	0.1	0.1
Non-life/credit insurance companies	0.1	0.1	0.1	0.1	0.1
Commercial banks	1.4	1.4	1.4	1.4	1.4
Savings banks	1.4	1.4	1.4	1.4	1.4
<b>Loans with guarantee</b>	<b>3.0</b>	<b>3.0</b>	<b>3.0</b>	<b>3.0</b>	<b>3.0</b>
Loans without guarantee arranged by:					
Broker	0.1	0.1	0.1	0.1	0.1
Bank	0.0	0.0	0.0	0.0	0.0
<b>Total inter-company loans</b>	<b>3.2</b>	<b>3.1</b>	<b>3.1</b>	<b>3.1</b>	<b>3.1</b>

Source: Norges Bank

**Table 21. Credit indicator and money supply**

	Volume figures at end of period NOKbn			Percentage growth				
				Over past 12 months			Over past 3 months annualised rate	
	C2	C3 <sup>1)</sup>	M2 <sup>2)</sup>	C2	C3 <sup>1)</sup>	M2 <sup>2)</sup>	C2	M2 <sup>2)</sup>
1992								
December	886.7	1 069.5	479.5	-3.3	-1.7	..	-2.2	..
1993								
December	875.5	1 074.1	475.7	-1.8	-1.7	-0.9	0.0	2.1
1994								
December	891.6	1 075.8	500.4	2.3	1.3	5.1	2.8	2.6
1995								
December	934.5	1 123.6	529.1	4.9	5.2	5.7	5.4	2.3
1996								
December	993.6	1 215.4	563.4	6.2	5.4	6.4	7.8	5.4
1997								
December	1 101.0	1 362.9	577.7	10.2	10.0	2.5	10.1	4.0
1998								
December	1 195.3	1 542.0	604.6	8.3	12.2	4.6	6.7	6.6
1999								
October	1 278.5	1 669.2	661.8	8.2	10.5	10.0	9.2	7.1
November	1 287.1	1 672.3	659.7	8.3	9.3	9.1	9.9	11.5
December	1 297.7	1 674.1	670.8	8.3	7.8	10.5	10.0	10.3
2000								
January	1 309.5	1 690.6	671.6	8.9	7.6	8.0	10.6	11.7
February	1 321.8	1 697.7	677.6	8.9	7.3	9.5	11.1	8.6
March	1 334.9	1 723.6	684.6	9.5	7.7	10.0	11.8	10.7
April	1 354.6	1 761.4	691.3	10.5	8.1	10.8	11.9	10.9
May	1 366.0	1 764.3	697.2	10.2	7.4	11.8	12.0	12.2
June	1 375.9	1 772.8	704.6	10.5	8.0	10.9	12.1	11.6
July	1 394.9	1 801.1	708.7	11.1	8.5	9.6	12.6	10.8
August	1 410.4	1 848.2	713.5	11.6	10.6	10.2	13.3	10.9
September	1 428.5	1 875.0	725.6	12.1	11.6	12.7	12.8	9.3
October	1 437.1	1 897.1	718.6	11.5	11.1	8.5	13.0	9.1
November	1 459.0	1 906.9	729.3	12.6	11.8	10.7	12.0	6.0
December	1 464.5	1 893.5	731.4	12.4	11.5	9.0	12.7	9.3
2001								
January	1 481.4	1 890.2	745.6	12.2	10.6	10.9	11.8	10.3
February	1 497.8	1 904.7	750.6	12.4	10.9	10.7	11.5	13.5
March	1 508.3	1 916.7	753.2	12.1	10.0	10.1	10.3	8.9
April	1 518.7	1 946.5	749.9	11.6	10.3	8.6	9.2	7.6
May	1 528.9	1 964.6	765.7	11.3	10.7	10.0	8.4	5.8
June	1 539.7	1 975.3	765.5	11.1	10.3	8.6	8.2	8.9
July	1 551.2	..	771.3	10.7	..	8.8	..	..

C2 = Credit indicator. Credit from domestic sources; seasonally adjusted figures.

C3 = Total credit from domestic and foreign sources; actual figures.

M2 = Money supply; seasonally adjusted figures.

<sup>1)</sup> C3 has not been adjusted for revised C2 figures.

<sup>2)</sup> With effect from November 2000, new definitions were introduced for money supply statistics, including the exclusion of "Unutilised overdrafts and building loans" which was previously included in M2.

Source: Norges Bank

**Table 22. Domestic credit supply to the private sector and municipalities, by source. In millions of NOK. 12-month growth as a percentage.**

	31/12/1998		31/12/1999		31/12/2000		31/07/2001	
	Amount	%	Amount	%	Amount	%	Amount	%
Private banks	747 061	8.7	819 535	9.5	938 076	13.8	992 200	9.9
State lending institutions	180 020	4.4	189 651	5.3	167 921	3.9	172 695	5.1
Norges Bank	532	3.9	566	6.4	575	1.6	590	0.2
Mortgage companies	94 964	31.5	93 270	-2.5	144 846	20.4	151 440	15.6
Finance companies	45 770	22.8	58 806	28.4	66 809	12.1	75 113	14.6
Life insurance companies	28 253	-15.4	25 062	-11.3	23 047	-8.0	24 410	-2.3
Pension funds	4 616	-0.9	4 968	7.6	4 780	-3.8	3 384	0.0
Non-life insurance companies	3 272	-16.9	1 321	-59.6	1 648	24.8	1 640	29.1
Bond debt <sup>1)</sup>	75 231	4.0	77 413	2.9	85 113	9.9	92 578	17.9
Certificate debt	10 580	-31.5	19 335	82.8	25 009	29.3	28 588	24.4
Other sources	4 729	22.7	7 175	51.7	6 038	27.4	8 529	64.1
Total domestic credit (C2) <sup>2)</sup>	1 195 028	8.3	1 297 102	8.3	1 463 862	12.4	1 551 167	10.7

<sup>1)</sup> Adjusted for non-resident holdings of Norwegian private and municipal bonds in Norway.

<sup>2)</sup> Corresponds to Norges Bank's credit indicator (C2).

Source: Norges Bank



**Table 23. Composition of money supply. In millions of NOK <sup>1)</sup>**

Actual figures at end of period	Notes and coins	Transaction account deposits	M1 <sup>2)</sup>	Other deposits <sup>3)</sup>	CDs	M2 <sup>4)</sup>	Change last 12 months in total M2
1992	32 452	157 852	190 304	290 667	828	481 799	..
1993	35 741	151 128	186 869	288 447	2 260	477 576	-4 223
1994	37 945	172 639	210 584	286 228	5 116	501 928	24 352
1995	39 092	178 690	217 782	296 778	15 731	530 291	28 363
1996	40 110	207 682	247 792	294 926	21 686	564 404	34 113
1997	42 262	227 440	269 702	278 889	30 200	578 791	14 387
1998	42 143	237 046	279 789	293 085	33 308	605 583	26 792
1999	43 376	300 559	343 935	296 238	31 392	671 564	65 981
2000							
July	39 366	334 384	373 750	309 085	29 539	712 375	61 841
August	38 836	325 228	364 064	318 563	31 437	714 065	65 865
September	38 635	338 968	377 603	313 425	37 196	728 225	82 270
October	38 130	330 628	368 758	322 120	30 370	721 249	56 559
November	39 008	331 516	370 524	318 192	29 935	718 652	69 348
December	42 524	330 724	373 248	324 506	34 338	732 093	60 529
2001							
January	39 399	336 194	375 593	340 759	33 354	749 707	73 821
February	38 689	339 800	378 489	343 531	33 920	755 941	72 973
March	38 324	334 396	372 720	339 894	39 661	752 276	68 738
April	38 433	328 323	366 756	339 998	33 957	740 671	58 524
May	38 507	339 233	377 740	344 153	34 742	756 636	68 563
June	39 155	340 068	379 223	358 666	37 801	775 691	61 142
July	38 422	332 431	370 853	368 226	36 046	775 126	62 751

1) With effect from November 2000, new definitions were introduced for money supply statistics. The most important change is the exclusion of "Unutilised overdrafts and building loans" which was previously included in both M1 and M2. In addition, the former definitions of M1 and M2 have been reclassified.

2) The narrow money concept M1 constitutes the money-holding sector's stock of Norwegian notes and coins plus the sector's transaction accounts deposits in Norges Bank, commercial banks and savings banks (in NOK and foreign currency).

3) Excluding restricted bank deposits (BSU, IPA, withholding tax accounts, etc).

4) The broad money concept M2 constitutes the sum of M1 and the money-holding sector's other bank deposits (in NOK and foreign currency) excluding restricted bank deposits (BSU, IPA, withholding tax accounts, etc) and CDs.

Source: Norges Bank

**Table 24. Household financial balance. Financial investments and holdings, by financial instrument. In billions of NOK**

	Financial investments			Financial investments		Holdings			Holdings	
	Year			Q1		Year			31 March	
	1998	1999	2000	2000	2001	1998	1999	2000	2000	2001
Bank deposits, etc. <sup>1)</sup>	23.6	33.3	34.6	7.0	8.6	374.1	407.6	442.4	414.6	451.0
Bonds, etc. <sup>2)</sup>	0.5	2.2	7.8	0.0	0.4	8.4	10.9	18.2	11.0	16.3
Shares, etc. <sup>3)</sup>	22.3	2.2	14.1	3.9	3.2	144.5	168.1	185.7	173.9	185.9
Units in securities funds	-0.2	7.0	11.9	4.7	1.0	50.0	77.9	93.3	86.1	88.2
Insurance claims	20.7	20.1	28.9	8.8	6.2	369.1	428.5	454.4	443.0	456.1
Loans and other assets <sup>4)</sup>	10.0	6.4	3.0	7.9	11.3	94.9	101.3	104.3	109.2	115.7
<b>Total assets</b>	<b>76.9</b>	<b>71.2</b>	<b>100.3</b>	<b>32.3</b>	<b>30.7</b>	<b>1 041.1</b>	<b>1 194.3</b>	<b>1 298.3</b>	<b>1 237.7</b>	<b>1 313.3</b>
Loans from commercial and savings banks	34.2	49.9	66.9	13.0	11.3	475.2	525.3	592.3	538.3	603.6
Loans from state banks and Norges Bank	6.7	6.1	5.9	2.6	5.6	128.6	134.3	139.9	136.8	145.2
Loans from private mortgage companies and finance companies	9.6	0.4	6.3	1.0	3.3	46.7	47.1	53.5	48.1	56.8
Loans from insurance companies	-5.5	-3.9	-2.4	0.3	-0.1	23.1	19.2	16.7	19.5	16.6
Other liabilities <sup>5)</sup>	8.6	0.6	-0.1	-10.7	-10.1	75.8	75.5	75.1	64.7	64.9
<b>Total liabilities</b>	<b>53.7</b>	<b>53.2</b>	<b>76.6</b>	<b>6.1</b>	<b>10.0</b>	<b>749.3</b>	<b>801.5</b>	<b>877.5</b>	<b>807.4</b>	<b>887.1</b>
<b>Net</b>	<b>23.2</b>	<b>18.0</b>	<b>23.7</b>	<b>26.1</b>	<b>20.8</b>	<b>291.8</b>	<b>392.9</b>	<b>420.8</b>	<b>430.3</b>	<b>426.2</b>

1) Notes and coins, bank deposits and deposits with finance companies.

2) Bearer bonds, savings bonds, premium bonds, notes and short-term Treasury notes.

3) VPS-registered (registered with the Norwegian Central Securities Depository) and non-registered shares.

4) Loans, accrued interest, holiday pay claims and tax claims.

5) Other loans, bonds and notes, tax liabilities, and accrued interest.

Sources: Statistics Norway and Norges Bank

**Table 25. Money market liquidity. Liquidity effect from 1 January to end period. In millions of NOK**

Supply+/withdrawal-	1/1-31/12		1/1-31/8	
	1999	2000	2000	2001
Central govt. and other public accounts (excl. paper issued by state lending inst. and govt.)	4 870	-50 855	-1 385	-58 385
Paper issued by state lending inst. and govt.	-2 702	-11 103	-9 406	11 236
Purchase of foreign exchange for Govt Petroleum Fund	11 321	53 010	28 430	74 300
Other foreign exchange transactions	-88	368	368	30
Holdings of banknotes and coins <sup>1)</sup> (estimate)	-1 800	775	5 028	5 014
Norges Bank's other transactions <sup>1)</sup> (estimate)	...	...	...	...
Overnight loans	-110	245	110	-100
Fixed-rate loans	13 499	-4 425	-25 576	-21 151
Other central bank financing	648	340	-19 024	-22 135
<b>Total reserves</b>	<b>25 638</b>	<b>-11 645</b>	<b>-21 455</b>	<b>-11 195</b>
Of which:				
Sight deposits with Norges Bank	25 638	-11 645	-21 455	-11 195
Short-term Treasury notes	0	0	0	0
Other reserves (estimate)	0	0	0	0

<sup>1)</sup> The figures are based mainly on Norges Bank's accounts. Discrepancies may arise between the bank's own statements and banking statistics due to different accruals.

Source: Norges Bank

## Interest rate statistics

**Table 26. Nominal interest rates for NOK. Averages. Per cent per annum**

	1-month		3-month		12-month		Interest rate on banks' over- night loans in Norges Bank	Interest rate on banks' sight deposits with Norges Bank
	NIDR	NIBOR	NIDR	NIBOR	NIDR	NIBOR		
2000								
August	7.0	6.9	7.3	7.1	7.6	7.5	8.6	6.6
September	7.3	7.1	7.5	7.3	7.8	7.7	8.8	6.8
October	7.5	7.4	7.7	7.5	7.9	7.8	9.0	7.0
November	7.4	7.3	7.6	7.4	7.7	7.5	9.0	7.0
December	7.6	7.5	7.6	7.4	7.5	7.3	9.0	7.0
2001								
January	7.5	7.4	7.6	7.4	7.4	7.2	9.0	7.0
February	7.4	7.2	7.5	7.3	7.4	7.2	9.0	7.0
March	7.5	7.3	7.5	7.4	7.5	7.4	9.0	7.0
April	7.6	7.5	7.6	7.5	7.5	7.4	9.0	7.0
May	7.6	7.4	7.6	7.4	7.6	7.5	9.0	7.0
June	7.4	7.3	7.6	7.4	7.7	7.6	9.0	7.0
July	7.4	7.3	7.5	7.4	7.6	7.5	9.0	7.0
August	7.4	7.2	7.5	7.3	7.5	7.3	9.0	7.0

Note: NIDR = Norwegian Interbank Deposit Rate, a pure krone interest rate  
NIBOR = Norwegian Interbank Offered Rate, constructed on the basis of currency swaps

Source: Norges Bank

**Table 27. Short-term interest rates<sup>1)</sup> for key currencies in the Euro-market. Per cent per annum**

	DEM	DKK	FIM	FRF	GBP	JPY	SEK	USD	EURO	Interest rate differential NOK/EURO
2000										
August	..	5.6	..	..	6.1	0.3	4.1	6.7	4.8	2.2
September	..	6.0	..	..	6.1	0.4	4.0	6.6	4.8	2.4
October	..	5.5	..	..	6.1	0.5	4.0	6.7	5.0	2.4
November	..	5.4	..	..	6.0	0.6	3.9	6.7	5.1	2.3
December	..	5.3	..	..	5.9	0.6	4.1	6.5	4.9	2.4
2001										
January	..	5.3	..	..	5.7	0.5	4.1	5.7	4.7	2.6
February	..	5.2	..	..	5.7	0.4	4.0	5.3	4.7	2.5
March	..	5.1	..	..	5.5	0.2	4.0	4.9	4.7	2.6
April	..	5.0	..	..	5.3	0.1	4.0	4.6	4.7	2.7
May	..	5.0	..	..	5.2	0.1	4.0	4.0	4.6	2.7
June	..	4.9	..	..	5.2	0.1	4.3	3.8	4.4	2.9
July	..	4.8	..	..	5.2	0.1	4.4	3.7	4.5	2.8
August	..	4.7	..	..	4.9	0.1	4.3	3.5	4.3	2.9

<sup>1)</sup> Three-month rates, monthly average of daily quotations.

Sources: OECD and Norges Bank

**Table 28. Yields on Norwegian bonds<sup>1)</sup>. Per cent per annum**

	3-year		5-year		10-year	
	Govt.	Private	Govt.	Private	Govt.	Private
2000						
August	6.9	7.4	6.5	7.4	6.2	7.2
September	7.1	7.7	6.7	7.7	6.3	7.4
October	7.0	7.7	6.6	7.7	6.4	7.5
November	6.7	7.4	6.4	7.5	6.2	7.3
December	6.4	6.9	6.1	7.0	6.0	7.0
2001						
January	6.4	6.9	6.1	6.9	5.9	6.9
February	6.4	7.0	6.2	6.9	6.0	7.0
March	6.6	7.1	6.3	7.0	6.0	7.0
April	6.7	7.1	6.4	7.1	6.2	7.1
May	6.8	7.3	6.6	7.3	6.5	7.3
June	6.9	7.5	6.8	7.4	6.6	7.4
July	6.9	7.4	6.7	7.4	6.6	7.4
August	6.7	7.2	6.5	7.1	6.5	7.2

<sup>1)</sup> Whole-year interest rate paid in arrears. Monthly average. As of 1 January 1993 based on interest rate on representative bonds weighted by residual maturity.

Source: Norges Bank

**Table 29. Yields on government bonds<sup>1)</sup> in key currencies. Per cent per annum**

	DEM	DKK	FIM	FFR	GBP	JPY	SEK	USD	Interest rate differential NOK/DEM <sup>2)</sup>
2000									
August	5.3	5.7	5.5	5.4	5.3	1.8	5.4	5.9	0.9
September	5.3	5.7	5.6	5.4	5.3	1.9	5.3	6.0	1.0
October	5.3	5.7	5.5	5.4	5.2	1.8	5.3	6.0	1.1
November	5.2	5.6	5.5	5.3	5.1	1.8	5.2	5.9	1.0
December	5.0	5.3	5.2	5.1	4.9	1.6	5.0	5.6	1.0
2001									
January	4.9	5.2	5.1	4.9	4.9	1.5	5.0	5.7	1.1
February	4.9	5.1	5.1	4.9	4.9	1.4	4.7	5.6	1.1
March	4.8	5.0	5.0	4.8	4.8	1.2	4.8	5.2	1.3
April	4.9	5.2	5.2	5.0	4.9	1.4	5.0	5.2	1.3
May	5.1	5.4	5.4	5.2	5.1	1.3	5.3	5.4	1.4
June	5.1	5.4	5.3	5.1	5.2	1.2	5.5	5.3	1.5
July	5.1	5.4	5.3	5.1	5.1	1.3	5.5	5.2	1.5
August	4.9	5.2	5.1	5.0	4.9	1.4	5.2	5.1	1.5

<sup>1)</sup> Government bonds with 10 years to maturity. Monthly average of daily quotations.

<sup>2)</sup> Differential between yields on Norwegian and German government bonds with 10 years to maturity.

Source: Norges Bank

**Table 30. Commercial and savings banks. Average interest rates and commissions on utilised loans in NOK to the private and municipal sector at end of quarter. Per cent per annum**

	All loans				Loans, excl. non-accrual loans <sup>1)</sup>			
	Credit lines	Repayment loans		Total loans	Credit lines	Repayment loans		Total loans
	Overdrafts and building loans	Housing loans	Other loans		Overdrafts and building loans	Housing loans	Other loans	
<b>Q2 2000</b>								
Commercial banks	9.49	7.21	7.68	7.65	9.59	7.22	7.74	7.68
Savings banks	10.94	7.49	8.30	8.00	11.06	7.49	8.33	8.02
All banks	10.08	7.36	7.96	7.83	10.20	7.37	8.01	7.85
<b>Q3 2000</b>								
Commercial banks	10.08	7.95	8.32	8.34	10.18	7.96	8.37	8.38
Savings banks	11.30	8.22	8.99	8.70	11.44	8.22	9.03	8.72
All banks	10.58	8.10	8.62	8.52	10.70	8.10	8.67	8.55
<b>Q4 2000</b>								
Commercial banks	10.71	8.36	8.57	8.72	10.80	8.37	8.64	8.75
Savings banks	11.77	8.60	9.30	9.06	11.96	8.61	9.37	9.09
All banks	11.15	8.50	8.90	8.89	11.28	8.51	8.97	8.93
<b>Q1 2001</b>								
Commercial banks	10.42	8.35	8.53	8.68	10.46	8.35	8.61	8.71
Savings banks	11.68	8.62	9.33	9.08	11.87	8.62	9.39	9.11
All banks	10.93	8.50	8.89	8.88	11.03	8.51	8.96	8.92
<b>Q2 2001</b>								
Commercial banks	10.68	8.38	8.52	8.72	10.72	8.39	8.62	8.76
Savings banks	11.71	8.59	9.32	9.06	11.92	8.60	9.38	9.09
All banks	11.10	8.50	8.88	8.89	11.21	8.51	8.96	8.93

<sup>1)</sup> Non-accrual loans for which interest accruals, commissions and charges have been suspended.

Source: Norges Bank

**Table 31. Commercial and savings banks. Average interest rates on deposits in NOK from the private and municipal sector at end of quarter. Per cent per annum**

	Ordinary terms	Special terms	Total deposits	Sight deposits	Time deposits	Deposits on transaction accounts	Other deposits
<b>Q2 2000</b>							
Commercial banks	4.38	5.88	4.66	4.34	5.77		
Savings banks	4.24	5.84	4.59	4.13	5.63		
All banks	4.32	5.85	4.62	4.24	5.67		
<b>Q3 2000</b>							
Commercial banks	5.14	6.66	5.46	5.09	6.54		
Savings banks	4.96	6.53	5.32	4.85	6.30		
All banks	5.05	6.57	5.39	4.98	6.38		
<b>Q4 2000</b>							
Commercial banks	5.58	6.91	5.83	5.53	6.84		
Savings banks	5.44	6.91	5.78	5.34	6.67		
All banks	5.52	6.91	5.81	5.44	6.73		
<b>Q1 2001</b>							
Commercial banks	5.65	6.91	5.88	5.59	6.86		
Savings banks	5.47	6.92	5.82	5.36	6.73		
All banks	5.56	6.92	5.85	5.48	6.77		
<b>Q2 2001</b>							
Commercial banks	...	...	5.81	...	...	5.15	6.51
Savings banks	...	...	5.72	...	...	4.48	6.50
All banks	...	...	5.77	...	...	4.86	6.50

Source: Norges Bank

**Table 32. Life insurance companies. Average interest rates by type of loan at end of quarter. Per cent per annum**

	Housing loans	Other loans	Total loans
Q2 2000	7.0	6.5	6.8
Q3 "	8.0	6.8	7.4
Q4 "	8.1	7.0	7.6
Q1 2001	8.1	7.0	7.6
Q2 "	8.1	7.2	7.6

Source: Norges Bank

**Table 33. Mortgage companies. Average interest rates, incl. commissions on loans to private sector at end of quarter. Per cent per annum**

	Housing loans	Loans to private enterprises	Total loans
Q2 2000	7.0	7.2	6.7
Q3 "	7.4	7.6	7.1
Q4 "	7.5	7.7	7.2
Q1 2001	7.5	7.7	7.3
Q2 "	7.6	7.7	7.4

Source: Norges Bank

## Profit/loss and capital adequacy data

**Table 34. Profit/loss and capital adequacy: commercial banks<sup>1)</sup>. Percentage of average total assets**

	1999 <sup>3)</sup>	2000	Q2	
			2000	2001
Interest income	7.2	7.4	6.9	7.7
Interest expenses	5.2	5.5	5.1	6.0
Net interest income	2.0	1.8	1.8	1.8
Total other operating income	1.2	1.3	1.2	1.1
Other operating expenses	2.0	1.9	1.9	1.8
Operating profit before losses	1.2	1.2	1.1	1.1
Recorded losses on loans and guarantees	0.0	0.1	0.0	0.1
Ordinary operating profit before taxes	1.2	1.1	1.1	1.0
Capital adequacy ratio <sup>2)</sup>	10.9	11.0	9.8	11.5
Of which:				
Core capital	8.0	7.8	7.4	7.9

1) Parent banks (excluding branches abroad) including Postbanken and foreign-owned branches. Excluding Gjensidige Bank from 1 January 1999.

2) As a percentage of the basis of measurement for capital adequacy.

3) New accounting rules from 1 January 1999.

Source: Norges Bank

**Table 35. Profit/loss and capital adequacy: savings banks<sup>1)</sup>. Percentage of average total assets**

	1999 <sup>3)</sup>	2000	Q2	
			2000	2001
Interest income	7.7	7.6	7.1	8.2
Interest expenses	4.8	4.9	4.4	5.8
Net interest income	2.9	2.7	2.6	2.5
Total other operating income	1.0	0.8	0.8	0.7
Other operating expenses	2.1	2.0	2.0	1.8
Operating profit before losses	1.7	1.6	1.5	1.4
Recorded losses on loans and guarantees	0.2	0.2	0.2	0.2
Ordinary operating profit before taxes	1.6	1.8	2.2	1.2
Capital adequacy ratio <sup>2)</sup>	13.6	13.7	12.7	13.6
Of which:				
Core capital	11.2	10.9	10.3	10.6

1) Including Gjensidige Bank from 1 January 1999.

2) As a percentage of the basis of measurement for capital adequacy.

3) New accounting rules from 1 January 1999.

Source: Norges Bank



**Table 36. Profit/loss and capital adequacy: finance companies<sup>1)</sup>. Percentage of average total assets**

	1999 <sup>3)</sup>	2000	Q2	
			2000	2001
Net interest income	5.4	5.0	4.9	4.3
Total other operating income	2.6	2.3	2.2	2.5
Other operating expenses	5.0	4.7	4.5	4.3
Operating profit before losses	2.9	2.5	2.6	2.5
Recorded losses on loans and guarantees	0.6	0.5	0.5	0.4
Ordinary operating profit before taxes	2.4	2.1	2.2	2.1
Capital adequacy ratio <sup>2)</sup>	12.1	12.4	11.9	11.8
Of which:				
Core capital	11.0	11.1	10.9	10.5

1) Norwegian parent and foreign-owned branches.

2) As a percentage of the basis of measurement for capital adequacy.

3) New accounting rules from 1 January 1999.

Source: Norges Bank

**Table 37. Profit/loss and capital adequacy: mortgage companies<sup>1)</sup>. Percentage of average total assets**

	1999 <sup>3)</sup>	2000 <sup>4)</sup>	Q2	
			2000	2001
Interest income	6.3	6.9	6.6	6.8
Interest expenses	5.5	6.2	5.9	6.1
Net interest income	0.8	0.7	0.7	0.7
Total other operating income	0.1	0.0	0.0	0.0
Other operating expenses	0.2	0.2	0.2	0.2
Operating profit before losses	0.7	0.6	0.6	0.6
Recorded losses on loans and guarantees	0.0	-0.0	-0.0	0.0
Ordinary operating income before taxes	0.8	0.6	0.6	0.6
Capital adequacy <sup>2)</sup>	16.4	16.6	16.2	15.1
Of which:				
Core capital	13.4	13.0	13.1	12.0

1) All Norwegian parent companies.

2) As a percentage of the basis of measurement for capital adequacy.

3) New accounting rules from 1 January 1999.

4) Kommunalbanken reports as a mortgage company with effect from the first quarter of 2000.

Source: Norges Bank

## Exchange rates

**Table 38. The international value of the krone and exchange rates against selected currencies. Monthly average of representative market rates**

	Trade-weighted krone exchange rate <sup>1)</sup>	1 EURO	100 DEM	100 DKK	100 FIM	100 FRF	1 GBP	100 JPY	100 SEK	1 USD
2000										
August	108.15	8.0959	413.94	108.56	136.16	123.42	13.336	8.2837	96.48	8.9556
September	107.80	8.0266	410.40	107.56	135.00	122.37	13.208	8.6235	95.39	9.2056
October	107.81	8.0032	409.20	107.47	134.60	122.01	13.582	8.6321	93.88	9.3613
November	107.10	7.9950	408.78	107.22	134.47	121.88	13.317	8.5737	92.66	9.3369
December	107.55	8.1334	415.86	109.06	136.79	123.99	13.260	8.0894	93.90	9.0662
2001										
January	106.81	8.2355	421.08	110.33	138.51	125.55	12.974	7.5176	92.48	8.7784
February	106.75	8.2125	419.90	110.04	138.12	125.20	12.956	7.6708	91.49	8.9117
March	105.73	8.1600	417.22	109.32	137.24	124.40	12.971	7.3962	89.42	8.9742
April	105.50	8.1183	415.08	108.78	136.54	123.76	13.052	7.3512	89.04	9.0942
May	104.70	8.9952	408.79	107.16	134.47	121.89	13.035	7.5058	88.24	9.1438
June	104.07	7.9338	405.65	106.44	133.44	120.95	13.021	7.6011	86.16	9.2987
July	104.15	7.9714	407.57	107.08	134.07	121.52	13.099	7.4362	86.05	9.2636
August	104.16	8.0552	411.86	108.20	135.48	122.80	12.853	7.3672	86.52	8.9469

1) The nominal effective krone exchange rate is calculated on the basis of the NOK exchange rate against the currencies of Norway's 25 main trading partners, calculated as a chained index and trade-weighted using the OECD's weights. The weights, which are updated annually, are calculated on the basis of each country's competitive position in relation to Norwegian manufacturing. The index is set at 100 in 1990. A rising index value denotes a depreciating krone. Further information can be found on Norges Bank's website ([www.norges-bank.no](http://www.norges-bank.no)).

Source: Norges Bank

**Table 39. International parities. Monthly average of representative exchange rates**

	DEM/USD	DEM/GBP	FRF/DEM	JPY/DEM	JPY/USD
2000					
August	2.1636	3.2219	3.354	49.983	108.12
September	2.2432	3.2185	3.354	47.604	106.76
October	2.2880	3.3195	3.354	47.420	108.45
November	2.2841	3.2578	3.354	47.683	108.91
December	2.1804	3.1888	3.354	51.444	112.10
2001					
January	2.0848	3.0811	3.354	56.024	116.78
February	2.1223	3.0856	3.354	54.750	116.18
March	2.1513	3.1090	3.354	56.412	121.35
April	2.1911	3.1446	3.354	56.474	123.73
May	2.2371	3.1891	3.354	54.483	121.84
June	2.2923	3.2101	3.354	53.388	122.37
July	2.2730	3.2141	3.354	54.816	124.57
August	2.1726	3.1211	3.354	55.904	121.45

Source: Norges Bank

## Balance of payments

**Table 40. Balance of payments. In millions of NOK**

	1999	2000	January - June	
			2000	2001
Goods balance	79 585	226 568	90 842	118 059
Service balance	-6 265	3 517	2 303	7 840
Net interest and transfers	-24 482	-26 492	-12 840	-12 547
A. Current account balance	48 838	203 593	80 305	113 352
Of which:				
Petroleum activities <sup>1)</sup>	157 038	303 367	130 806	152 248
Shipping <sup>1)</sup>	24 268	33 877	15 624	22 198
Other sectors	-132 468	-133 651	-66 125	-61 094
B. Net capital transfers	-1 317	-492	507	1 026
C. Capital outflow excl. Norges Bank <sup>2)</sup>	-21 542	36 446	15 487	-30 905
Distributed among:				
Central government sector	-6 307	-19 339	-6 446	7 963
Local government sector	247	60	89	618
Commercial and savings banks	-18 450	-42 753	-16 252	14 493
Insurance	15 057	18 629	10 968	11 897
Other financial institutions	1 755	-10 001	-8 023	-4 662
Shipping	-3 084	-7 709	-4 502	2 535
Petroleum activities	-409	9 837	17 003	-26 054
Other private and state enterprises	-12 504	20 818	-8 866	-19 079
Unallocated (incl. errors and omissions)	2 153	66 904	31 516	-18 616
D. Norges Bank's net capital outflow (A + B - C)	69 063	166 655	65 325	145 283
E. Valuation changes in Norges Bank's net foreign assets	9 788	17 210	15 768	-24 972
Change in Norges Bank's net foreign assets (D+E)	78 851	183 865	81 093	120 311
Of which: <sup>2)</sup>				
International reserves	51 544	52 274	-2 503	-22 788
Investment of Government Petroleum Fund	54 633	163 849	82 224	136 549

<sup>1)</sup> Specified by Norges Bank on the basis of items from the balance of payments.<sup>2)</sup> Specifications from Norges Bank's balance sheet.

Sources: Statistics Norway and Norges Bank

**Table 41. Norway's foreign assets and debt. In billions of NOK**

	31/12/1999			31/12/2000			30/6/2001		
	Assets	Debt	Net	Assets	Debt	Net	Assets	Debt	Net
Central government admin. <sup>1)</sup>	13.0	48.1	-35.1	12.5	67.1	-54.6	62.9	59.2	3.7
Norges Bank <sup>2)</sup>	462.6	78.5	384.1	767.6	199.9	567.7	797.9	162.5	635.4
State lending institutions	1.2	0.0	1.2	1.4	0.0	1.4	1.4	0.0	1.4
Commercial and savings banks <sup>3)</sup>	94.8	251.9	-157.1	131.3	339.2	-208.1	159.9	355.4	-195.5
Mortgage companies	27.1	67.6	-40.4	30.9	90.1	-59.2	61.1	124.6	-63.4
Finance companies	9.7	14.7	-5.1	12.8	16.9	-4.1	13.1	18.5	-5.4
Insurance companies	140.9	34.0	106.9	161.9	36.9	125.0	177.3	40.4	136.9
Local government	0.0	0.0	0.1	0.1	0.0	0.1	0.2	-0.6	0.8
Municipal enterprises	0.2	4.9	-4.8	0.2	5.7	-5.5	0.4	5.4	-5.1
State enterprises	83.5	116.7	-33.2	79.3	119.3	-40.1	57.0	108.3	-51.3
Other Norwegian sectors	225.8	340.1	-114.2	345.1	442.6	-97.5	324.9	458.4	-133.5
Undistributed and errors and omissions <sup>4)</sup>	39.9	0.0	39.9	108.4	0.0	108.4	89.8	0.0	89.8
All sectors	1 098.8	956.5	142.4	1 651.3	1 317.6	333.7	1 745.9	1 332.1	413.7

Note:

Norges Bank calculates the holdings figures on the basis of Statistics Norway's annual census of foreign assets and liabilities and sectoral statistics for financial industries, which are combined with the figures on changes in the form of transactions and valuation changes from the balance of payments and sectoral statistics for insurance and mortgage companies.

1) Also includes foreign holdings of NOK debt instruments issued by central government administration.

2) Norges Bank's equity holdings are estimated at market value and may deviate from Norges Bank's official balance sheet.

Norges Bank's purchases of derivatives are included in the balance of payments, but not in the official balance sheet, and may result in differences.

3) Including Postbanken.

4) Consists of net amounts which could not be sectorised at the time and statistical errors. For the sake of simplicity, the net amount is recorded under assets.

Sources: Statistics Norway and Norges Bank

## International capital markets

**Table 42. Changes in banks' international assets.<sup>1)</sup> In billions of USD**

	1998	1999	2000	Q1		Outstanding
				2000	2001	31 March 2001
Total	280.1	276.1	1 175.6	445.0	704.3	11 177.4
Of which vis-à-vis:						
Non-banks	134.1	298.2	295.8	88.9	247.4	3 695.6
Banks (and undistributed)	146.0	-22.0	879.8	356.1	456.9	7 481.8

1) International assets (external positions) comprise

– cross-border claims in all currencies

– foreign currency loans to residents

– equivalent assets, excluding lending

Source: Bank for International Settlements

**Table 43. Banks' international claims by currency. Percentage of total international assets**

	December			Q1	
	1998	1999	2000	2000	2001
US dollar (USD)	34.3	39.4	41.3	39.6	42.0
Deutsche mark (DEM)	11.3	..	..	..	..
Swiss franc (CHF)	2.6	2.4	2.2	2.6	2.1
Japanese yen (JPY)	10.1	9.0	8.2	8.5	7.3
Pound sterling (GBP)	4.2	4.3	4.4	4.5	4.5
French franc (FRF)	3.5	..	..	..	..
Italian lire (ITL)	4.6	..	..	..	..
ECU/euro <sup>1)</sup>	1.4	27.7	27.7	28.2	28.7
Undistributed <sup>2)</sup>	28.0	17.1	16.2	16.6	15.4
Total in billions of USD	9 665.4	9 939.8	10 778.0	10 094.2	11 177.4

1) From January 1999.

2) Including other currencies not shown on the table, and assets in banks in countries other than the home countries of the seven currencies specified.

Source: Bank for International Settlements

**Table 44. Funds raised on international markets, by type of instrument. In billions of USD.** *This table will not be updated hereafter, and after a period will cease to be published.*

	1993	1994	1995	1996	1997
Issues of bonds	481.0	428.6	467.3	708.8	831.6
– of which floating-rate instruments	69.8	96.3	78.9	165.7	213.1
International and foreign bank loans	136.7	236.2	370.2	345.2	390.4
Other international facilities	8.2	4.9	3.8	4.5	2.7
<b>Total</b>	<b>625.8</b>	<b>669.7</b>	<b>841.3</b>	<b>1 058.5</b>	<b>1 224.7</b>

Source: OECD

**Table 45. Funds raised on international markets, by borrowing country/institution. Per cent of total borrowing.** *This table will not be updated hereafter, and after a period will cease to be published.*

	1993	1994	1995	1996	1997
OECD countries	86.3	87.7	90.1	88.3	85.8
Non-OECD countries	9.9	10.5	7.8	9.4	11.9
International institutions and other countries	3.8	1.8	2.1	2.3	2.3

Source: OECD

## Foreign currency trading

**Table 46. Foreign exchange banks. Foreign exchange purchased/sold forward with settlement in NOK.<sup>1)</sup> In billions of NOK at end of month**

		Purchased net from:				Purchased gross from		Sold gross to		
		Central govt. <sup>2)</sup>	Other financial inst. <sup>3)</sup>	Non-financial sector	Foreign sector	Total	Non-financial sector	Foreign sector	Non-financial sector	Foreign sector
2000	July	0.1	27.0	61.0	-17.0	71.1	88.0	297.1	27.0	314.1
	August	0.1	31.4	63.3	-6.6	88.2	92.5	308.8	29.2	315.4
	September	0.1	26.8	62.5	-5.4	84.0	97.5	324.9	35.0	330.3
	October	0.1	28.8	62.4	-30.5	60.8	96.6	339.1	34.2	369.6
	November	0.1	30.1	66.2	-2.6	93.8	102.2	400.7	36.0	403.3
	December	0.1	35.5	51.9	-21.9	65.6	105.1	386.7	53.2	408.6
2001	January	0.1	34.3	69.5	-23.5	80.4	101.7	458.2	32.2	481.6
	February	0.1	29.7	69.8	-13.4	86.2	99.9	497.3	30.1	510.7
	March	12.6	32.7	65.0	-16.4	93.9	99.2	555.7	34.2	572.2
	April	0.1	43.1	61.4	-45.7	58.9	93.9	542.6	32.5	588.3
	May	0.1	30.5	59.5	-48.0	42.1	96.4	563.6	36.9	611.6
	June	0.1	38.4	77.7	-17.6	98.6	109.5	648.8	31.8	666.4
	July	0.1	1.3	72.2	-20.6	53.0	107.4	606.0	35.2	626.6

<sup>1)</sup> Excl. exchange rate adjustments.

<sup>2)</sup> Central government administration, social security administration and Norges Bank.

<sup>3)</sup> Incl. possible discrepancies between forward assets and forward liabilities within the category of foreign exchange banks.

Source: Statements from commercial and savings banks (registered foreign exchange banks) to Norges Bank

**Table 47. Foreign exchange banks. Overall foreign currency position. In millions of NOK**

	30/6 2000	30/9 2000	31/12 2000	31/3 2001	30/6 2001
Foreign assets, spot	197 958	205 302	216 694	222 319	227 322
Foreign liabilities, spot	296 250	318 965	307 225	347 759	329 940
1. Spot balance, net	-98 292	-113 663	-90 531	-125 440	-102 618
2. Forward balance, net	43 612	44 226	21 119	-2 720	54 848

Source: Norges Bank

**Table 48. Transactions relating to Norges Bank's exchange market operations. In billions of NOK**

	1999	2000	Week in 2001													
	1-52	1-52	25	26	27	28	29	30	31	32 <sup>2)</sup>	33	34	35	36	37	1-37
<b>A. Norges Bank's net sales of foreign exchange to banks</b>	-11	-53	-2.19	-2.30	-2.45	-2.45	-2.25	-2.50	0.00	-5.05	-2.55	-2.65	-2.65	-2.96	-2.95	-74.53
of foreign exchange to banks	-16	-48	-2.19	-2.30	-2.45	-2.45	-2.25	-2.50	0.00	-5.05	-2.55	-2.65	-2.65	-2.96	-2.95	-74.53
1. Spot	5	-5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2. Forward																
<b>Used by banks to cover:</b>																
<b>B. Foreign<sup>1)</sup></b>	-1	-37	5.68	-17.00	14.56	-4.56	-0.68	-0.57	0.00	-2.16	-16.72	-19.24	-2.09	-3.83	-12.80	-57.27
1. Spot	-4	-64	1.95	-3.92	0.18	9.61	4.77	-4.25	0.00	2.43	-1.44	-3.45	0.86	-15.88	1.34	-11.8
2. Forward	3	27	3.73	-13.08	14.38	-14.17	-5.45	3.68	0.00	-4.59	-15.28	-15.79	-2.95	12.05	-14.14	-45.47
<b>C. Norwegian sectors, non-bank<sup>1)</sup></b>	-26	-22	-10.12	14.64	-18.75	4.14	1.62	-2.55	0.00	-5.12	15.94	17.69	0.92	-1.13	6.53	-21.46
1. Spot	4	20	-20.22	17.12	-17.83	10.00	-4.62	0.48	0.00	-6.40	8.65	17.91	-1.64	7.47	3.56	-33.13
2. Forward	-24	-33	9.34	-0.18	-6.82	0.85	2.47	-0.89	0.00	3.75	2.96	-2.22	2.97	-3.72	-0.23	6.21
3. Increase in customers' net currency claims on banks	-6	-10	0.76	-2.30	5.90	-6.71	3.77	-2.14	0.00	-2.47	4.33	2.00	-0.41	-4.88	3.2	5.46
<b>D. Other</b>	16	6	2.24	0.07	1.74	-2.03	-3.19	0.63	0.00	2.24	-2.06	-1.11	-1.47	1.99	3.33	3.96
1. Banks' income deficit in foreign exchange, foreign	6	6	0.18	0.18	0.18	0.18	0.18	0.18	0.00	0.18	0.18	0.18	0.18	0.18	0.18	6.48
2. Losses on spot transactions, foreign	7	6	-1.55	0.87	1.49	-0.86	-1.54	-0.73	0.00	-0.59	0.07	0.03	-0.87	0.66	-1.59	-2.58
3. Other losses, including adjustments	-1	-6	1.53	-0.04	-0.65	-0.20	-0.88	1.66	0.00	0.46	0.66	-0.77	1.26	-2.11	5.02	-0.42
4. Increase in banks' total position	4	-1	2.08	-0.94	0.72	-1.15	-0.95	-0.48	0.00	2.19	-2.97	-0.55	-2.04	3.26	-0.28	0.48
<b>Specification:</b>																
Non-resident net sale of NOK-denominated assets related to:																
Net NOK claims on banks	-2	-5	11.32	-3.67	-6.12	9.01	1.37	-4.54	0.00	1.32	-0.21	-4.03	0.78	-14.88	0.09	-6.47
VPS-registered shares	5	-40	-10.11	-1.75	3.75	0.25	2.98	-0.23	0.00	0.90	0.84	1.08	0.6	-0.09	-0.05	-9.98
VPS-registered bonds	-11	-16	0.47	1.75	2.58	0.21	0.32	0.52	0.00	0.85	-1.56	-0.49	-0.34	-0.26	1.86	10.04
VPS-registered notes and certificates	3	-3	0.27	0.25	-0.03	0.15	0.10	0.00	0.00	-0.64	-0.51	-0.01	-0.18	-0.65	-0.56	-5.38
<b>Total (equal to NOK offset to B1 above)</b>	-4	-64	1.95	-3.92	0.18	9.62	4.77	-4.25	0.00	2.43	-1.44	-3.45	0.86	-15.88	1.34	-11.79
<b>Memorandum:</b>																
Increase in banks' foreign spot position (net) (Corresponds to A1-B1-C1-D1-D2)	-8	-29	17.45	-16.55	13.53	-21.38	-1.04	1.82	0.00	-0.67	-10.01	-17.32	-1.18	4.61	-6.44	-33.5

1) Positive figures denote foreign exchange sales from banks to the sectors mentioned. Negative figures denote purchases.

2) Cumulative figures for weeks 31 and 32.

Source: Norges Bank



