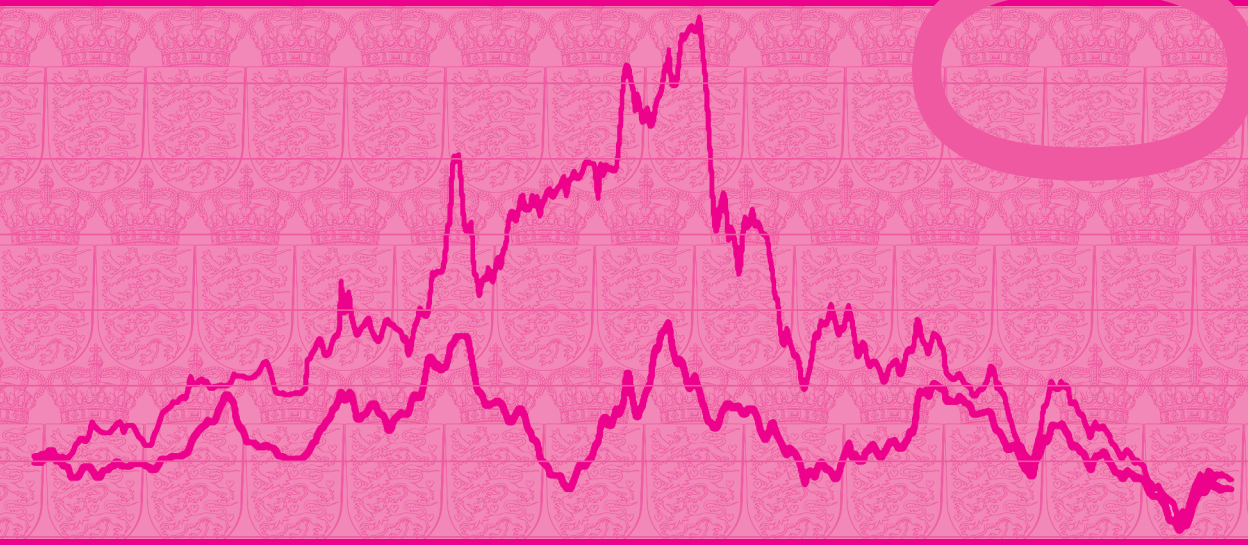
Danmarks Nationalbank

Danish Government Borrowing and Debt

2008



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Explanation of Symbols
- \- Magnitude nil
- 0 Less than one half of unit employed
- • Category not applicable

In tables figures may not add because of rounding.

This publication is based on information available up to 1 February 2001.

Contents

Foreword

In connection with the management of the Danish central-government debt Danmarks Nationalbank issues the publication "Statens låntagning og gæld" (Danish Government Borrowing and Debt). The publication describes the development during the preceding year and reports on other issues of relevance to debt management.

The aim of the publication is to give a deeper understanding of Denmark's government debt policy. *Key Elements of the Government Debt Policy in 2000 and the Strategy for the Next Years* highlights selected topics from this year's publication.

Chapter 1 gives a general presentation of the *key principles* for the government debt policy. The chapter does not include report topics concerning the preceding year. Readers who are familiar with Denmark's government debt policy can omit this chapter without losing any information.

Chapters 2-6 constitute the *report section.* They present the considerations and factors governing borrowing and debt management during the preceding year, as well as an account of the strategy for 2001. Chapter 2 describes domestic borrowing and Chapter 3 foreign borrowing. Chapter 4 gives an account of the management of the assets of the Social Pension Fund, while Chapter 5 reports on the development in the government debt and in borrowing by government-guaranteed entities. Chapter 6 describes the interest-rate, exchange-rate and credit risks on the government debt.

The *special-topic section* comprises Chapters 7-11. Chapter 7 presents an overview of development trends in recent years in the area of government debt in the EU member states. The other chapters of this section concern various aspects of the risk management of government debt. Chapter 8 reviews experience from the coordinated foreign-exchange management of the foreign government debt and Danmarks Nationalbank's foreign-exchange reserve. Chapter 9 presents the model which is applied to scenario analyses of duration, build-up of outstanding volumes of government securities and redemption profile. Chapter 10 reports on the status of the work on the risk measure Cost-at-Risk which has been developed by Danmarks Nationalbank to support the trade-off of costs against interest-rate risk on the government debt.

Finally, Chapter 11 presents an overall status of the management of credit risks on the central government's swap portfolio.

The *Appendix* presents announcements relating to central-government borrowing and debt. In addition, there is a comprehensive Appendix of Tables with detailed central-government borrowing and debt statistics.

Key Elements of the Government Debt Policy in 2000 and the Strategy for the Next Years

FALLING GOVERNMENT DEBT AND INTEREST COSTS

The surplus on the central government's budget reduces the central government's debt and interest costs.

In 2000, the central-government debt fell for the third consecutive year. The decrease amounted to DKK 27 billion. At the close of 2000 the central-government debt was DKK 535 billion. The central-government debt comprises the domestic and foreign debt after deduction of the assets of the Social Pension Fund and the balance of the central government's account with Danmarks Nationalbank.

In 2000 the interest expenditure on the government debt amounted to DKK 37 billion, which is around DKK 1 billion less than in 1999. Interest expenditure has been declining since 1996.

GOVERNMENT BORROWS EVEN IF THE BUDGET SHOWS A SURPLUS

Even if the central-government budget shows a surplus, the central government still has a borrowing requirement. It arises because redemption of the existing debt has to be refinanced on maturity.

In 2000 domestic government securities for an amount of DKK 66 billion were issued. In accordance with previous years, sale of government securities was planned in order to achieve an attractive range of current issues open for sale with emphasis on liquid fixed-rate securities in the 2-, 5- and especially 10-year maturity segments.

In 2000 the central government raised new medium- and long-term foreign loans for DKK 14 billion. The loans were raised mainly in dollars and were swapped to euro.

CONTINUED FOCUS ON LIQUIDITY IN CURRENT ISSUES OPEN FOR SALE

Liquidity is a parameter of competition on the international bond markets, and normally investors are willing to pay a premium for liquid bonds. Liquidity thus contributes to ensuring a low cost of borrowing to the central government.

The budget surpluses of recent years have reduced the central government's requirement for sale of krone-denominated bonds. The government debt policy has been subject to continuous adjustment in order to maintain an attractive range of current issues open for sale, with focus on large liquid series. Therefore the objective continues to be an outstanding amount of at least DKK 60 billion in current 10-year issues open for sale.

As an element of the government debt policy buy-backs can be undertaken in a wide range of government securities which are not current issues open for sale. The purpose is to support the objective of liquid current issues, since buy-backs are refinanced with current issues open for sale. The use of buy-backs increased significantly in 2000, totalling almost DKK 18 billion in securities maturing after 2000. Buy-backs are also used by most other EU member states as a key instrument to ensure liquid issues. In future, buy-backs will continue to be a key element of Danish government debt policy.

The liquidity of the long-term segment of current issues open for sale is also supported via the use of interest-rate swaps in Danish kroner. Interest-rate swaps were introduced in domestic government debt policy in 1998, and experience gained during the first years has been positive. In 2000 the central government entered into krone-denominated interest-rate swaps for DKK 13 billion. The use of interest-rate swaps makes it possible to separate the issuing policy from the management of the interest-rate risk on the government debt, thereby contributing greater flexibility to the overall government debt policy.

In order to support the liquidity of current issues open for sale, a securities lending facility for government securities among current issues open for sale was established in 1998. In 2000 the largest proportion of lending was in 6 per cent government bonds 2011. The lending facility has thus contributed to supporting the liquidity of this series during the introductory phase when the outstanding volume was relatively small.

In 2001 opportunities to strengthen the liquidity of current issues open for sale will be further improved. In future, the central government will be able to undertake a proportion of its foreign borrowing by issuing domestic krone-denominated bonds combined with currency swaps from kroner to euro. Since the central government does not wish to influence the swap market the amounts involved will be limited. Currency and interest-rate swaps in other currencies than kroner have been used for a number of years in government-debt management. Foreign borrowing by issuing domestic loans combined with currency swaps is known from a number of countries, including Sweden and the UK.

ADJUSTMENTS TO THE TREASURY BILL PROGRAMME

The central government's short-term krone-denominated borrowing is undertaken via the Treasury bill programme. In order to stimulate interest in the programme some adjustments are planned to be made in May 2001. The programme will be expanded to include a 12-month Treasury bill, which is already common in equivalent programmes of other EU member states. Another objective is to include the Treasury bills in the securities lending facility. A more detailed announcement will be issued at a later date.

MARKET CONVENTIONS NOW IN LINE WITH INTERNATIONAL STANDARDS

Danish government securities are the object of considerable attention from international investors. Non-residents hold around one third of the circulating volume of domestic government securities.

In order to ensure that Danish bonds continue to be attractive to international investors, as of 8 February 2001 the Danish rules for calculation of accrued interest on purchase and sale of bonds were brought in line with the relevant international standards. Adjustments have been made in two respects: the day-count convention has been changed from 30/360 to actual/actual, and the ex-coupon period is abolished.

RISK MANAGEMENT

Via its borrowing and debt the central government is exposed to various risks, primarily interest-rate, exchange-rate and credit risks. The management of these risks is part of the ongoing debt management.

Duration and redemption profile are elements of the management of the interest-rate risk on the central-government debt. At the close of 2000 the duration of the government debt was 3.5 years, compared to 3.8 years at the beginning of the year. The duration band for the government debt remains set at 3.5 +/- 0.5 years in 2001. Furthermore, the aim is to achieve a smooth redemption profile, so as to reduce the refinancing risk to the central government.

As part of the overall management of the government debt, scenario analyses are prepared to show the effect of various borrowing strategies on the duration and redemption profile of the government debt in the longer term. In 2000 the available tools were developed further, and analyses of this type covering a longer span of time are a fixed element of the basis for government debt policy decision-making.

In addition to duration, the risk measure Cost-at-Risk (CaR) is an element of the management of the interest-rate risk on the government

debt. CaR indicates the maximum cost of the debt with a probability of 95 per cent. CaR was established by Danmarks Nationalbank in 1997 and has since been further developed.

It is sought to limit the exchange-rate risk on the foreign government debt by exclusively raising euro-denominated loans, or loans which are swapped to euro. As a consequence of Denmark's fixed-exchange-rate policy vis-à-vis the euro, debt denominated in euro exposes the central government to only a limited exchange-rate risk. Since 1992 the exchange-rate risk on the foreign government debt and Danmarks Nationalbank's foreign-exchange reserve has been subject to formalised coordinated management. Since the government debt now solely entails exchange-rate-risk exposure to the euro, and the foreign-exchange reserve is predominantly denominated in euro, the formalised coordinated management is no longer required. As from 2001 the formalised set-up has therefore been abolished. It is still the intention not to raise loans in one currency with subsequent placement of the proceeds in another currency, and that the central government should not be exposed to a significant indirect exchange-rate risk via the Nationalbank. This is ensured by the Nationalbank as a general rule continuing to place additions to and reductions of the foreign-exchange reserve in euro, and by the Nationalbank's exchange-rate-risk exposure being predominantly to the euro.

When the central government enters into swap transactions, there is a risk of default by the counterparty. The central government thereby risks a loss. In 1999 the central government began to enter into agreements on the pledging of collateral by counterparties, in order to reduce this credit risk. The central government only enters into swap transactions with counterparties which have either signed, or are soon expected to sign, a collateral agreement with the central government. At the close of 2000 the central government had signed agreements on the unilateral pledging of collateral with 14 counterparties. Thereby almost 60 per cent of the principal of the central government's swap portfolio is covered by collateral agreements. At least 5 counterparties are expected to sign a collateral agreement during 2001, thereby increasing the ratio covered to approximately 80 per cent.

GOVERNMENT BORROWING REQUIREMENT IN 2001

In the Budget Review of December 2000 the central government's gross domestic borrowing requirement for 2001 is estimated at DKK 50 billion. The borrowing requirement will be covered by issuing domestic government securities with emphasis on the 2-, 5- and 10-year segments. 7 per cent government bonds 2024 is no longer open for sale.

The central government's foreign borrowing requirement is DKK 18 billion in 2001. For a number of years foreign borrowing has been based on raising small loans in the international financial markets. In 2001 there will be greater emphasis on raising larger loans, preferably directly in euro. Moreover, as stated the current strategy will be supplemented with the opportunity for a proportion of foreign borrowing to be undertaken as the issue of domestic bonds combined with currency swaps from kroner to euro.

Further Information on Government Borrowing and Debt

Danmarks Nationalbank regularly publishes information on Danish government borrowing and debt.

On a daily basis details of sale (screen no. 51) and buy-back (screen no. 58) of domestic government securities on the preceding trading day are released via DN News[1]. These pages are reproduced by e.g. Reuters (pages DKNA-51 and DKNA-58).

On the first banking day of each month an announcement is sent to Copenhagen Stock Exchange on the sale and buy-back of domestic government securities during the preceding month.

On the second banking day of each month Danmarks Nationalbank issues a press release with details of e.g. the central government's actual financing requirement, etc. in the preceding month. Furthermore, via DN News information on the central government's domestic borrowing is released together with the most recent estimate of the gross domestic borrowing requirement (screen no. 54). The last-mentioned information is reproduced by e.g. Reuters (page DKNA-54).

After the monthly Treasury bill auctions announcements are sent to Copenhagen Stock Exchange and via DN News (screen no. 53) on the progress of the auction, including cut-off interest rates and sales of the individual Treasury bills. This information is reproduced by e.g. Reuters (page DKNA-53).

The estimated central-government financing requirement is presented in the budget reviews of the Ministry of Finance which are issued in May, August and December. After each budget review Danmarks Nationalbank publishes a monthly breakdown of the estimated net and gross financing requirements to interested parties. Moreover, a day-to-day distribution of the liquidity impact of central-government payments is drawn up and sent to interested parties on the penultimate banking day of each month.

Every six months – normally in June and December – an announcement is sent to Copenhagen Stock Exchange with details of central-government borrowing, including current central-government issues open for sale. The announcement also presents more general information on the plans for the central government's debt strategy.

[1] Danmarks Nationalbank's system for transmission of information to connected news agencies.

Prior to the opening of new government securities series an announcement is sent to Copenhagen Stock Exchange with details of e.g. the coupon, due date, year of maturity and opening day of the new loan. This information may be included in the biannual announcement on central-government borrowing. On the actual opening day an announcement is sent to Copenhagen Stock Exchange on the initial opening volume offered and the maximum sale on the opening day. This announcement is also released via DN News (screen no. 55) and reproduced by e.g. Reuters (DKNA-55).

Once a year, normally in February, Danmarks Nationalbank issues Danish Government Borrowing and Debt. This publication describes the management of the government debt during the preceding year and reports on other issues of relevance to debt management.

Most of the above information can also be viewed on Danmarks Nationalbank's Web site (www.nationalbanken.dk), which also presents further information on aspects of government debt. It is possible to join Danmarks Nationalbank's subscription service (see under www.nationalbanken.dk/nb/nb.nsf/alldocs/Fcontact_us_info) and be notified directly of new information and updates concerning government borrowing and debt.

Please direct any enquiries concerning Danish government borrowing and debt to Danmarks Nationalbank, Financial Markets, Government Debt Management, by e-mail: kma@nationalbanken.dk.

Main Principles

CHAPTER 1

Main Principles of Government Borrowing

SUMMARY 1.1

The overall objective of the government debt policy is to achieve the lowest possible long-term borrowing costs, while taking various factors into account, including the risks associated with the debt.

The overall strategy for government borrowing is determined at quarterly meetings of the Ministry of Finance, the Ministry of Economic Affairs and Danmarks Nationalbank. The responsibility for government debt policy is held by the Minister of Finance, while Danmarks Nationalbank acts as agent to the Ministry of Finance in the area of government-debt management. Within Danmarks Nationalbank the work is undertaken by Government Debt Management in cooperation with other departments of the bank. Danmarks Nationalbank thus undertakes the functions related to government-debt management which in many other countries are often placed with independent agencies, or are part of the ministry of finance.

The central government raises loans denominated in kroner and in foreign currencies. The central government undertakes domestic borrowing in order to refinance redemptions on the domestic government debt and to cover any central-government budget deficit. The purpose of foreign borrowing is to maintain an adequate foreign-exchange reserve.

Domestic borrowing takes place primarily as tap issues of government bonds and Treasury notes on the Copenhagen Stock Exchange. Treasury bills are issued at monthly auctions. Large liquid government securities series are built up in the 2-, 5- and 10-year maturity segments. The liquidity premiums resulting from this strategy contribute to low borrowing costs to the central government. Interest-rate swaps in kroner and buy-backs are supplementary instruments. In order to support the liquidity of current issues open for sale a securities lending facility has been established.

Foreign borrowing is denominated directly in euro or swapped to euro. Foreign borrowing has so far predominantly consisted of raising small loans on advantageous terms in the international financial markets. In 2001 there will be greater emphasis on raising larger loans, preferably directly in euro. Furthermore, the current strategy will be sup-

plemented with the opportunity to undertake domestic borrowing combined with currency swaps from kroner to euro.

MANAGEMENT OF THE GOVERNMENT DEBT 1.2

The overall objective of the government debt policy is to achieve the lowest possible long-term borrowing costs. This objective must be pursued while taking various factors into account, including the risks associated with the debt and the objective of a well-functioning domestic financial market, cf. Box 1.1.

At the close of 2000 the nominal value of the total domestic and foreign debt was DKK 709 billion. After deduction of the assets of the Social Pension Fund and the balance of the central government's account with Danmarks Nationalbank the central-government debt at end-2000 was DKK 535 billion, corresponding to just over 40 per cent of GDP, cf. Chart 1.2.1. The interest costs on the government debt were DKK 37 billion in 2000, which is just under 3 per cent of GDP.

The statutory basis for government borrowing is set out in the Act on the authority to raise central-government loans. The Act empowers the Minister of Finance to raise loans on behalf of the central government up to a maximum of DKK 950 billion, which is the maximum limit for the total domestic and foreign government debt.

Since 1991 Danmarks Nationalbank has undertaken all functions related to the management of the government debt. The division of responsibility

OBJECTIVE OF THE GOVERNMENT DEBT POLICY Box 1.1

The objective of the government debt policy is set out in the remarks to the bill for the Act on the authority to raise loans on behalf of the central government and in the agreement on division of work in the area of government debt between the Ministry of Finance and Danmarks Nationalbank. The Act on the authority to raise loans was adopted by the Folketing (Parliament) in December 1993 (Act No. 1079 of 22 December 1993).

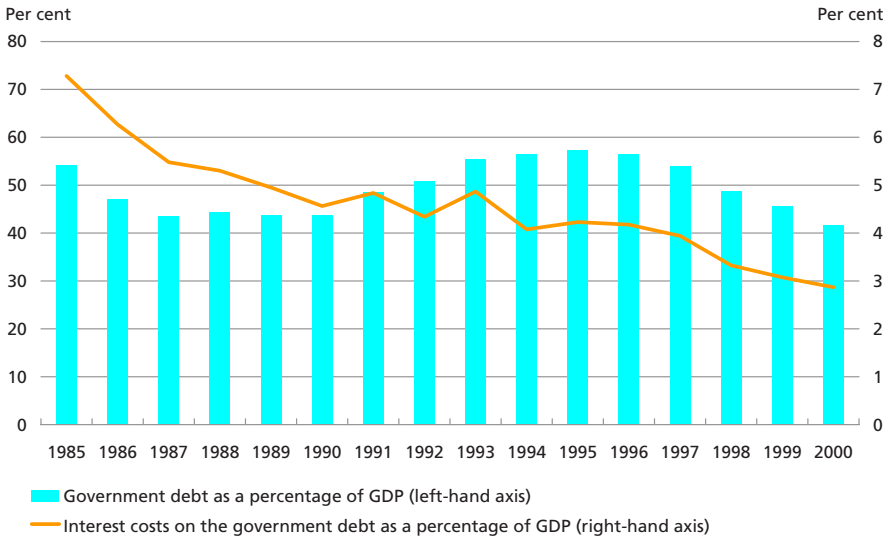
The overall objective of the government debt policy is to achieve the lowest possible long-term borrowing costs. The objective is supplemented by other considerations:

- To keep the risk at an acceptable level
- Overall to build up and support a well-functioning, effective financial market in Denmark
- To ease the central government's access to the financial markets in the longer term.

The risk elements pertaining to the debt are:

- Interest-rate risk
- Exchange-rate risk
- Credit risk
- Other risks, e.g. operational risk.

GOVERNMENT DEBT AND INTEREST COSTS, 1985-2000 Chart 1.2.1



Note: The government debt is compiled as the central government's domestic and foreign debt after deduction of the assets of the Social Pension Fund and the balance of the central government's account with Danmarks Nationalbank.

is set out in an agreement between the Ministry of Finance and Danmarks Nationalbank.

The strategy for government borrowing is determined at quarterly meetings of the Ministry of Finance, the Ministry of Economic Affairs and Danmarks Nationalbank. At the meeting in December the overall strategy for the following year is determined. The strategy is drawn up on the basis of proposals from the Nationalbank. The latter handles the management of the debt portfolio in accordance with the adopted strategy, as authorised by the Ministry of Finance.

The Nationalbank's management of the government debt is undertaken by Financial Markets, Government Debt Management, in cooperation with other departments of the bank, primarily Market Operations, Accounting and Audit.

Danmarks Nationalbank thus undertakes the functions related to government-debt management which in many other countries are often placed with independent agencies or are part of the administrative responsibilities of the ministry of finance.

THE NORM FOR DOMESTIC AND FOREIGN BORROWING 1.3

The distribution and the extent of the central government's domestic and foreign borrowing are managed via the central-government borrowing norm, which is set out in an agreement between the govern-

ment and Danmarks Nationalbank. There is a norm for both domestic and foreign borrowing, and together they ensure the separation of fiscal policy and monetary policy.

In overall terms, the domestic norm states that the domestic borrowing in kroner for the year as a whole shall match the central government's gross domestic financing requirement, i.e. the central government's current deficit and redemptions on the domestic debt. The norm for foreign borrowing states that new foreign loans are normally raised to refinance the redemptions on the foreign debt. The norm and the gross domestic financing requirement are described in more detail in respectively Box 1.2 and 1.3.

In accordance with the EU Treaty's prohibition of monetary financing the central government's account with Danmarks Nationalbank may not show a deficit. The central government's borrowing is therefore planned to ensure an appropriate balance on the central government's account which can absorb the day-to-day fluctuations.

Financing in individual calendar years may exceed or fall short of the norm. This financing surplus or deficit will be reflected in offsetting changes in the central government's account.

THE CENTRAL-GOVERNMENT BORROWING NORM — Box 1.2

In the planning of central-government borrowing the situation in the financial markets and the balance of the central government's account with Danmarks Nationalbank are taken into consideration. As a consequence of Article 101 of the EU Treaty which prohibits monetary financing the balance of the central government's account with Danmarks Nationalbank must be positive at all times.

The distribution and extent of central-government borrowing are managed via the central-government borrowing norm. The norm is set out in an agreement between the government and Danmarks Nationalbank. The agreement consists of two parts: a norm for domestic borrowing and a norm for foreign borrowing. The norm is a key element of the separation of fiscal policy and monetary policy.

The norm for domestic borrowing states that the gross domestic financing requirement for the year as a whole is covered by issuance of domestic government securities.

The norm for foreign borrowing states that the central government's redemptions on the government debt in foreign currency (the foreign government debt) are normally refinanced by borrowing with final exposure in foreign currency.

The purpose of the central government's foreign borrowing is to maintain an adequate foreign-exchange reserve. If the foreign-exchange reserve decreases by more than is desirable, the central government will raise loans abroad. The foreign currency proceeds are purchased by Danmarks Nationalbank and the equivalent amount in Danish kroner is credited to the central government's account with the Nationalbank. If the foreign-exchange reserve increases by more than is required, the norm for foreign borrowing can be reduced, provided that the balance of the central government's account leaves scope for such a reduction.

THE GROSS DOMESTIC FINANCING REQUIREMENT Box 1.3

The gross domestic financing requirement is defined as:

– Receipts to the central government
+ Expenditures by the central government
= *Net financing requirement*
+ Redemptions on the domestic debt
+ Net bond purchases by the Social Pension Fund
= *Gross domestic financing requirement*

Expenditures by the central government include the value in kroner of the central government's current payments on interest and transfers.

The *gross domestic financing requirement* is covered by sale of government bonds, Treasury notes, net sales of Treasury bills and any reduction of the central government's account with Danmarks Nationalbank. The central government's gross *domestic borrowing requirement* is thus the proportion of the gross domestic financing requirement which is not financed via a reduction of the central government's account with the Nationalbank.

Sale of government securities is matched to the estimated gross borrowing requirement published in the budget reviews of the Ministry of Finance. The estimates may deviate from the actual gross borrowing requirement as a consequence of uncertainty concerning the payments to and disbursements by the central government. Sales and buy-backs are determined up to the turn of the year on the basis of the development in the central government's account with the Nationalbank.

STRATEGY FOR CENTRAL-GOVERNMENT BORROWING 1.4

The strategy for *the domestic borrowing* is centred on building up large liquid bond series in the 2-, 5- and especially 10-year maturity segments. By borrowing in liquid bond series the central government earns a liquidity premium and thereby reduces the costs of borrowing. The liquidity premium arises because investors are usually willing to pay a premium for liquid bonds which can be traded without affecting the price, and with a small bid/offer spread.

Internationally, the 2-, 5- and 10-year segments are the key maturity segments. This contributes to making government securities issues attractive to resident and non-resident investors. International interest in government securities is important to the financing of the government debt, since foreign investors' demand for Danish government securities helps to ensure low interest costs on the government debt.

At the short end of the maturity range, the central government issues Treasury bills at auction. Treasury bills are short-term zero-coupon securities. The maturity of Treasury bills at issue is up to 9 months. It is

planned to change this in 2001, so that Treasury bills with a maturity of up to 1 year will be issued.

Domestic interest-rate swaps are a key instrument used in the management of the government debt. Interest-rate swaps make it possible to separate the issuing policy from the management of the interest-rate risk on the government debt, and thereby lend greater flexibility to the overall government debt policy. Domestic interest-rate swaps are transacted as portfolio swaps, i.e. without direct relation to the issue of bonds.

Buy-backs are also used as an element of the management of the government debt. To support the liquidity of current issues open for sale a securities lending facility has also been established.

All *foreign borrowing* takes place directly in euro, or via loans which are swapped to euro. For many years foreign borrowing has been based on raising small loans in the international financial markets. In 2001 there is greater emphasis on raising larger loans, preferably directly in euro. Moreover, the current strategy will be supplemented with the opportunity to issue domestic bonds combined with currency swaps to euro. This will contribute to strengthening the liquidity of domestic current issues open for sale.

The *credit rating* of the central government influences the terms of borrowing available to the central government, and thereby the interest costs on the debt. Moody's and Standard & Poor's have assigned the highest rating of respectively Aaa and AAA to both the domestic and the foreign debt of the Danish central government.

MARKET CONDITIONS AND PRACTICAL ASPECTS OF DOMESTIC BORROWING 1.5

Government bonds and Treasury notes are issued on tap via the electronic trading system, SAXESS, of the Copenhagen Stock Exchange. SAXESS is a joint trading system for the Copenhagen Stock Exchange and the Stockholm Stock Exchange. Treasury bills are issued at monthly auctions held by Danmarks Nationalbank. All domestic government securities are listed on the Copenhagen Stock Exchange.

Licensed traders on the Copenhagen Stock Exchange may buy government bonds and Treasury notes directly from the Nationalbank via the Stock Exchange. Licensed Stock Exchange traders and the Nationalbank's monetary-policy counterparties can participate in the Treasury bill auctions. The sale of government bonds and Treasury notes, and of Treasury bills, are described in more detail in respectively Box 1.4 and 1.5.

ISSUE OF GOVERNMENT BONDS AND TREASURY NOTES Box 1.4

Sale of government bonds and Treasury notes is undertaken by Danmarks Nationalbank on behalf of the central government via the Copenhagen Stock Exchange. All licensed traders on the Copenhagen Stock Exchange may purchase government securities directly from the Nationalbank via the trading system of the Stock Exchange.

Government bonds and Treasury notes are issued on tap in the market. Tap sale signifies that government securities are issued when a borrowing requirement exists and the markets are favourable. The Nationalbank aims at conducting tap sale so as to avoid creating or amplifying market trends. Normally, the Nationalbank does not underbid itself within the same day or within a period of a few days. It is also sought to ensure transparency in the tap sale. The sale of government securities on the preceding day is published on a day-to-day basis.

The procedure for the opening of new series of government bonds and Treasury notes is that 1-2 weeks before the issue opens information on the new loan is published via the Copenhagen Stock Exchange with details of coupon, maturity and opening day. Before the opening day an announcement is published on the maximum sale on the opening day. The opening price is fixed on the basis of the current market conditions and experience from previous openings of government-securities issues. Fixing a maximum amount for sale on the opening day ensures that if demand is high, sale can be interrupted without it being necessary to raise the price to a level which could impede sale on the following days. The announced maximum sale amount also gives market participants greater certainty of the course of sale on the opening day. The stated maximum is not a required target for sale on the opening day, but indicates the upper limit for sale.

There are two market-maker arrangements for government securities under the auspices of respectively the Copenhagen Stock Exchange and the Danish Securities Dealers Association. Participants in these arrangements are obliged to quote two-way prices for a certain amount of the appropriate bonds at any time. The market-maker arrangements help to support liquidity in the government securities. Under the Stock Exchange arrangement prices are set only in the 10-year benchmark, while

ISSUE OF TREASURY BILLS Box 1.5

Treasury bills are issued at monthly auctions held by Danmarks Nationalbank. The short maturity of the Treasury bills gives a short build-up period, so that auction is found to be the most appropriate method of sale.

All licensed traders on the Copenhagen Stock Exchange and Danmarks Nationalbank's monetary-policy counterparties can bid at the auctions. Bids are made for interest rates. All bids at or below the fixed cut-off interest rate are met at the cut-off interest rate (uniform pricing). Bids at the cut-off interest rate may be subject to proportional allocation. A period of half an hour elapses from the deadline for submission of bids to the announcement of the result of the auction.

the arrangement of the Danish Securities Dealers Association comprises other liquid government securities. More information on the Copenhagen Stock Exchange is available at the Web site www.xcse.dk.

Government bonds, Treasury notes and Treasury bills are registered electronically in the Danish Securities Centre (VP). Danish government securities may also be registered in Euroclear and Clearstream. To facilitate easy transfer of securities between VP and Euroclear without loss of trading days there is a direct link between Euroclear and VP. Government securities trades are normally settled in VP, but may also be settled in Euroclear and Clearstream. More information is available at VP's Web site www.vp.dk.

RISK MANAGEMENT OF THE GOVERNMENT DEBT 1.6

The borrowing and debt of the central government expose it to a number of risks, primarily interest-rate, exchange-rate and credit risks. The risk that the development in interest rates or exchange rates will lead to higher costs of borrowing is called respectively interest- and exchange-rate risk. In addition to the interest- and exchange-rate risk, the central government undertakes a credit risk when it enters into swap transactions. Finally, the central government is exposed to operational risks, i.e. risks of error in the administration of the debt. A more detailed account of the risk management is given in Chapter 6.

Interest-rate risk

Each year parts of the central-government debt are refinanced. The future development in interest rates therefore influences the interest costs of the debt, since the debt is refinanced at future interest rates. A short-term debt will normally entail higher interest-rate risk than a debt with a longer term to maturity. This is because short-term interest rates normally show greater fluctuation than long-term interest rates.

The central-government budget is affected by fluctuations in interest costs on the central-government debt. In 2000 the interest costs accounted for around 10 per cent of the total central-government expenditure.

The interest-rate risk can be divided into two elements. The first is the risk of a general upward shift in interest rates, and the second is the risk that the refinancing of a large redemption on the debt will coincide with a temporary high level of interest rates, or take place at a time when the terms of central-government borrowing are particularly unfavourable. The last-mentioned is also called the refinancing risk. Three different measures are used to manage the interest-rate risk: duration, the shape of the redemption profile and Cost-at-Risk (CaR).

Duration is the key measure for managing of the interest-rate risk on the government debt. Duration expresses the average fixed-interest period of the assets or liabilities. In other words, duration is a measure of how quickly changes in interest rates will affect the actual borrowing costs of the debt. Longer duration entails a lower sensitivity to changes in interest rates, but on the other hand higher average interest costs, since the term structure of interest rates is normally rising. On determining the duration target the level of average interest costs is therefore weighed against the sensitivity of costs to interest-rate increases.

The duration target is determined as a duration band which sets the limits for duration. The duration target is determined for the total government debt taken as one. A more detailed description of the management of the duration of the government debt is presented in Chapter 6.

The *redemption profile* is used together with duration in the management of the government debt. By ensuring a smooth redemption profile without excessive fluctuations in the annual redemptions of the debt, the risk of having to refinance a large proportion of the debt at a time when market conditions are unfavourable is reduced. The redemption profile of the government debt is described in Chapter 6.

Cost-at-Risk (CaR) is used as a supplement to duration and redemption profile in the management of government debt. In contrast to duration and redemption profile, CaR is a risk measure which quantifies the risk of the central government's exposure to major increases in interest costs.

CaR can therefore contribute to a more consistent trade-off of interest costs against interest-rate risk on determining government debt policy. Currently, CaR is applied solely to the domestic debt. In 2001 work will continue on expanding the model to include the other elements of the government debt. CaR is presented in Chapters 6 and 10.

Exchange-rate risk

Exchange-rate risk is the risk that the value of the debt will increase as a consequence of the development in exchange rates. The exchange-rate risk on the government debt is reduced by the central government solely raising debt denominated in euro, or debt which is swapped to euro. The purpose of the central government's foreign borrowing is to ensure that the foreign-exchange reserve of Danmarks Nationalbank has an adequate level. The foreign-exchange reserve is predominantly placed in euro. The management of the exchange-rate risk is presented in Chapters 6 and 8.

Credit risk

A swap is an agreement between two parties to exchange payments during a specific period. When a swap is transacted, it normally has a market value of zero. After it is transacted, fluctuations in interest and exchange rates can cause the swap's market value to deviate from zero. In a situation where a counterparty defaults on its obligations, the central government will therefore sustain a loss equivalent to the market value of the swap. This risk of loss is called the credit risk. The total credit exposure on swaps depends on the actual market value (the actual credit exposure) and the future value of the swap (the potential credit exposure).

In order to limit the credit risk, the central government only transacts swaps with counterparties holding a rating of AA- or higher. For interest-rate swaps in Danish kroner the minimum requirement is A-. Moreover, the central government only enters into swap transactions with counterparties which have either signed, or are soon expected to sign, an agreement on unilateral pledging of collateral. According to the agreements a counterparty must pledge securities as collateral to the central government if the actual exposure on the counterparty exceeds a certain limit.

There have been no examples of the central government sustaining losses on swaps due to counterparty default.

The status of the conclusion of collateral agreements is described in Chapter 6, while the credit-risk management of swaps is presented in Chapter 11.

Other risks

Besides the risks described above, the central government also undertakes other risks on the government debt. These include the risk of error in the management of the debt (operational errors), or the risk that the legal basis for e.g. swap contracts does not hold. Furthermore, the central government may wish to avoid participating in certain types of loan arrangements on ethical or political grounds.

The risk of operational errors is minimised by separating the various functions of government-debt management and by using simple, well-known debt-management instruments. The legal risk is minimised by using standardised contracts. This principle is e.g. applied to swap contracts.

Report Section

CHAPTER 2

Domestic Borrowing

SUMMARY 2.1

The central government's budget surpluses in recent years have reduced the requirement for sale of government securities. This has implied ongoing developments of the government debt policy and the government debt policy instruments in order to ensure an attractive range of current issues open for sale. It is the aim that the individual government securities series continue to be sufficiently large to ensure a liquidity premium that reduces the central government's borrowing costs.

In 2001, as was the case in 2000, the sale of Treasury notes and government bonds will be concentrated in the 2-, 5- and 10-year maturity segments. In 2001 buy-backs and domestic interest-rate swaps will continue to be used to support the liquidity in the current issues open for sale.

After discussions with market participants certain adjustments to the Treasury bill programme have been prepared. In 2001 the plan is to enhance the programme with a 12-month Treasury bill. To support liquidity, another objective is to include the Treasury bills in the securities lending facility.

To further support the liquidity of domestic government securities, as from 2001 the central government may issue domestic government securities combined with currency swaps from kroner to euro, instead of direct borrowing in foreign currency.

SALE OF GOVERNMENT SECURITIES AND FINANCING REQUIREMENT 2.2

As a general rule, the sale of government securities covers the gross domestic financing requirement. In 2000 the gross domestic financing requirement was DKK 62.3 billion, while sale of government securities totalled DKK 65.7 billion at market value, cf. Table 2.2.1. The surplus sale was set off by an increase in the balance of the central government's account.

The surplus sale in 2000 was partly due to the fact that at the end of 2000 considerable adjustments were made to the estimated budget surplus (net cash balance) as a consequence of higher tax revenue than expected. In August it was expected that the net cash balance for 2000

THE CENTRAL GOVERNMENT'S CIL, NET CASH BALANCE AND GROSS DEFICIT, 1997-2000 — Table 2.2.1

DKK billion	1997	1998	1999	2000
Current, investment and lending budget	7.6	31.4	9.1	30.5
Net bond purchases[1]	7.4	-	-	-
Re-lending of government loans	-0.8	0.3	-1.6	-2.1
Distributed capital losses on issue and due interest	5.1	2.1	3.2	1.6
Other capital items	-6.6	0.1	0.2	0.3
Net cash balance	12.7	34.0	10.9	30.2
Redemptions on domestic government debt				
Government bonds	28.1	57.8	60.4	70.1
Treasury notes	53.3	21.2	15.5	21.5
Redemptions on foreign government debt[2]	31.4	37.4	20.0	15.7
Gross deficit (-)	-100.1	-82.5	-85.0	-77.1
Gross domestic financing requirement[3]	73.8	64.4	67.9	62.3
Sale of government securities, market value	73.0	68.0	68.8	65.7
Surplus sale, market value	-0.8	3.6	0.9	3.4

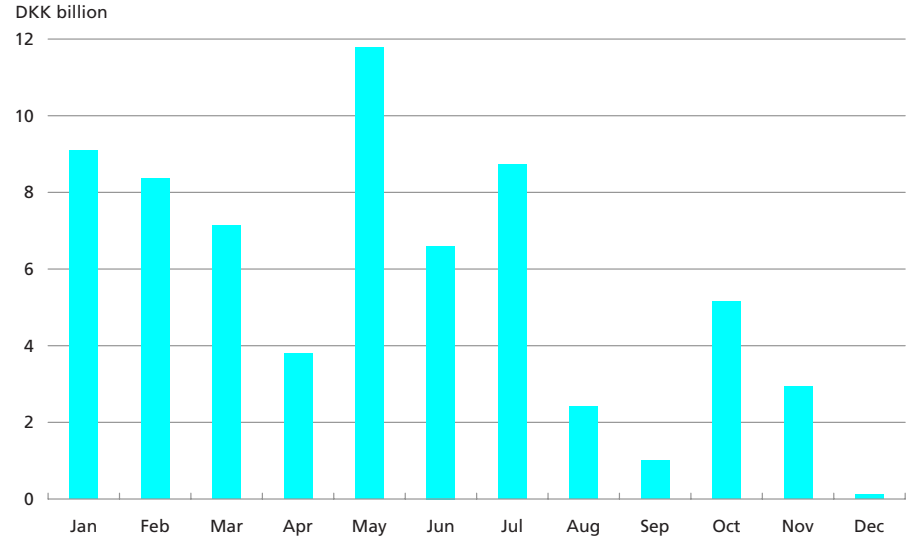
Source: 1997-99 are figures from the central-government accounts. Provisional figures for 2000 are based on the forecast in Budget Review, December 2000, the Nationalbank's press release and the provisional central-government accounts.

[1] As from 1998 net bond purchases by the Social Pension Fund are no longer included in the net cash balance. The Social Pension Fund's net bond purchases are included in the redemptions on the domestic government debt as from 1998.

[2] Medium- and long-term borrowing.

[3] Based on the Nationalbank's statistics at year-end. The figures may therefore deviate from the accounting figures.

SALE OF GOVERNMENT BONDS AND TREASURY NOTES IN 2000 — Chart 2.2.1



Note: Compiled at market value.

would be DKK 16.5 billion, while the estimate in December increased to DKK 30.2 billion. At that time the sale of government securities was to a great extent based on the earlier estimate.

Government bonds and Treasury notes are sold on tap in the market with due consideration of market conditions. Moreover, the timing of sales takes into account that the balance of the central government's account must be positive at all times.

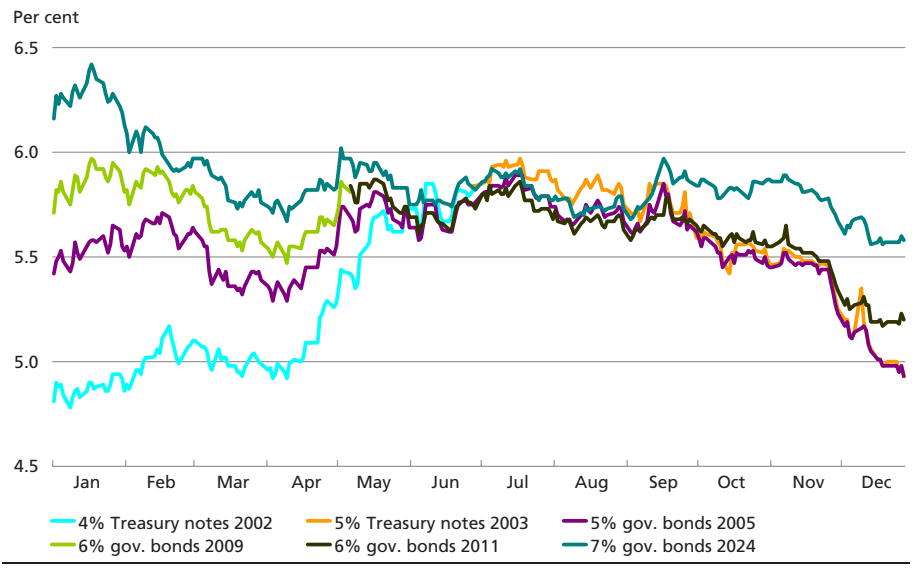
The sales of government bonds and Treasury notes were concentrated at their highest level in the first part of the year. Apart from a small amount in December the sale was completed by the end of November, cf. Chart 2.2.1.

DEVELOPMENT IN INTEREST RATES 2.3

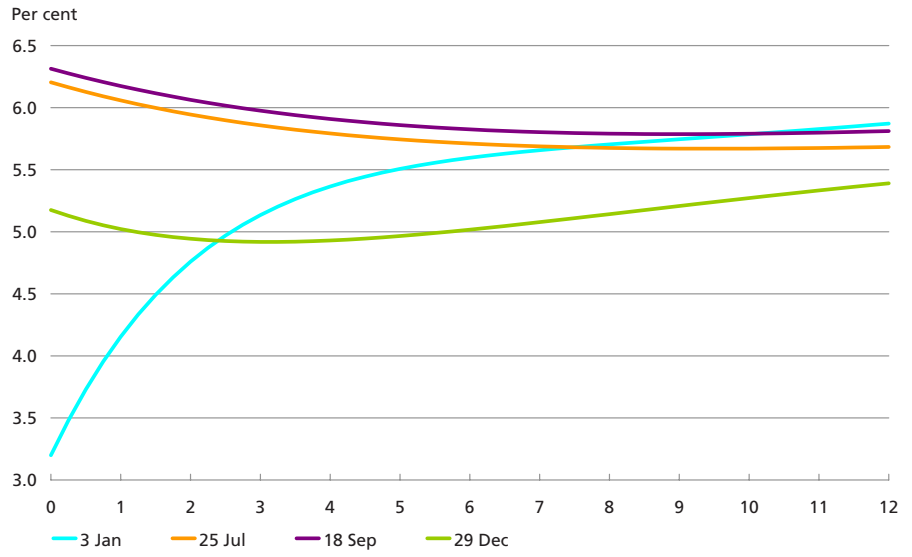
In 2000 Danish official interest rates were raised as a consequence of the raising of interest rates by the European Central Bank, and in conjunction with the referendum on 28 September 2000 on Denmark's participation in EMU. When the interest rates were raised, short-term government yields also increased. During the year the long-term yields decreased slightly, resulting in a flattening of the yield curve, cf. Charts 2.3.1 and 2.3.2.

Denmark's 10-year yield differential to Germany was around 30 basis points at the beginning and close of the year, cf. Chart 2.3.3. In mid-year the differential widened temporarily to around 55 basis points. However,

YIELDS ON SELECTED DANISH GOVERNMENT SECURITIES IN 2000 Chart 2.3.1



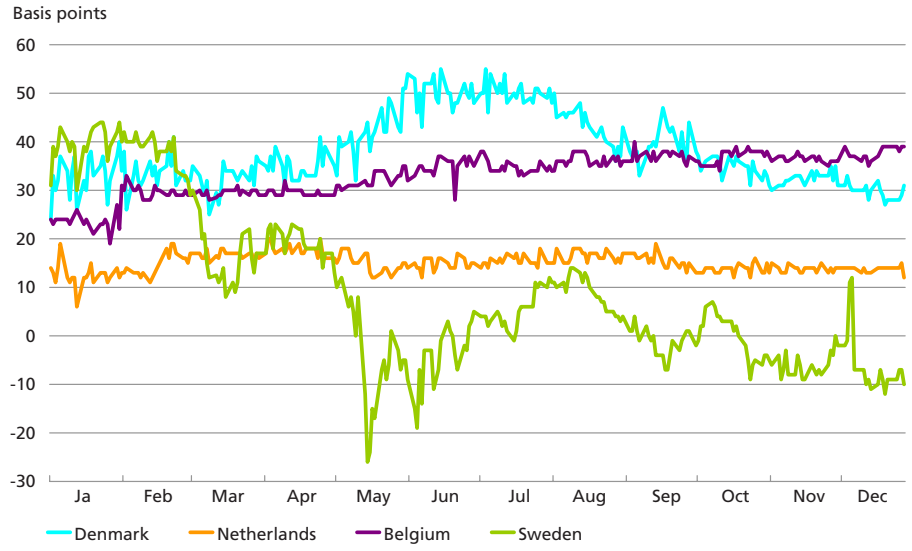
ESTIMATED TERM STRUCTURES OF ZERO-COUPON YIELDS, 2000 Chart 2.3.2



Note: The zero-coupon yield curve is an estimated curve of yields on non-coupon-based bonds showing the relation between yield and maturity at a given time.

the differential was not significantly affected by the outcome of the referendum. The reason may be that market participants had already taken the result into account prior to the referendum. In the time up to the referendum opinion polls predominantly reported a majority in favour of remaining outside the single currency. At the close of 2000

10-YEAR YIELD DIFFERENTIALS TO GERMANY, 2000 Chart 2.3.3



Denmark's 10-year yield differential to Germany was lower than the Belgian differential, but higher than that of the Netherlands. The Belgian central government has a larger debt ratio and a lower credit rating than Denmark.

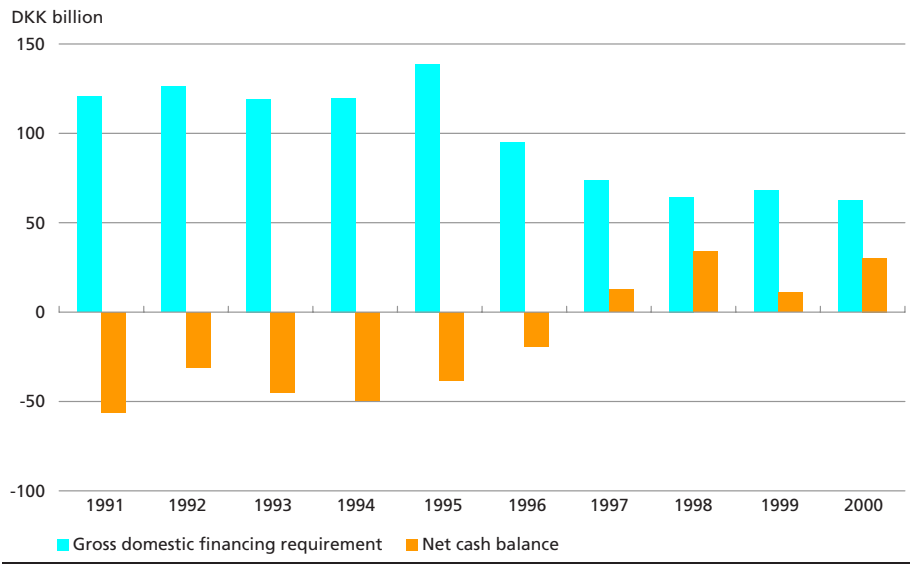
Sweden's 10-year yield differential to Germany narrowed during 2000 and was negative in some periods. This can be attributed to the Swedish government's buy-backs of government bonds in connection with the Telia privatisation. Moreover, the yield differential should be considered in the light of the fact that the Swedish krona floats against the euro.

GOVERNMENT DEBT POLICY AND BUDGET SURPLUS 2.4

The central government's budget surpluses in recent years have reduced the requirement for sale of government securities. The development in the requirement for sale of domestic government securities (the gross domestic financing requirement) and the budget surplus (the net cash balance) since 1991 are shown in Chart 2.4.1. This has implied ongoing developments of the government debt policy and the government debt policy instruments in order to ensure an attractive range of current issues open for sale. It is the aim that the individual government securities series continue to be sufficiently large to ensure a liquidity premium that reduces the central government's borrowing costs.

The issue of Treasury notes and government bonds is concentrated in the internationally important 2-, 5- and 10-year maturity segments. The

BUDGET SURPLUS AND BORROWING REQUIREMENT, 1991-2000 Chart 2.4.1



financing requirement is not large enough for sale in additional segments without jeopardising the objective to build up liquid series. Therefore, as from 2001 7 per cent government bonds 2024 in the 30-year segment is no longer among the current issue open for sale. The number of current issues of Treasury notes was reduced from two to one already in 1998. The concentration of issues on few relatively large series in the key maturity segments means that Danish government securities do not deviate significantly from the standard in the European financial markets, where the introduction of the euro has sharpened the focus on liquidity, cf. Chapter 7. This ensures that Danish government securities continue to be attractive to both domestic and international investors. The latter hold a considerable proportion of Danish government securities and are an important factor in the financing of Denmark's government debt, cf. Chapter 5.

The introduction of domestic interest-rate swaps in 1998 likewise supports the liquidity in domestic government securities. The transaction of swaps from fixed to floating interest rates makes it possible to build up liquidity in the 10-year segment, the most important maturity segment internationally, with due consideration of the duration target.

So far, buy-backs have been used mainly to smooth the redemption profile. In 1999 a wider range of government securities in which buy-backs can be made was introduced. This improved opportunities to use buy-backs to maintain issues in large series. This is in line with international developments, where recently a key motive for buy-backs in other EU member states has been to build up large liquid series more quickly than would otherwise have been possible, cf. Chapter 7.

In order to support the liquidity of domestic government securities, as from 2001 the central government may on a limited scale issue domestic government securities combined with currency swaps from kroner to euro, instead of direct borrowing in foreign currency, cf. Chapter 3.

In order to improve liquidity, in January 1998 a lending facility was established for newly opened government bonds and Treasury notes among the current issues for sale. In 1999 this facility was expanded to generally include government bonds and Treasury notes among current issues open for sale. The purpose is to support liquidity, particularly during a series' build-up phase when the outstanding amount is limited.

CURRENT ISSUES OPEN FOR SALE AND ISSUING STRATEGY 2.5

Government borrowing takes place via the issue of government bonds, Treasury notes and Treasury bills. Issues of government bonds and Treasury notes are concentrated in the 2-, 5- and 10-year maturity segments,

while Treasury bills, with a maturity of up to 9 months on issue, are the current short-term issues open for sale.

In addition to the issuing strategy and the size of the series, transparency and openness vis-à-vis the market participants are key elements of Denmark's government debt policy. This aspect of the policy is implemented via announcements on current issues open for sale, sales and buy-backs.

Government bonds and Treasury notes

Government bonds and Treasury notes are fixed-rate bullet loans, which is the type of loan predominantly used internationally by government borrowers. In 2000 issues took place in 5 different securities, cf. Table 2.5.1. Treasury notes and government bonds are issued on tap via the Copenhagen Stock Exchange. Sales were concentrated on a relatively small number of participants, and 5 members bought more than 80 per cent of the total issue.

In the 10-year segment, issues in 6 per cent government bonds 2009 took place at the beginning of the year. This paper was removed from

DOMESTIC GOVERNMENT BORROWING IN 2000 Table 2.5.1

DKK million	Issue			Nominal outstanding end-2000
	Nominal	Market value	Capital loss	
7% government bonds 2024	0	0	0	25,000
6% government bonds 2011	15,695	15,975	-280	15,695
6% government bonds 2009	9,955	10,113	-158	66,645
5% government bonds 2005	13,240	12,893	347	51,660
Government bonds, total	38,890	38,981	-91	
5% Treasury notes 2003	10,827	10,581	246	10,827
4% Treasury notes 2002	17,890	17,499	391	35,075
Treasury notes, total	28,717	28,081	636	
Bonds and Treasury notes, total	67,607	67,062	545	
Treasury bills 2001 III	8,100	7,779	321	8,100
Treasury bills 2001 II	18,251	17,600	651	18,251
Treasury bills 2001 I	10,495	10,179	316	10,495
Treasury bills 2000 IV	13,539	13,218	321	
Treasury bills 2000 III	13,401	13,172	229	
Treasury bills 2000 II	4,383	4,335	48	
Redemptions	67,673	67,673		
Treasury bills, net	496	-1,390	1,886	
Sales of government securities, total	68,103	65,672	2,431	

current issues open for sale on 4 May 2000 when it was replaced by 6 per cent government bonds 2011. The objective continues to be an outstanding amount of at least DKK 60 billion in the 10-year bond.

In the 5-year segment, issues in 5 per cent government bonds 2005 continued. This series was opened in January 1997.

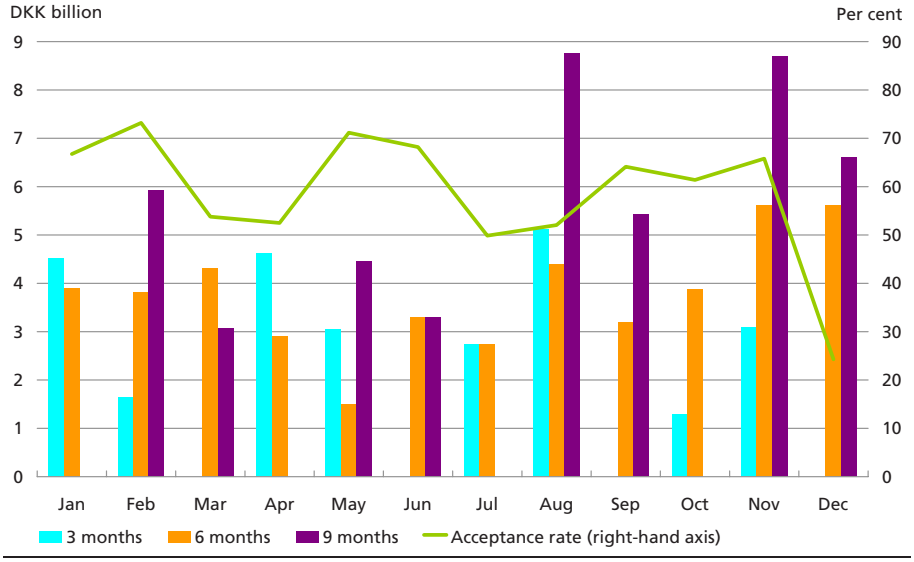
In the 2-year segment, issues in 5 per cent Treasury notes 2003 commenced on 29 June as a consequence of the raising of the minimum coupon rate from 4 to 5 per cent on 1 July. This paper thus replaced 4 per cent Treasury notes 2002 in the 2-year segment of current issues open for sale.

Treasury bills

Treasury bills are zero-coupon papers issued below par. The Treasury bill programme is the basis for short-term domestic borrowing. Treasury bills are sold at auctions in which there are a few large participants and a number of small participants. In 2000 there were around 20 auction participants in the course of the year, of which the five largest bought 85 per cent of the total issue of Treasury bills. The large participants tended to participate most frequently in the auctions.

As in previous years, in 2000 there were considerable variations in the amounts bid at the Treasury bill auctions, as well as in the proportion of accepted bids, cf. Chart 2.5.1.

BID VOLUMES AND ACCEPTANCE RATES AT TREASURY BILL AUCTIONS IN 2000 Chart 2.5.1



Note: 3 months includes securities with remaining maturities of 3 and 4 months; 6 months includes securities with remaining maturities of 5, 6 and 7 months; and 9 months includes securities with remaining maturities of 8 and 9 months. The acceptance rate for the individual months is calculated as a weighted average of the acceptance rates for the individual securities sold at the monthly auction.

With effect from 27 April 2000 the period of time between submission of bids and announcement of the auction results was reduced from 1 to ½ hour. The Treasury bill auction terms are described in the announcement of 30 March 2000 on the central government's domestic borrowing in 2000. This announcement is presented as an Appendix to this publication.

In order to stimulate the interest in the Treasury bill programme, some adjustments have been planned after discussions with market participants. So far the longest remaining maturity has been 9 months, but it is planned to enhance the programme to include a 12-month Treasury bill in 2001. Treasury bills with a maturity of 12 months are already common in similar programmes of other EU member states. To support liquidity, another objective is to include the Treasury bills in the securities lending facility.

BUY-BACKS 2.6

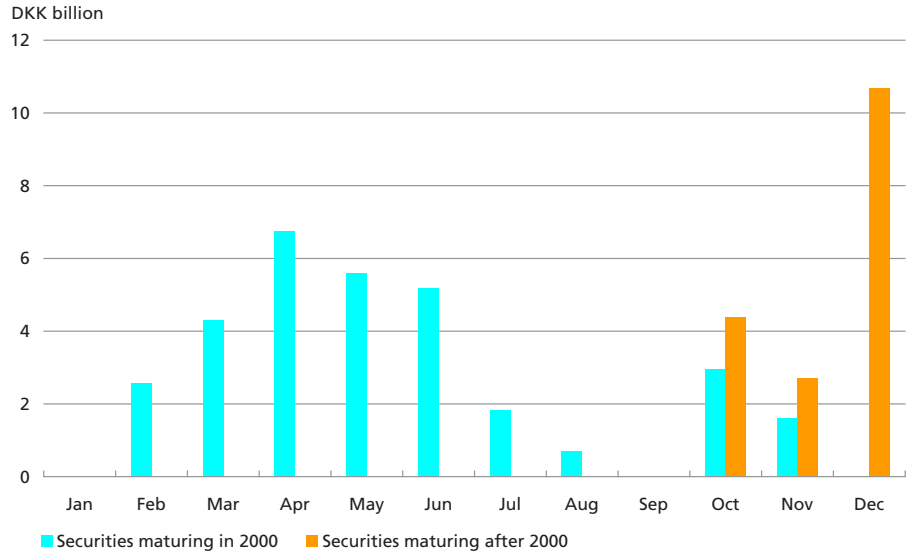
Buy-backs of government securities maturing in the same year brings forward the financing requirement within the year. In order to smooth the financing requirement within the year, in 2000 buy-back was undertaken prior to the redemption date in November of 9 per cent government bonds 2000 for a total nominal value of DKK 31.0 billion, cf. Table 2.6.1.

Buy-backs in securities maturing in a following year brings forward the financing requirement to the buy-back year. In 2000 these buy-backs have been used to smooth redemptions between years, so as to reduce the interest-rate and refinancing risk, and also to reduce sale of government securities that is surplus to the financing requirement. The buy-backs were concentrated in the last part of the year in conjunction with the revision of the estimated central-government budget surplus, cf.

BUY-BACKS OF DOMESTIC GOVERNMENT SECURITIES IN 2000 Table 2.6.1

	Buy-backs		Nominal outstanding end-2000
	Nominal	Market value	
9% government bonds 2000	30,950	31,505	
Buy-backs, redemption dates in 2000, total ...	30,950	31,505	
4% Treasury notes 2001 I	9,100	9,061	35,355
12% government bonds S 2001	2,000	2,025	678
8% government bonds 2001	3,150	3,222	39,635
8% government bonds 2003	3,250	3,454	65,750
Buy-backs, redemption dates after 2000, total	17,500	17,761	

BUY-BACKS OF GOVERNMENT BONDS AND TREASURY NOTES IN 2000 Chart 2.6.1



Note: Compiled at market value.

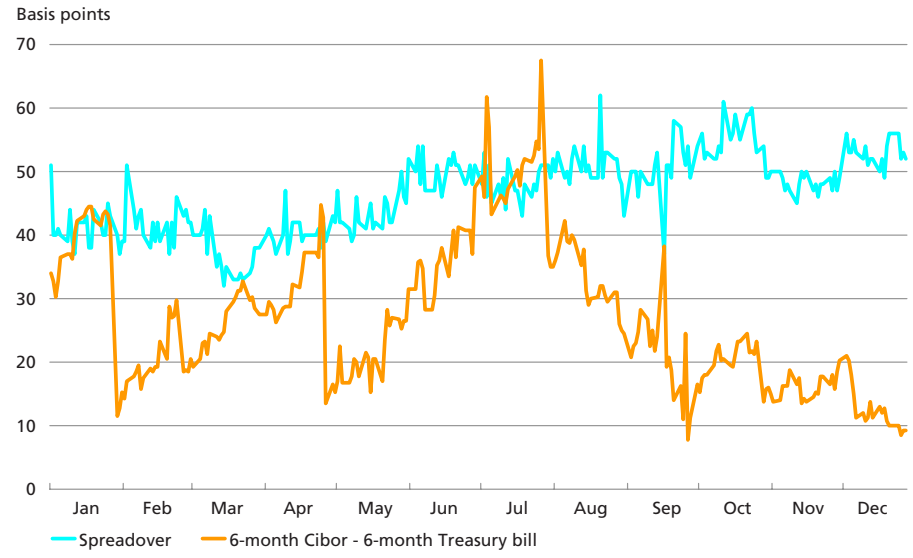
Chart 2.6.1. In 2000 buy-back in securities maturing after 2000 totalled a nominal value of DKK 17.5 billion, of which DKK 14.3 billion was buy-back in securities maturing in 2001, while the remaining buy-backs of DKK 3.3 billion were in 8 per cent government bonds 2003.

The central government only undertakes buy-backs when this is advantageous to the overall government debt policy. As a general rule, bonds which are bought back are cancelled immediately thereafter. In addition to direct central-government buy-backs, the Social Pension Fund purchased government securities for its own portfolio for a nominal value of DKK 18.5 billion.

DOMESTIC INTEREST-RATE SWAPS 2.7

Domestic interest-rate swaps are used primarily to increase the flexibility of the central government's borrowing. In the swaps transacted so far, the central government has swapped long-term fixed-rate debt to short-term floating-rate debt. In isolated terms, this has reduced the duration of the debt. With due consideration of the market's efficiency the maturity of interest-rate swaps in Danish kroner is fixed so as not to exceed 10 years. Only standardised interest-rate swaps, so-called "plain-vanilla" interest-rate swaps, are used. The central government does not wish to influence the market and transacts interest-rate swaps for only small amounts at a time.

DEVELOPMENT IN SPREADOVER, ETC., 2000 Chart 2.7.1



Note: Spreadover is the difference between the 10-year indicative swap rate and the 10-year bond yield.

Interest-rate swaps for DKK 13.0 billion were transacted during 2000. The total outstanding notional amount at the close of 2000 was DKK 21.0 billion, cf. Table 4b of the Appendix of Tables. In 2000, 49 interest-rate swaps were transacted, of which 10 with Danish counterparties. The individual interest-rate swaps have an outstanding notional amount of between DKK 200 and 500 million, cf. Table 4a of the Appendix of Tables.

When interest-rate swaps are transacted the central government assumes a credit risk vis-à-vis counterparties in the swaps, cf. Chapter 11. Together with the liquidity in the swap market the credit risk determines the difference between the swap rate and the government bond yield (spreadover), cf. Chart 2.7.1. In 2000 only swaps in which the central government pays a 6-month Cibor interest rate and receives a fixed 10-year swap rate were used. Issue of 10-year government bonds combined with interest-rate swaps has approximately the same duration as the issue of Treasury bills with 6 months' maturity. The difference between spreadover and the yield differential between 6-month Cibor and 6-month Treasury bills expresses the saving which can be obtained on a given day (and 6 months ahead) from using interest-rate swaps rather than issuing Treasury bills.

Experience from the use of domestic interest-rate swaps has been favourable, and again in 2001 interest-rate swaps will be an important instrument of government debt policy. However, the amounts will continue to be relatively moderate since as stated previously the central

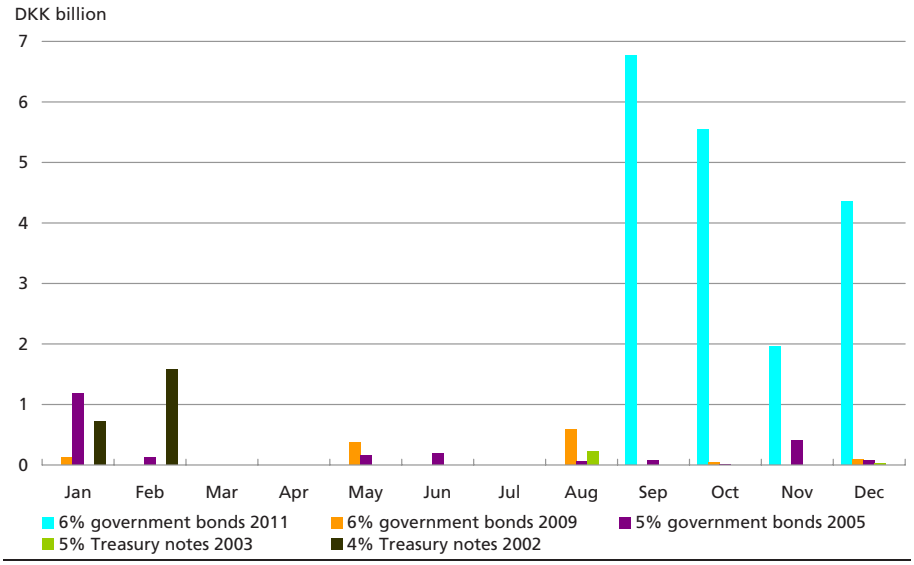
government does not wish to influence the swap market. A more detailed presentation of swaps is given in Chapter 8 of Danish Government Borrowing and Debt 1998.

SECURITIES LENDING FACILITY 2.8

In the securities lending facility government bonds and Treasury notes can be borrowed for a period from 1 to 5 trading days. Most of the loans in the facility were in 6 per cent government bonds 2011, cf. Chart 2.8.1. The securities lending facility has contributed to supporting the paper's liquidity in the build-up phase. The rules for the securities lending facility are presented in announcements on government borrowing and debt. These announcements are included in the Appendix.

At the beginning of 2001 the securities lending facility covered all government bonds and Treasury notes included in current issues open for sale. In 2001 the objective is to include Treasury bills in the lending facility.

SECURITIES LENDING IN 2000 Chart 2.8.1



Note: Transacted lending agreements distributed by month. Nominal value of the securities lent.

CHAPTER 3

Foreign Borrowing

SUMMARY 3.1

In 2000 the central government's foreign debt was reduced by around DKK 5 billion. In recent years all loans have been raised exclusively in euro – either directly or by use of currency swaps.

For many years foreign borrowing has been based on raising small loans in the international financial markets. In 2001 the strategy has been adjusted in order to place greater emphasis on raising larger loans, preferably directly in euro. Furthermore, the current strategy will be supplemented with the opportunity to undertake domestic borrowing combined with currency swaps from kroner to euro.

BORROWING IN 2000 3.2

In 2000 the central government raised medium- and long-term loans for DKK 14.0 billion. Redemptions on the medium- and long-term debt amounted to DKK 15.7 billion. The central government's short-term borrowing was DKK -3.6 billion, cf. Table 3.2.1. In overall terms, the foreign debt was reduced by around DKK 5 billion.

Medium- and long-term borrowing

For many years the medium- and long-term foreign borrowing has been based on an opportunistic borrowing strategy whereby the central government raises small loans in the international financial markets. The

FOREIGN BORROWING BY THE CENTRAL GOVERNMENT AT MARKET VALUE Table 3.2.1

DKK billion	Short-term borrowing, net	Medium- and long-term borrowing	Redemptions on medium- and long-term debt	Net borrowing
1999	4.3	16.6	19.5	1.5
2000	-3.6	14.0	15.7	-5.2
1st qtr.	-4.2	2.1	4.2	-6.2
2nd qtr.	0.6	2.6	4.6	-1.4
3rd qtr.	0.0	5.4	4.9	0.5
4th qtr.	0.0	3.8	2.0	1.9

Note: Buy-back of bonds is included under redemptions. Medium- and long-term borrowing include proceeds received in connection with the reduction of the market value of a swap.

objective has been to achieve low borrowing costs by utilising advantageous borrowing opportunities. Typically, the loans are established on the basis of concrete approaches from foreign investment banks which are in contact with investors with special placement requirements. The investment banks are informed continuously of the terms on which the central government is willing to borrow. The opportunistic borrowing strategy has led to a relatively illiquid portfolio of loans, which limits opportunities to restructure the debt.

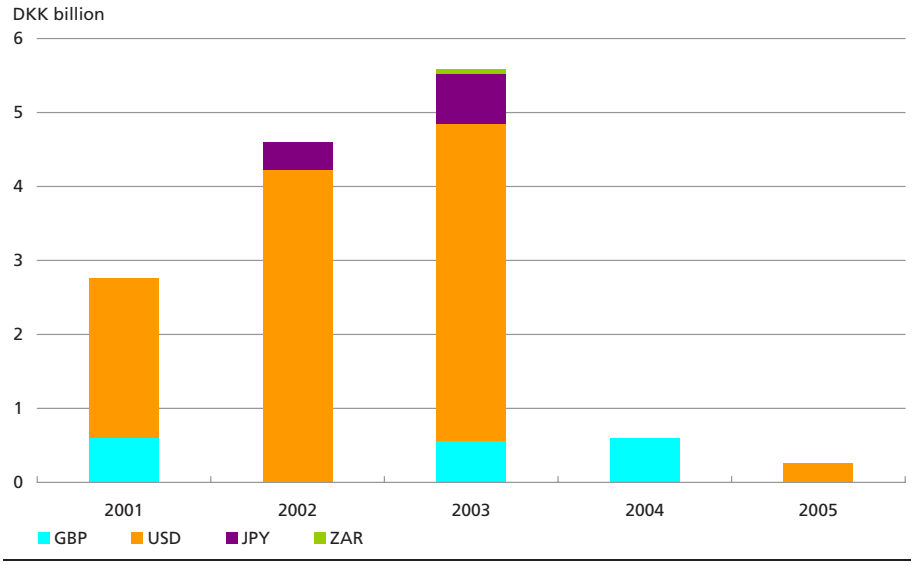
The central government usually transacts currency and interest-rate swaps in conjunction with the borrowing. In this way the individual loan can be matched to the targets for duration and currency exposure.

In 2000 the central government raised medium- and long-term loans for DKK 14 billion, distributed on 20 loans. Loans denominated in other currencies than euro were swapped to euro. The currency and maturity distribution of borrowing before swaps are presented in Chart 3.2.1. The individual loans are listed in Table 3 of the Appendix of Tables.

In 2000 it was decided to reduce the credit risk related to a zero-coupon swap. The market value was reduced to 0 by write-up of the principal on the liability leg of the swap, cf. Chapter 6. The central government received DKK 1 billion.

The central government in 2000 raised loans at an interest-rate level around 6-month Euribor minus 20 basis points. These terms are slightly less advantageous than in previous years. The level of interest rates re-

FOREIGN BORROWING BEFORE SWAPS IN 2000 Chart 3.2.1



Note: Borrowing compiled before swaps, excluding Commercial Papers.

flects that borrowing conditions have generally deteriorated, since opportunities to raise small loans on advantageous terms in the international financial markets have diminished in recent years. This trend is due partly to the growing integration and efficiency of the financial markets, and partly to greater investor focus on liquidity and credit products.

Short-term borrowing

Short-term borrowing is used primarily if there is a need to increase the foreign-exchange reserve quickly, or to ensure a positive balance on the central government's account. Short-term borrowing takes place mainly by drawing on the central government's Commercial Paper programmes, which make it possible to raise considerable amounts in a short time.

In July the central government issued Commercial Papers maturing in the same month for DKK 1.7 billion. The purpose of this issue was to test the contingency measure for short-term borrowing and furthermore to signal that the central government is still active in the Commercial Paper market.

Moreover, in 2000 the central government raised loans with maturities of just under 1 year for DKK 0.8 billion. The individual loans are listed in Table 3 of the Appendix of Tables.

GUIDELINES FOR CHOICE OF LOAN TYPES 3.3

In recent years the central government has exclusively applied simple loan structures and no longer raises structured loans. The guidelines for the choice of loan types are set out in Box 3.1.

The use of simple loan structures means that the portfolio of foreign loans now includes only five structured loans. All five have been

GUIDELINES FOR CHOICE OF LOAN TYPES Box 3.1

The borrowing strategy emphasises simple loan structures which are customary in the market. Simple loan structures are easy to price, and the related legal and operational risks are reduced to a minimum.

The guidelines for foreign borrowing can be summarised as follows:

- The loan structure must be known in the market and used by reputed market participants.
- The loan structure must be composed of simple elements which make the structure transparent.
- The loan structure may not lead to uncertainty concerning the central government's redemption payments or lead to the central government undertaking a disproportionally high credit risk in connection with related interest-rate and currency swaps.

CENTRAL-GOVERNMENT STRUCTURED LOANS, END-2000 Table 3.3.1

No.	Structure of loan	Principal	Principal in DKK	Expiry	Swapped to
794	JPY loan with floating interest rate depending on exchange rate	JPY 1,000 million	70 million	Jan 2007	DEM 6-month Libor -32 bp.
796	CHF loan with currency options connected to redemptions	CHF 200 million	980 million	Jan 2004	DEM 6-month Libor -32 bp.
850	JPY loan with floating interest rate depending on exchange rate	JPY 2,000 million	140 million	Sep 2007	DEM 6-month Libor -24 bp.
853	JPY loan with floating interest rate depending on exchange rate	JPY 500 million	35 million	Oct 2007	DEM 6-month -28 bp.
863	Floating-rate DEM loan with structured interest-rate cap	DEM 125 million	477 million	Dec 2004	DEM 6-month Libor -18 bp.

swapped to a floating interest rate and the structure of the loans therefore only affects the credit risk on the swap portfolio. It has been decided to retain the loans in the central government's portfolio even though they do not adhere to the current guidelines for choice of loan types. The background to this decision is that the structured loans are illiquid and difficult to redeem prematurely. Moreover, the risk related to the loans is considered to be moderate. The individual loans are described in Table 3.3.1.

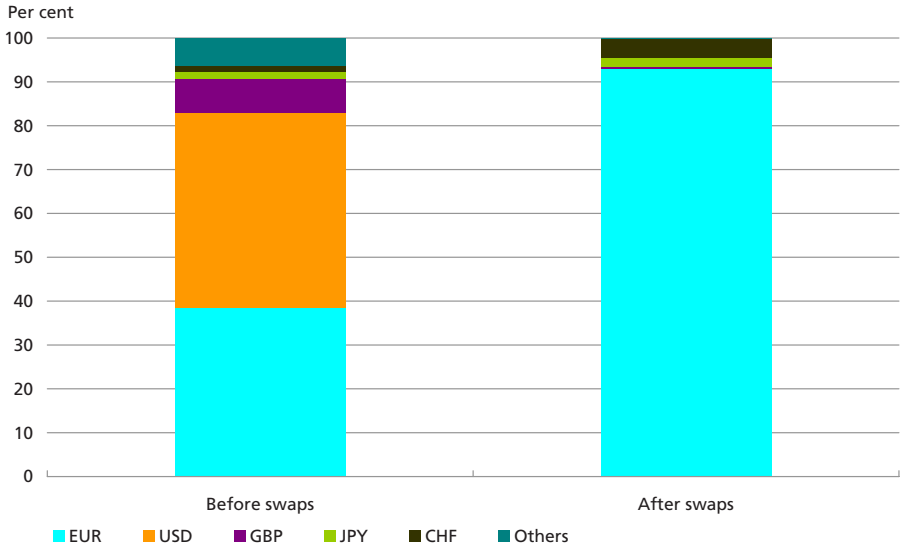
CURRENCY DISTRIBUTION OF THE CENTRAL GOVERNMENT'S FOREIGN DEBT 3.4

The central government raises foreign loans in a number of different currencies. The loans are converted via currency swaps so that by far the greatest proportion of the central government's foreign debt is denominated in euro. All borrowing in recent years has been in euro, either directly or via currency swaps. The effect of currency swaps is shown in Chart 3.4.1.

The remaining non-euro-denominated proportion of the foreign government debt was converted to euro at the beginning of 2001. This restructuring ensures that the central government is exposed to the lowest possible exchange-rate risk. The management of the exchange-rate risk on the central government's foreign debt is described in Chapter 8.

In 2001, as in previous years, all borrowing will be exclusively in euro, either directly or via transaction of currency swaps.

CURRENCY DISTRIBUTION OF THE FOREIGN GOVERNMENT DEBT
BEFORE AND AFTER CURRENCY SWAPS, END-2000 Chart 3.4.1



Note: The remaining non-euro-denominated proportion of the central government's foreign debt was converted to euro at the beginning of 2001.

BORROWING IN 2001 3.5

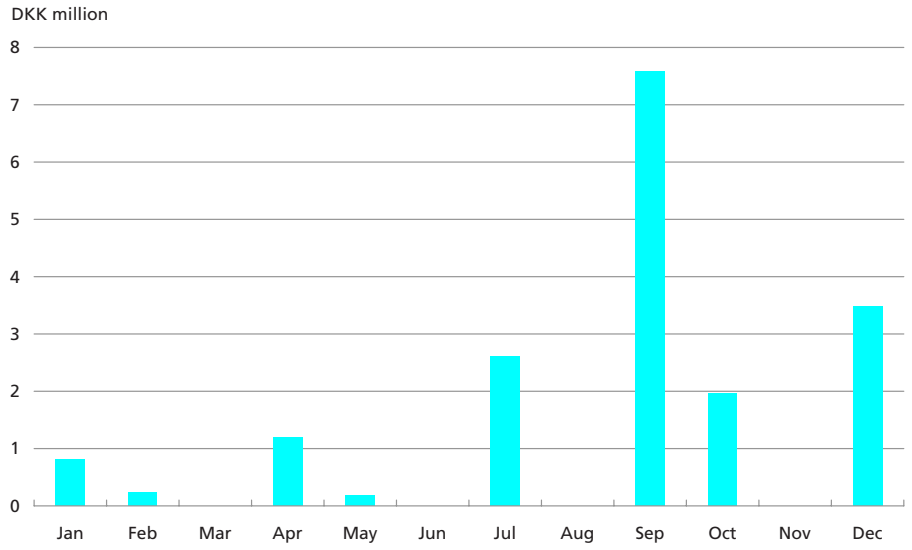
In 2001 foreign loans for DKK 18.0 billion will be raised, corresponding to the redemptions on the foreign debt. The distribution of the redemptions within the year is presented in Chart 3.5.1.

The central government will introduce additional instruments in foreign borrowing in 2001. This will ensure the central government greater scope in the planning of borrowing. The introduction of additional instruments should be seen in the light of the development in the international financial markets. As mentioned, there is generally less opportunity for opportunistic borrowing, and the terms are less advantageous than in previous years.

In 2001 the central government will continue to raise loans in accordance with the current strategy, but will focus to a greater extent than before on larger loans, preferably directly in euro. Raising loans directly in euro reduces the credit risk on the swap portfolio, since fewer currency swaps between e.g. USD and euro are required. In the central government's credit-risk management these swaps are considered to entail a greater risk than swaps between e.g. kroner and euro.

An innovation is that in 2001 the central government has made it possible to supplement direct borrowing in foreign currency with domestic borrowing combined with currency swaps from kroner to euro.

REDEMPTIONS ON THE FOREIGN GOVERNMENT DEBT IN 2001 Chart 3.5.1



Domestic borrowing combined with swaps to euro

Domestic borrowing combined with swaps to euro is a new instrument available in the foreign borrowing. This instrument is used by other countries, including Sweden and the UK. The instrument contributes to greater liquidity in domestic issues, and the overall terms of borrowing have proved favourable.

The borrowing takes place by the central government issuing domestic bonds. The domestic issue is combined with a currency swap whereby the central government receives loan proceeds in euro, cf. Box 3.2. Overall, loans and swaps can be considered as foreign borrowing which at the same time supports the liquidity of current domestic issues open for sale.

Besides a currency swap, the domestic issue can also be combined with an interest-rate swap. The interest-rate swap is used as an element of duration management. Both the interest-rate and the currency swap are transacted as portfolio swaps, i.e. with no direct relation to specific borrowing. The central government hereby avoids excessive exposure to any concentration of fixings of short-term interest rates.

The maturity of the currency swap determines the time of repayment of the principal in euro. Currency swaps can be used in the management of the redemption profile of the foreign debt.

The use of domestic borrowing combined with swaps to euro is limited by the liquidity in the market for currency swaps from kroner to euro.

The central government does not wish to influence the market and will only transact currency swaps for smaller amounts. This is equivalent to the procedure for domestic interest-rate swaps.

PAYMENTS RELATED TO DOMESTIC BORROWING COMBINED WITH CURRENCY SWAPS FROM KRONER TO EURO — Box 3.2

A currency swap is an exchange of payments equivalent to loans in different currencies. In a standard currency swap from kroner to euro the central government receives interest in kroner at a floating rate and pays interest in euro at a floating rate. Principals are exchanged at both the start and close of the swap. The central government thus receives euro and pays kroner on transaction of the swap. On expiry of the swap the central government pays back euro and receives kroner. In overall terms the issue of a krone-denominated bond combined with a currency swap to euro can be regarded as borrowing in euro.

Besides a currency swap the domestic issue can also be combined with a plain vanilla interest-rate swap. In the interest-rate swap the central government e.g. receives interest at a fixed rate and pays interest at a floating rate, thereby reducing the duration of the government debt.

The central government will use only portfolio swaps in connection with domestic borrowing combined with a swap to euro. The total interest payment on the krone-denominated bond and the interest-rate swap therefore does not necessarily match the interest received in currency and interest-rate swaps.

Example of calculation of interest payments

The interest payments on domestic borrowing combined with a swap to euro can be illustrated as follows: the central government issues a 10-year bond combined with an interest-rate and a currency swap. It is assumed that the interest-rate and currency swaps are transacted simultaneously with the issue of the 10-year krone-denominated bond. The interest rates in the Table below are indicative.

INTEREST-RATE LEVEL ON DOMESTIC BORROWING COMBINED WITH SWAP TO EURO — Table

		Per cent
Government bond:	+ Central government pays DKK at fixed rate	5.20
Interest-rate swap:	– Central government receives DKK at fixed rate	5.64
	+ Central government pays DKK at floating rate	6-month Cibor
Currency swap:	– Central government receives DKK at floating rate	6-month Cibor
	+ Central government pays EUR at floating rate	6-month Euribor +3 bp.
Borrowing costs, net		6-month Euribor -41 bp.

Source: Bloomberg and Reuters, 26 January 2001. The figures are mid-market rates.

CHAPTER 4

The Social Pension Fund

SUMMARY 4.1

At the close of 2000 the nominal value of the bond portfolio of the Social Pension Fund (SPF) was DKK 139.6 billion. Government bonds accounted for 76 per cent of the portfolio. The remainder was invested mainly in mortgage-credit bonds. SPF's income from interest totalled DKK 9.9 billion in 2000. An amount of DKK 8.2 billion was transferred to the Ministry of Social Affairs to cover pension improvement measures, while DKK 2.3 billion was paid as pension-fund tax. The duration of SPF's portfolio at the close of 2000 was 4.1 years.

BACKGROUND AND MANAGEMENT OF SPF 4.2

SPF was established by the Social Pension Fund Act in 1970 whereby a special national retirement pension contribution was introduced. The proceeds were allocated to SPF and were to be invested in bonds. With effect from 1982 the Act was amended and the payments to SPF ceased. SPF was continued as an asset of the central government.

SPF is part of the remit of the Minister of Social Affairs and the Minister of Finance. The overall management of the bond portfolio of SPF is handled by a committee with representatives from the Ministry of Finance, the Ministry of Social Affairs and Danmarks Nationalbank. The day-to-day management of the assets of SPF is handled by Danmarks Nationalbank.

The principles for the management of SPF's capital are set out in regulations. The regulations state that the aim is to achieve a satisfactory return on SPF's assets while taking due account of the overall budgetary consequences of SPF's transactions.

SPF's capital is placed in stock-exchange-listed bonds. The regulations state that the funds are to be invested primarily in government bonds. It is sought to ensure that SPF's purchases are made without significantly affecting the formation of interest rates in the bond market, including the spread between yields on mortgage-credit and government bonds.

The interest on SPF's bond portfolio after payment of pension-fund tax is used to finance pension improvements or is allocated to SPF. SPF's

core capital can be used to finance pension improvements, should the costs of such measures exceed SPF's income from interest.

The Danish Finance Act stipulates the amount to be transferred from SPF to the Ministry of Social Affairs on a current basis to cover the costs of the pension improvement measures taken with reference to SPF.

CURRENT PAYMENTS AND BOND PORTFOLIO OF THE FUND 4.3

In 2000 SPF's income from interest was DKK 9.9 billion, cf. Chapter 5. An amount of DKK 8.2 billion was transferred to the Ministry of Social Affairs to finance pension improvement measures. Pension-fund tax of DKK 2.3 billion was paid. Bonds for a total of DKK 20.6 billion were drawn and sold. The remaining income from interest and the proceeds from drawings and sale were placed in government bonds.

At the close of the year the bond portfolio of SPF was DKK 139.6 billion at nominal value, cf. Table 4.3.1. The nominal portfolio has decreased by DKK 2.1 billion during 2000. This decline is related to the reinvestment of the proceeds from drawn bonds in government bonds at prices above par. Moreover, a minor proportion of the refinancing requirement in 2000 (DKK 1.3 billion) was temporarily placed on SPF's account with the Nationalbank at the end of 2000. The market value of the bond portfolio fell by DKK 1.6 billion during 2000.

The bond portfolio mainly comprises government bonds which constitute 76 per cent of the total portfolio, cf. Table 4.3.2. The remainder of the portfolio is invested mainly in mortgage-credit bonds.

The government securities in the portfolio all mature in 2007 or earlier, while most of the mortgage-credit, index-linked and Ship Credit Fund bonds mature after 2007. The distribution of SPF's portfolio by year of maturity is presented in Chart 4.3.1.

At the close of 2000 the duration of SPF's bond portfolio was 4.1 years, which is 0.1 year less than at the close of 1999, cf. Table 4.3.3. The duration of the portfolio of government bonds has increased, while the duration of the rest of the bond portfolio has fallen. The decline is related to the falling level of interest rates, which increases the conversion risk and thereby reduces the duration of callable mortgage-credit bonds.

BOND PORTFOLIO OF THE SOCIAL PENSION FUND, YEAR-END 1995-2000 Table 4.3.1

DKK billion	1995	1996	1997	1998	1999	2000
Nominal value	151.5	148.8	146.8	143.6	141.6	139.6
Market value	153.5	156.6	157.4	159.8	150.7	149.1

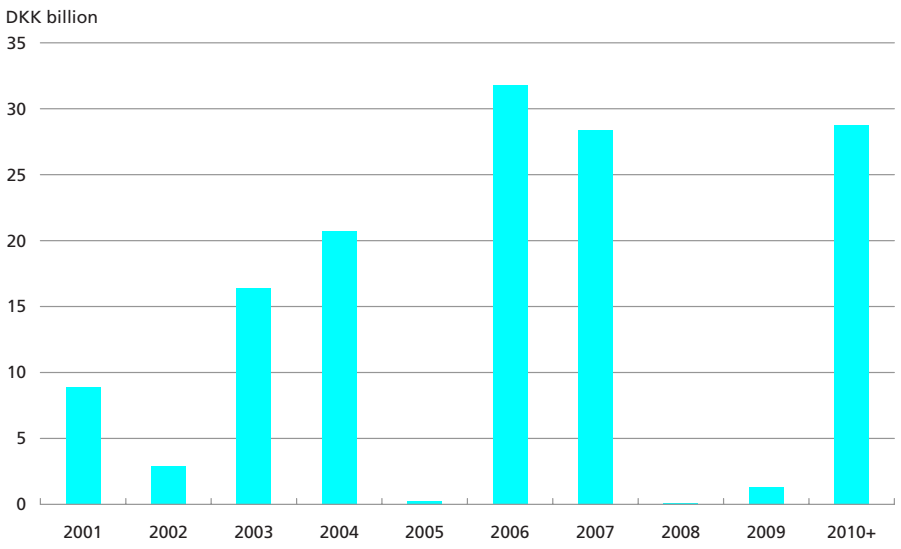
Note: The figures for nominal value include index-linked bonds at indexed values.

BOND PORTFOLIO OF THE SOCIAL PENSION FUND
DISTRIBUTED BY TYPES OF BOND, END-2000 Table 4.3.2

Nominal value	DKK billion	Per cent
8% government bonds 2001	7.7	
6% government bonds 2002	2.8	
8% government bonds 2003	16.3	
7% government bonds 2004	18.3	
8% government bonds 2006	31.2	
7% government bonds 2007	27.6	
12% government bonds S 2001	0.2	
10% government bonds S 2004	2.1	
Government bonds, total	106.3	76.2
Mortgage-credit bonds, etc.	25.3	18.1
Index-linked bonds[1]	7.9	5.7
Total	139.6	100.0

[1] Indexed value.

BOND PORTFOLIO OF THE SOCIAL PENSION FUND
DISTRIBUTED BY YEAR OF MATURITY, END-2000, NOMINAL VALUE Chart 4.3.1



DURATION OF THE SOCIAL PENSION FUND'S BOND PORTFOLIO Table 4.3.3

Year	End-1999	End-2000
Government bonds	3.8	3.9
Other bonds	5.6	4.9
Total portfolio	4.2	4.1

Note: For callable mortgage-credit bonds an option-adjusted duration is used.

CHAPTER 5

Government Debt

SUMMARY 5.1

The central-government budget surplus in recent years has led to a reduction of the central-government debt. At the close of 2000 the central-government debt was DKK 535.0 billion, which is a decrease of DKK 26.7 billion from 1999. The general-government debt compiled in accordance with the EU Treaty was DKK 619.5 billion, or 48.3 per cent of GDP, at the close of 2000.

In 2000 the interest costs on the government debt amounted to DKK 36.8 billion, having fallen since 1996. This decline should be viewed in connection with the lower market interest rates and the reduction of the central-government debt.

Non-residents held 33 per cent of Danish government securities at end-2000. The proportion held by non-residents has been relatively constant for a number of years.

At the close of 2000 the government-guaranteed entities held a total debt of DKK 83.2 billion with government guarantee.

GOVERNMENT DEBT AND INTEREST COSTS 5.2

Government debt

The central-government debt was DKK 535.0 billion at the close of 2000, which is a decrease of DKK 26.7 billion from 1999, cf. Table 5.2.1. The decline in the central-government debt can be attributed to the surplus on central-government finances. The compilation of central-government borrowing and debt is presented in Box 5.1.

Interest costs

Interest costs in 2000 totalled DKK 36.8 billion, equivalent to a decrease of DKK 1.0 billion from 1999, cf. Table 5.2.2. Since 1996 the central government's annual interest costs has been reduced by DKK 7 billion. A further decline by DKK 3 billion is expected in 2001.

Firstly, recent years' decline in the central government's annual interest costs is attributable to the decrease in the debt, cf. Table 5.2.1. Secondly, lower market interest rates have enabled the central government to refi-

NET BORROWING AND CHANGES IN THE GOVERNMENT DEBT, 1997-2001 Table 5.2.1

DKK billion	1997	1998	1999	2000	2001
Net borrowing					
Domestic borrowing	-5.9	-10.2	-7.1	-27.8	-27.5
Foreign borrowing[1]	-0.2	-21.7	1.5	-5.2	0.0
Drawing on Danmarks Nationalbank	2.0	-1.3	-4.8	1.8	4.7
Net borrowing at market value	-4.1	-33.1	-10.3	-31.2	-22.9
Capital losses					
Domestic capital losses on issue[2]	1.8	-0.5	-0.8	3.2	2.5
Foreign capital losses on issue[2]	0.2	0.1	0.0	0.0	0.0
Exchange-rate losses, etc.	1.4	-0.3	0.2	0.4	0.0
Net borrowing at nominal value	-0.8	-33.8	-11.0	-27.6	-20.3
Balance-sheet items, year-end, nominal value					
Domestic debt	673.7	656.4	648.6	624.0	599.0
Foreign debt	103.6	88.3	90.0	85.2	85.2
Central government's account with Danmarks Nationalbank[3]	-29.0	-30.4	-35.2	-34.7	-30.0
The Social Pension Fund[4]	-146.8	-143.6	-141.6	-139.6	-140.7
Government debt	601.5	570.8	561.7	535.0	513.5

Note: In 1998 the central government's 8.5 per cent EUR government bonds 2002 was reclassified from domestic to foreign debt. Net bond purchases by the Social Pension Fund are not included in the net borrowing.

Source: Central-government accounts 1997-99. For 2000, the forecast in Budget Review, December 2000, and provisional figures from the central-government accounts. The forecast figures for 2001 are based on Budget Review, December 2000 and the Finance Bill for 2001.

[1] 1999, including proceeds of DKK 0.5 billion as a consequence of the early redemption of 2 foreign interest-rate swaps. The amount is counterbalanced under exchange-rate losses. For 2000 including proceeds of DKK 1.0 billion received in connection with the reduction of the market value of a swap.

[2] Including capital losses on buy-backs.

[3] For 2000 the central government's account is compiled in accordance with the monthly balance sheet of Danmarks Nationalbank.

[4] The Social Pension Fund's portfolio of index-linked bonds is compiled at indexed value.

nance debt at relatively high interest rates with debt at lower interest rates, thereby reducing the total interest costs. The compilation of the interest costs on the central-government debt is presented in Box 5.1.

THE GENERAL GOVERNMENT'S GROSS DEBT (EMU DEBT) 5.3

Besides the central-government debt, which accounts for the largest proportion, the general government's gross debt includes the debt of local government and social security funds.

The general-government debt is compiled in accordance with the EU Treaty. The debt is compiled on a gross basis, but the general-government sector may consolidate the debt with claims on itself. This e.g. means that the portfolio of government securities of the Social Pension Fund may be deducted from the debt, but not the Fund's portfolio of mortgage-credit bonds, etc.

COMPILATION OF CENTRAL-GOVERNMENT DEBT AND INTEREST COSTS — Box 5.1

The *central-government debt* is compiled as the nominal value of domestic and foreign debt minus the central government's account with Danmarks Nationalbank and the assets of the Social Pension Fund (SPF).

The change in the central-government debt corresponds to the net borrowing at nominal value minus the change in SPF's assets. The net borrowing at nominal value comprises borrowing at market value with addition of value adjustments. The net borrowing is compiled as domestic and foreign borrowing and drawing on the central government's account. The value adjustments comprise capital losses in connection with issuance and buy-back, as well as realised and unrealised exchange-rate losses.

The distribution on respectively domestic and foreign borrowing and debt is based on currency. The distribution is made after currency swaps. Domestic debt is krone-denominated debt, while foreign debt is currency-denominated debt.

Interest costs related to the central-government debt comprises interest, distributed capital losses on issue and realised exchange-rate losses.

Interest and capital losses on issue are accrued on the basis of an earnings principle. The interest costs is compiled as a ratio of the interest credited for the year equivalent to the number of days that a loan has run in that year. The capital loss on issue is the difference between the nominal and market values on issue and is distributed over the time to maturity of the loan in accordance with the interest costs on the loan.

INTEREST COSTS ON THE GOVERNMENT DEBT, 1997-2001 — Table 5.2.2

DKK billion	1997	1998	1999	2000	2001
Domestic debt					
Interest	49.7	45.7	43.7	42.5	38.5
Distributed capital losses on issue	4.4	3.5	2.9	2.3	2.7
Interest costs	54.1	49.1	46.6	44.8	41.2
Foreign debt					
Interest	3.9	4.8	4.0	3.9	4.7
Realised exchange-rate losses on redemptions	-	-1.3	-0.3	0.0	0.0
Distributed capital losses on issue	0.7	0.1	0.1	0.1	0.0
Interest costs	4.6	3.6	3.8	4.0	4.6
Interest concerning					
Central government's account with Danmarks Nationalbank	-1.2	-1.7	-1.8	-2.1	-2.2
The Social Pension Fund	-14.0	-12.2	-10.8	-9.9	-9.8
Total	43.5	38.9	37.8	36.8	33.8

Note: A new accounting principle as from 1 January 1998 changed the calculation of interest costs and distributed capital losses on issue. At the same time, the central government's euro-denominated loan was reclassified from domestic to foreign debt.

Source: Central-government accounts 1997-99. For 2000 provisional figures from the central-government accounts. The forecast figures for 2001 are based on Budget Review, December 2000, and the Finance Bill for 2001.

BUDGET BALANCE AND GENERAL-GOVERNMENT DEBT, 1996-2000 Table 5.3.1

	1996	1997	1998	1999	2000
General-government balance in DKK billion ...	-10.6	5.3	14.0	34.3	34.3
General-government balance as a percentage of GDP	-1.0	0.5	1.2	2.8	2.7
Gross debt in DKK billion	690.6	682.8	649.7	639.7	619.5
Gross debt as a percentage of GDP	65.1	61.4	55.8	52.6	48.3

Source: Ministry of Economic Affairs, *Economic Survey*, December 2000.

The general-government's gross debt thus deviates from the central-government debt as compiled in Table 5.2.1 since it includes the entire general-government sector and is compiled on a gross basis.

The European Commission monitors the development in the budgetary situation of the member states in order to assess whether budgetary discipline is maintained. This evaluation is based on two criteria which are set out in the EU Treaty. The first criterion is that the general-government deficit as a general rule may not exceed 3 per cent of GDP, and the second criterion stipulates that the general-government debt as a general rule may not exceed 60 per cent of GDP.

At the close of 2000 the general-government debt compiled in accordance with the EU Treaty was DKK 619.5 billion, or 48.3 per cent of GDP, cf. Table 5.3.1.

OWNERSHIP STRUCTURE OF DOMESTIC GOVERNMENT SECURITIES 5.4

The ownership structure of Danish krone-denominated government securities is presented in Table 5.4.1. The ownership structure has been stable during the past year. Non-residents accounted for an ownership share of 33 per cent at the close of 2000. Disregarding the Social Pension Fund's portfolio of government securities, the proportion held by non-residents is 40 per cent.

The proportion of a number of selected government securities held by non-residents at the end of the 4th quarter of 2000 is presented in Chart 5.4.1. Of the government securities selected, 5 per cent government bonds 2005 is the series with the highest non-resident ownership share at just under 50 per cent. The Treasury note expiring in 2002 has an ownership share of approximately 35 per cent. The 10-year benchmark issue has an ownership share of approximately 35 per cent. The non-resident ownership share of the Treasury bills is approximately 25 per cent.

The distribution by country of non-residents' holdings of domestic government securities issued by Belgium, Denmark, Finland, the Nether-

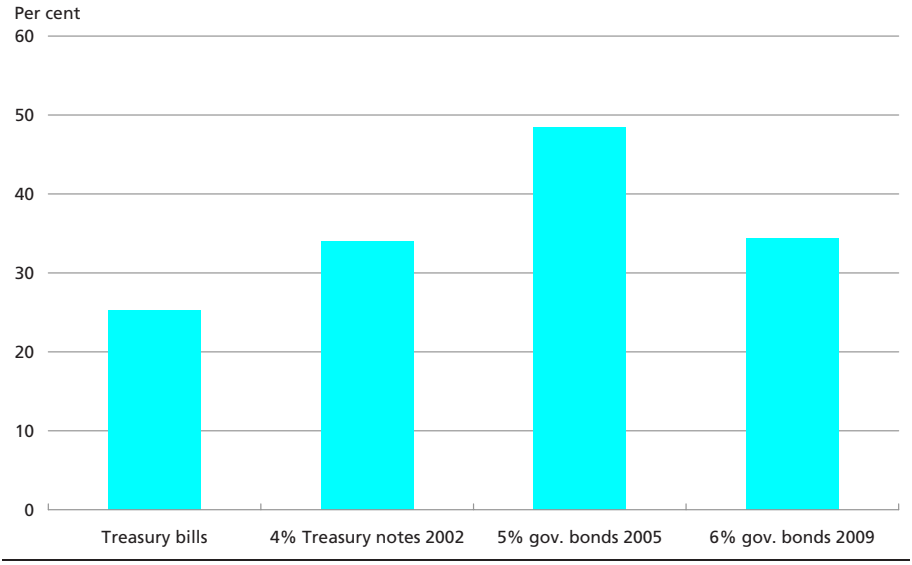
DISTRIBUTION BY OWNERSHIP OF CIRCULATING KRONE-DENOMINATED GOVERNMENT SECURITIES, 1999-2000 Table 5.4.1

Per cent	End of 4th qtr. 99	End of 1st qtr. 00	End of 2nd qtr. 00	End of 3rd qtr. 00	End of 4th qtr. 00
Non-financial companies	5	5	4	5	5
Financial institutions, including Danmarks Nationalbank	23	23	22	22	21
Insurance companies and pension funds	10	10	10	11	10
General-government sector	22	22	22	22	24
Private, non-dividend-paying institutions	3	3	3	3	3
Households	1	1	1	1	1
Non-residents	35	35	35	35	33
Not stated	1	2	2	2	2
Total	100	100	100	100	100
Total market value, DKK billion	684.1	684.9	678.4	686.4	662.9

Note: Danmarks Nationalbank has adjusted the figures for repurchase agreements between Danish banks and non-residents. Moreover, estimated adjustments are made for the safekeeping-account holdings of residents.
Source: Statistics Denmark, based on data from the Danish Securities Centre.

lands and Sweden is presented in Table 5.4.2. The figures are based on Capital Access International's database of the bond holdings of a number of financial institutions in Europe, the USA and Canada. With regard to Denmark, the figures cover around 20 per cent of non-residents' total

NON-RESIDENTS' OWNERSHIP SHARE OF SELECTED DOMESTIC GOVERNMENT SECURITIES, END OF 4TH QUARTER 2000 Chart 5.4.1



Note: Nominal value. Danmarks Nationalbank has adjusted the figures for repurchase agreements between Danish banks and non-residents. Moreover, estimated adjustments are made for the safekeeping-account holdings of residents.
Source: Statistics Denmark, based on data from the Danish Securities Centre.

DISTRIBUTION BY COUNTRY OF NON-RESIDENTS' HOLDINGS OF DOMESTIC GOVERNMENT SECURITIES Table 5.4.2

Per cent	Belgium	Denmark	Finland	Netherlands	Sweden
Denmark, Finland, Norway and Sweden	0	0	0	2	1
Germany	22	37	18	20	28
Belgium, Netherlands and Luxembourg	21	17	6	9	8
UK	7	12	5	11	6
France	27	4	33	10	3
Italy	7	7	9	27	22
Ireland, Spain and Austria	4	2	3	6	2
Switzerland	11	12	23	11	18
USA and Canada	2	10	3	4	12
Total	100	100	100	100	100

Note: The Table comprises government securities denominated in each country's own currency. For each country the Table is based on government securities held by non-residents. Data comprises government securities with initial maturity exceeding one year and is compiled for the period 3rd quarter 1999 - 4th quarter 2000. The number of financial institutions covered by the database ranges from 39 (Portugal) to 1,264 (USA).
Source: Capital Access International.

holdings of krone-denominated government bonds. Therefore the figures should be interpreted with some reservation.

Comparison of the distribution for Denmark with the distributions for the other countries shows that Denmark's share of investors from Germany is relatively high. Moreover, Denmark has relatively high shares of investors from Belgium, the Netherlands and Luxembourg, the USA and Canada, and the UK. On the other hand, Denmark has a relatively low share of investors from France and Italy compared to the other countries.

Belgium and Finland stand out in that large proportions of their domestic government securities are placed with investors in France, while the Netherlands has a high proportion placed in Italy.

GOVERNMENT-GUARANTEED ENTITIES 5.5

The central government provides guarantees for the borrowing and related financial transactions of a number of government-guaranteed entities. These are typically companies whose tasks are defined in an act or legal document which also gives access to government guarantees for loans within a certain framework. The companies are typically structured as government-owned limited-liability companies.

The government-guaranteed entities are primarily engaged in infrastructure projects. The government-guaranteed entities are Storebæltsforbindelsen (Great Belt), Øresundsforbindelsen, Hypotekbanken (the Mortgage Bank of the Kingdom of Denmark), DSB (the Danish State Railways) and Danmarks Radio (The Danish Broadcasting Corporation).

GOVERNMENT-GUARANTEED DEBT — Table 5.5.1

DKK billion	End-2000
Hypotekbanken	8.4
Storebæltsforbindelsen	41.3
Øresundsforbindelsen	8.8
Øresundsbro Konsortiet	22.7
DSB and DSB S-tog A/S	1.9
Danmarks Radio	-
Total	83.2

Note: The debt of Øresundsbro Konsortiet is guaranteed jointly by Denmark and Sweden.

The central government undertakes a risk when it provides government guarantees. The borrowing by these entities is therefore subject to certain guidelines designed to reduce this risk. The guidelines are stated in a set of agreements comprising three elements: an agreement between respectively the Ministry of Finance or the Ministry of Transport and Danmarks Nationalbank; an agreement between the Ministry and the individual entity; and finally a list of acceptable loan categories. The list is drawn up and updated jointly by the Ministry of Finance and Danmarks Nationalbank. Within the framework of the set of agreements the board of directors and management of each government-guaranteed entity are responsible for the entity's financial transactions, risk management, etc.

The list of acceptable loan types was amended in autumn 2000 and is based on the following principles: transactions must be customary, i.e. known and used in the market by reputed borrowers, and must be built up from simple elements which make them transparent. Moreover, it is emphasised that credit-risk management should take place on the basis of a rating-based limit system, just as it is recommended to establish agreements on the provision of collateral. The currency exposure of the entities' loan portfolios should as a general rule be limited to euro. If the government-guaranteed entity has future operating or investment revenue denominated in other currencies than euro, the entity may be exposed to other currencies equivalent to this revenue.

Together with Sweden, the Danish central government also guarantees the debt of Øresundsbro Konsortiet (Øresund Bridge). The borrowing, etc. of Øresundsbro Konsortiet is subject to guidelines laid down by both Sweden and Denmark.

The government-guaranteed debt of the entities totals DKK 83.2 billion at the close of 2000, cf. Table 5.5.1.

In addition to the above entities, Ørestadsselskabet, responsible for constructing the new Copenhagen Metro and Ørestaden, is subject to the

guidelines for borrowing by government-guaranteed entities. However, since the entity is a general partnership of which the central government is co-owner no government guarantee is provided for the entity's borrowing. The debt of Ørestadsselskabet was around DKK 8 billion at end-2000.

CHAPTER 6

Risk Management

SUMMARY 6.1

Via its borrowing and debt the central government is exposed to various risks. The most important are interest-rate, exchange-rate and credit risk.

The interest-rate risk is managed by determining a duration band for the government debt, and by aiming to achieve a smooth redemption profile. Moreover, Cost-at-Risk is used as a supplement to the management of the interest-rate risk on the domestic debt.

During 2000 the duration of the government debt was reduced from 3.8 to 3.5 years. The duration band for 2001 is set at 3.5 +/- 0.5 year, which is unchanged from 2000.

It is sought to limit the exchange-rate risk on the central government's foreign debt by exclusively holding euro-denominated loans or debt swapped to euro. Moreover, the Nationalbank's exposure via the foreign-exchange reserve is predominantly in euro.

Since 1992 the exchange-rate risk on the central government's foreign debt and Danmarks Nationalbank's foreign-exchange reserve has been subject to formalised coordinated management. Since the foreign debt is now solely exposed to euro, and the foreign-exchange reserve is predominantly in euro, formalised coordinated management is no longer required. As from 2001 the formalised set-up has therefore been abolished.

The credit exposure on the central government's swap portfolio decreased by DKK 3.1 billion to a total of DKK 8.3 billion at the end of 2000. The decrease can be attributed to collateral agreements with 14 counterparties, of which 10 were signed during 2000. Without collateral agreements the credit exposure at the close of 2000 would have been DKK 13.3 billion.

Swaps are only transacted with counterparties, which have either signed, or are soon expected to sign, a collateral agreement. At least 5 counterparties are expected to sign a collateral agreement during 2001. At the close of 2000, 60 per cent of the principal of the swap portfolio was covered by collateral agreements. The ratio covered is expected to increase to approximately 80 per cent before the end of 2001.

INTEREST-RATE AND REFINANCING RISK 6.2

Duration

Duration is a measure of the period of time it takes for the interest costs of the debt to adjust to a new level of interest rates. The duration applied in government-debt management is the Macaulay duration, cf. Box 6.1. Duration, i.e. the sensitivity of interest costs to changes in the level of

DURATION OF THE CENTRAL-GOVERNMENT DEBT Box 6.1

The calculation of the *duration* of the government debt is based on the Macaulay duration (V_{Mac}) defined as:

$$V_{Mac}(s, i_s) = \sum_t (t - s) \frac{C_t (1 + i_s)^{-(t-s)}}{\sum_u C_u (1 + i_s)^{-(u-s)}}$$

where s is the time of calculation, i_s is the discount rate, and t is the time of the future payment C_t. Duration is also expressed by Σ_t (t-s) w_t, where w_t is the share of the payment at time t of the total present value of the payments.

Duration indicates the average fixed interest period for the debt. The longer the duration, the longer the time it will take for the interest costs on the debt to adjust to the current level of interest rates. Longer duration thereby results in a lower interest-rate sensitivity on the interest costs of the debt. Long duration thus typically entails a small variation in the annual interest costs.

For floating-rate loans duration is calculated as the time to the next due date. This definition is also applied to the calculation of the duration of interest-rate swaps. An example is the case where the central government transacts a 10-year interest-rate swap whereby interest at a 10-year fixed rate (the fixed leg) is received and interest at a 6-month floating rate (the variable leg) is paid. The duration of the floating leg is calculated as the time to the next due date, cf. above, and the duration of the fixed leg is calculated according to the Macaulay formula. The total duration of the swap is calculated as the duration of the floating leg (the liability) less the duration of the fixed leg (the asset).

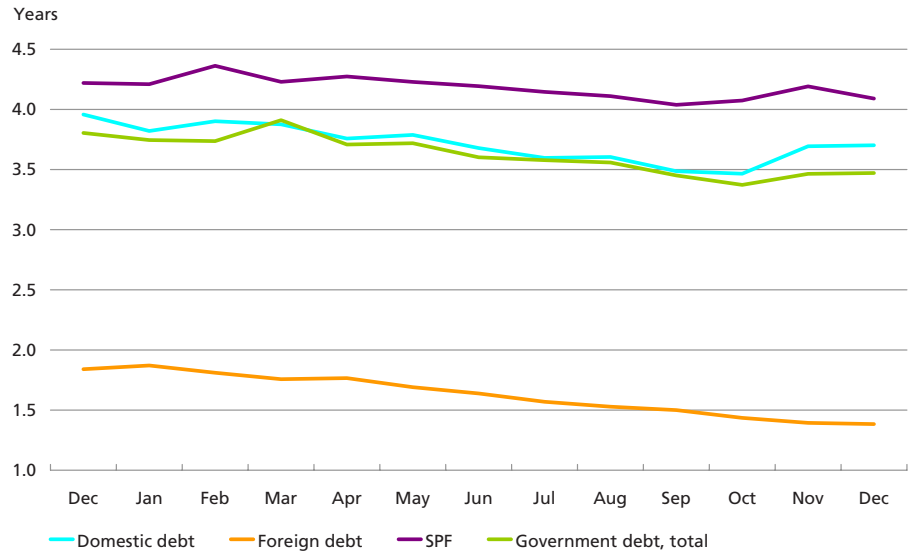
The duration of the total government debt is compiled by calculating the duration of the sub-portfolios of the government debt and then weighing them together at their respective proportions of the government debt. The duration of liabilities is calculated with sign positive, while the duration of assets is calculated with sign negative.

An option-adjusted duration is applied to the calculation of the duration of the Social Pension Fund (SPF). This includes SPF's callable mortgage-credit bonds with a shorter duration than for equivalent uncallable securities.

Duration is an average measure of the fixed interest period for the debt and is therefore not an adequate instrument to evaluate the spread of the payments on the debt. Therefore the duration measure is combined with management of the redemption profile.

Duration and redemption profile do not quantify the interest-rate risk on the government debt. In order to measure this risk it is necessary to specify the probabilities of various interest-rate scenarios. This is the purpose of Cost-at-Risk, which calculates the interest-rate risk on the debt.

DEVELOPMENT IN DURATION IN 2000, END OF MONTH Chart 6.2.1



Note: The duration of the balance of the central government's account with Danmarks Nationalbank is 0 years.

interest rates, is managed via a duration band for the total government debt.

When duration is determined, account is also taken of the other objectives of government debt policy, which include to build up an attractive range of current issues open for sale in the 2-, 5- and 10-year maturity segments.

In 2000 the duration of the total government debt decreased from 3.8 years to 3.5 years. The fall in duration fulfils the year's objective to reduce the duration to around 3.5 years. The decrease in duration in recent years should be viewed in the light of a declining debt and an assessment of the relation between interest costs and interest-rate risk.

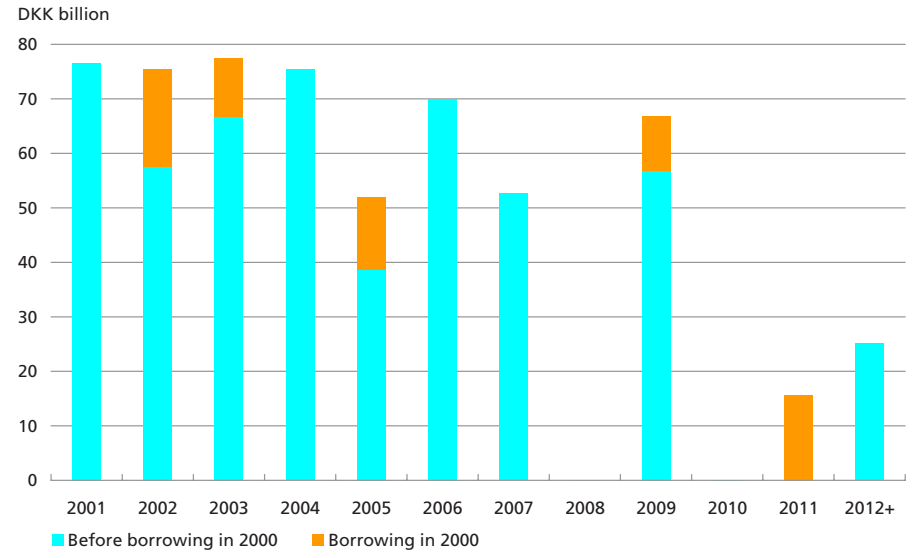
The sub-components of the central-government debt comprise the domestic debt, the foreign debt, the Social Pension Fund (SPF) and the balance of the central government's account with Danmarks Nationalbank. The development in the duration of the government debt and its sub-components is presented in Chart 6.2.1.

In 2001 the duration band of the total government debt remains unchanged from 2000 at 3.5 +/- 0.5 years.

Redemption profile

The redemption profile of the domestic debt shows the distribution of the redemptions over time. The aim is to achieve stable annual redemptions of the debt, in order to reduce the central government's refinancing risk,

REDEMPTION PROFILE – DOMESTIC GOVERNMENT DEBT, END-2000 Chart 6.2.2



Note: Excluding Treasury bills.

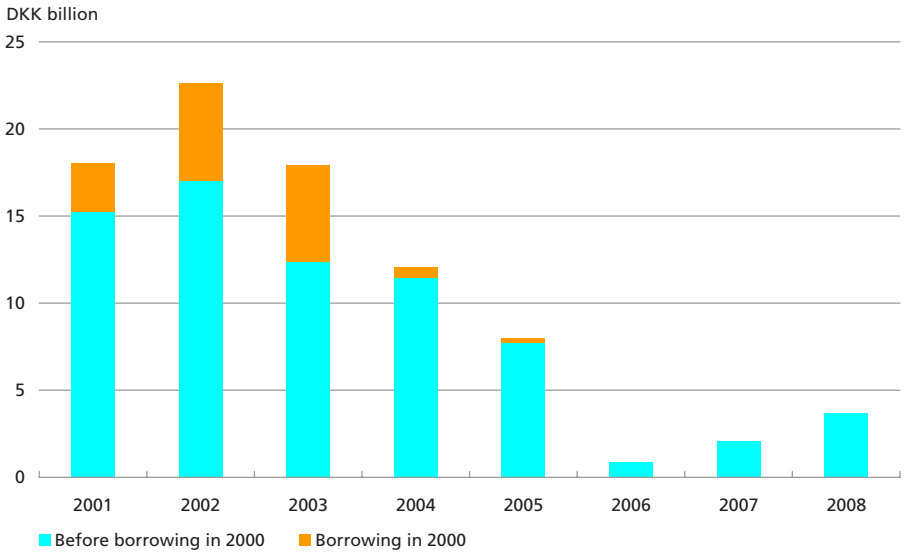
i.e. the risk of the central government having to refinance a large proportion of the debt at relatively high interest rates in a given year.

The redemption profile of the domestic government debt is shown in Chart 6.2.2. The redemptions comprise the proportion relating to borrowing in previous years, and the proportion which can be attributed to borrowing in 2000. The Chart shows that Treasury notes and government bonds with five different redemption dates were issued in 2000. The new issues in 2000 have contributed to smoothing the redemption profile. The structure of the redemption profile reflects the strategy for the current issues open for sale, with issues in the 2-, 5- and 10-year segments.

The redemption profile is managed not only via the structure of current issues open for sale, but also through the use of buy-backs of government securities before the ordinary redemption date. The financing of the redemptions in 2001 commenced in 2000 with buy-backs for DKK 14.3 billion in securities maturing in 2001. In addition, buy-backs for DKK 3.5 billion were made in securities maturing in 2003. The buy-backs have contributed to smoothing the distribution of the redemptions in 2001 and 2002, and help to offset excessive redemptions in 2003.

For the foreign debt the target is likewise a generally constant annual refinancing requirement. The objective previously used was a decreasing redemption profile, since borrowing was based on minor loans which from the outset were assumed to be distributed evenly across the 1-10-year segments.

REDEMPTION PROFILE – FOREIGN GOVERNMENT DEBT, END-2000 Chart 6.2.3



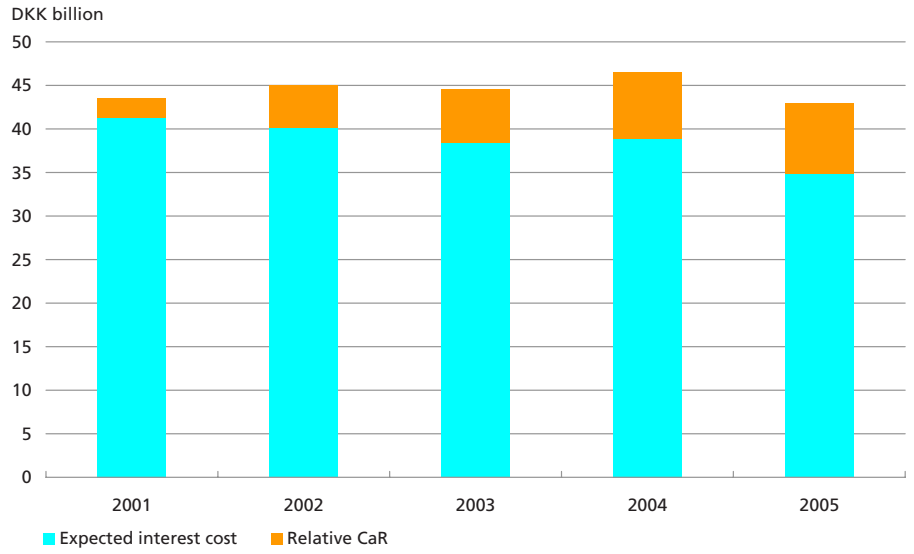
In the light of the change of foreign-borrowing strategy, with greater focus on loans that are a little larger, which may be supplemented with issues of domestic krone-denominated bonds combined with currency swaps to euro, the refinancing risk is now managed by setting a maximum for the annual redemptions. The redemption profile of the foreign government debt is presented in Chart 6.2.3.

Cost-at-Risk

Cost-at-Risk (CaR) is used as a supplement to duration and redemption profile in the management of the interest-rate and refinancing risk on the government debt. CaR is a risk measure quantifying the central government's risk of being exposed to strong interest-cost increases.

The CaR figures in Chart 6.2.4 are based on the assumption of an average central-government budget surplus after interest costs of DKK 23 billion for the period 2001-05, cf. Chapter 10. The calculations show that subject to these assumptions the expected interest costs decrease from around DKK 41 billion in 2001 to DKK 35 billion in 2005. With a probability of 95 per cent the interest costs in 2005 will not exceed DKK 43 billion (absolute CaR). Measured by relative CaR, the uncertainty relating to the interest costs in 2005 is DKK 8 billion, equivalent to more than 20 per cent of the expected interest costs. An increase in the interest costs to around DKK 43 billion in 2005 assumes an average level of interest rates of just over 9 per cent p.a. throughout the entire period.

COST-AT-RISK FOR THE DOMESTIC GOVERNMENT DEBT Chart 6.2.4



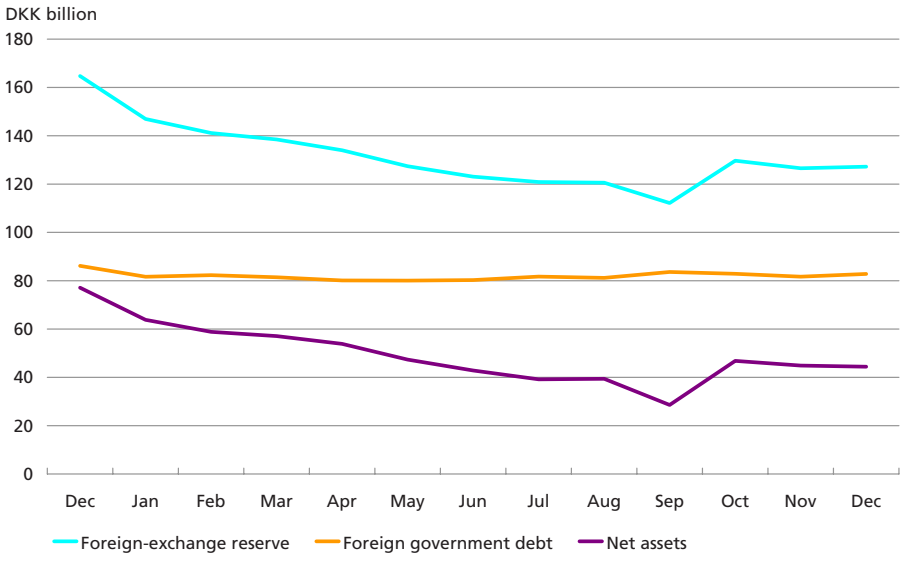
Note: Relative CaR is defined as absolute CaR (95th percentile) less the expected interest cost. The expected interest cost is defined as the mean value.

EXCHANGE-RATE RISK 6.3

The central government and Danmarks Nationalbank are exposed to exchange-rate risk as a consequence of respectively the central government's foreign debt and Danmarks Nationalbank's foreign-exchange reserve. Together these entail either net foreign assets or liabilities. Since 1992 the exchange-rate risks of the central government and Danmarks Nationalbank have been subject to formalised coordinated management of the exchange-rate risk on the net assets/liabilities, since the purpose of the central government's foreign borrowing is to maintain an adequate foreign-exchange reserve.

As from 2001 the formalised coordinated management has been abolished. It is still the objective not to borrow in one currency and thereafter place the proceeds in another, and that the central government should not be exposed to a significant indirect exchange-rate risk via Danmarks Nationalbank. It has been decided as from 2001 that the central government's foreign debt will be exposed solely to euro. At the same time the Nationalbank's exchange-rate exposure via the foreign-exchange reserve is predominantly in euro, and as a general rule changes in the size of the foreign-exchange reserve are denominated in euro.

DISTRIBUTION OF NET FOREIGN ASSETS IN 2000, END OF MONTH Chart 6.3.1



Net foreign assets and currency distribution in 2000

Throughout 2000 net foreign assets were held. However, the net foreign assets decreased from approximately DKK 77 billion at the beginning of the year to approximately DKK 44 billion at the close of the year, cf. Chart 6.3.1. The decrease was a consequence of Danmarks Nationalbank's intervention sales of foreign currency[1], which reduced the foreign-exchange reserve.

The exchange-rate risk on the net foreign assets/liabilities has in practice been managed on the basis of a neutral distribution for the currency composition, and the risk has been kept at a low level. The neutral distribution has been determined at the quarterly government debt meetings of the Ministry of Finance, the Ministry of Economic Affairs and Danmarks Nationalbank on the basis of a trade-off between expected risks and returns. To support the determination of the neutral distribution a portfolio model has been applied which takes into account the long-term exchange-rate expectations, exchange-rate risks and interest-rate differential vis-à-vis the euro area.

Exposure to currencies other than euro has been small, cf. Table 6.3.1. Net debt positions have been held in Swiss francs and yen, for which interest rates are lower than the equivalent euro interest rates. The

[1] The central government's raising of foreign loans does not in itself affect the size of the net foreign assets/liabilities, since the Nationalbank purchases the currency proceeds and credits an equivalent amount in kroner to the central government's account. The Nationalbank's foreign assets thereby increase in parallel with the foreign government debt.

NEUTRAL DISTRIBUTION OF NET FOREIGN ASSETS, 2000 Table 6.3.1

DKK billion	USD	JPY	GBP	CHF	EUR	Total
1st qtr.	-2.0	-0.5	2.0	-3.5	Rest	57.1
2nd qtr.	-2.0	-0.5	2.0	-3.5	Rest	42.8
3rd qtr.	-2.0	-0.5	2.0	-3.5	Rest	28.6
4th qtr.	-2.0	-0.5	2.0	-3.5	Rest	44.4

Note: Negative figures indicate liability positions. The size of the net foreign assets "Total" is calculated at end of quarter.

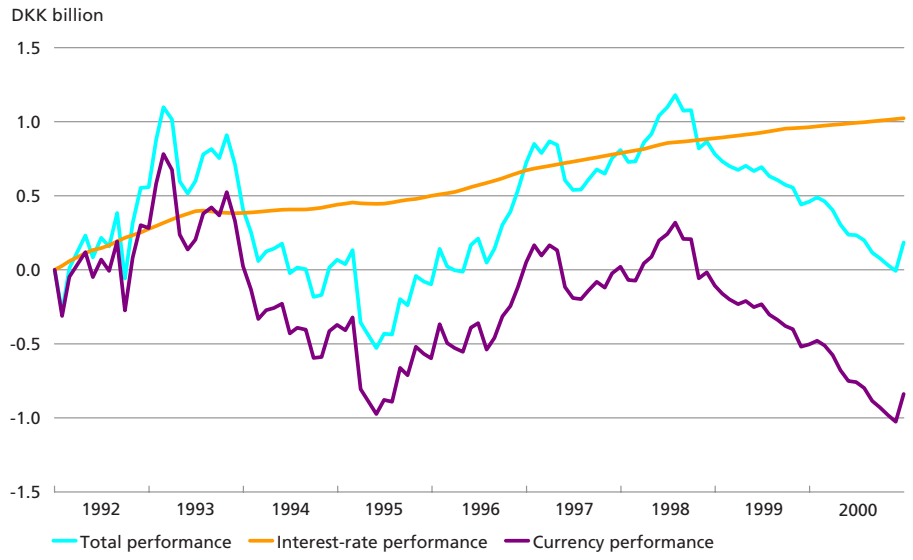
background to the relatively small debt position in yen despite the very low Japanese interest rates is the significantly higher exchange-rate risk in yen. The positions in dollar and sterling must be considered together, since the two currencies show strong correlation. The exchange-rate risk on the sterling-denominated net foreign assets has therefore been offset by a net liability position in dollars.

Performance

The objective of the positions is to give a higher return than an exposure exclusively in euro. The difference in the return is the performance of the neutral distribution and it is calculated on the basis of the development in exchange rates and the interest-rate differential to the euro.

In 2000 performance was negative at DKK 0.3 billion, cf. Chart 6.3.2. The negative performance is due mainly to the weakening of the euro vis-à-vis the dollar and the Swiss franc, and the dollar's strengthening

ACCUMULATED PERFORMANCE OF THE NEUTRAL DISTRIBUTION, 1992-2000 Chart 6.3.2



Note: Observations at end of month. The calculation takes into account the transition from management by a relative to an absolute risk measure, cf. Chapter 4 of *Danish Government Borrowing and Debt 1998*.

against sterling. Performance has been DKK 0.2 billion for the entire period since the introduction of the coordinated management in 1992.

The Nationalbank's day-to-day positions in relation to the neutral distribution have been very moderate and the performance thereon has resulted in a small loss, due mainly to the strengthening of the dollar.

CREDIT RISK 6.4

Swaps are used by the central government to adjust the foreign-currency and interest-rate terms for existing or new loans. A swap is an agreement to exchange different types of payments for a defined period. The difference in value between these two cash flows may develop in the central government's favour, but the central government risks a loss if the counterparty defaults on the payment obligations. The risk of loss is called the credit risk.

In order to limit the credit risk on the central government's swap portfolio, principles for credit-risk management of the portfolio have been laid down. Significant elements of the credit-risk management are the required high rating for the counterparties, that credit exposures are to be held within relatively tight credit lines, and finally, that new transactions only take place with counterparties which have signed, or are soon expected to sign, a collateral agreement. A more detailed description of the principles for credit-risk management is given in Chapter 11.

The credit risk of the swap portfolio at the close of 2000

In 2000 the central government transacted 85 new swaps for a total principal of DKK 27.2 billion. Of these, 49 were interest-rate swaps in Danish kroner with a total notional value of DKK 13 billion. During the year 49 swaps with a total principal of DKK 29.8 billion expired. The composition of the swap portfolio is presented in Table 6.4.1.

SWAP PORTFOLIO OF THE CENTRAL GOVERNMENT, YEAR-END 1998-2000 Table 6.4.1

	1998	1999	2000
Number of counterparties	33	36	34
Number of swaps	177	192	228
		DKK billion	
Interest-rate swaps, Danish kroner	0.5	8.0	21.0
Interest-rate swaps, other currencies	61.5	54.2	40.3
Currency swaps	48.2	55.1	57.5
Structured swaps	3.9	3.5	1.7
Principal, total	114.1	120.7	120.5

NET MARKET VALUE OF THE SWAP PORTFOLIO, YEAR-END 1998-2000 Table 6.4.2

DKK billion	1998	1999	2000
Interest-rate swaps, Danish kroner	-0.0	-0.2	0.7
Interest rate swaps, other currencies	-1.1	-0.4	0.3
Currency swaps	1.0	4.8	4.1
Structured swaps	0.0	0.3	0.1
Total	-0.1	4.4	5.2

The principal of the swaps relating to the foreign debt exceeds the central government's foreign debt. This is primarily because often both an interest-rate and a currency swap are transacted when a new foreign loan is raised, cf. Chapter 3.

The market value of the central government's swap portfolio increased by DKK 0.9 billion during 2000, cf. Table 6.4.2.

As a consequence of fluctuations in interest and exchange rates there can be relatively strong fluctuations in the swap portfolio's market value over time. The market value will therefore often be highly dependent on the specific calculation date. For example, the market value was DKK 10.1 billion at the end of October 2000 when the dollar was strongest vis-à-vis the euro.

Table 6.4.3 shows that the market value of the swap portfolio will increase by DKK 1.5 billion should domestic interest rates decrease by 1 percentage point; equivalently, a dollar appreciation of 1 per cent against the Danish krone will increase the market value by DKK 0.4 billion. The decrease in domestic interest rates and the strengthening of the dollar against the euro in 2000 thus led to an increase in the market value of the swap portfolio.

It should be noted that in isolated terms the market value of the swap portfolio is of interest solely from a credit-risk management viewpoint

EXCHANGE-RATE AND INTEREST-RATE SENSITIVITY OF THE SWAP PORTFOLIO, END-2000 Table 6.4.3

DKK billion	Increase in market value on appreciation by 1 per cent vis-à-vis DKK	Increase in market value on a decrease in interest rates by 1 percentage point
DKK	•	1.5
EUR	-0.4	-0.4
USD	0.4	1.0
GBP	0.1	0.1
Other currencies (net)	0.0	0.2
All currencies (net)	0.0	2.3

Note: The stated measures exclude structured swaps.

CREDIT QUALITY OF THE SWAP PORTFOLIO, YEAR-END 1998-2000 Table 6.4.4

Rating	1998		1999		2000	
	Number of counter-parties	Credit exposure (DKK billion)	Number of counter-parties	Credit exposure (DKK billion)	Number of counter-parties	Credit exposure (DKK billion)
AAA	9	2.1	9	2.9	10	2.2
AA+	5	1.2	5	1.9	4	0.9
AA	4	1.8	3	1.8	3	1.6
AA-	13	2.1	13	4.5	12	3.0
A+	2	0.2	5	0.3	4	0.6
A	-	-	1	0.0	1	0.1
A-	-	-	-	-	-	-
Total	33	7.4	36	11.4	34	8.3
Of which:						
- Actual exposure		2.2		5.5		5.9
- Collateral pledged ..		0.0		-0.2		-2.2
- Potential exposure ..		5.2		6.0		4.6

Note: From 2000 the principles for distributing the credit exposure on rating were adjusted. In the Table the figures for 1998 and 1999 have been redistributed according to the new principles.

since the swap portfolio should be considered in conjunction with the overall government debt.

The central government's credit exposure on transacted swaps decreased by DKK 3.1 billion to a total of DKK 8.3 billion at the close of 2000, cf. Table 6.4.4, notwithstanding the increase in the market value of the swap portfolio.

The background is that several swap counterparties have signed collateral agreements during 2000. Introduction of collateral agreements affect the credit exposure in two ways. If the market value of a swap portfolio exceeds a given threshold value, collateral is provided, whereby the *actual* credit exposure decreases. But at the same time the collateral agreement helps to limit possible *future* increases in market value, so that the *potential* credit exposure also declines. The latter also applies even if the market value does not exceed the threshold value.

The collateral agreements have led to a significant reduction of the central government's overall credit exposure, cf. Table 6.4.5. Without collateral agreements the credit exposure would thus have been DKK 13.3 billion.

Swap no. 793 required special attention in 2000. When the collateral agreement with the counterparty was originally established in 1999, this particular swap was not covered by the agreement, because it was a type of swap that was difficult to include in the collateral agreement. However, the market value of the swap developed strongly in the central government's favour, thereby generating an unacceptable credit exposure. A

IMPACT OF COLLATERAL AGREEMENTS ON CREDIT EXPOSURE — Table 6.4.5

	DKK billion
Credit exposure without collateral agreements	13.3
Reduction of credit exposure on swap no. 793	-1.0
Collateral pledged	-2.2
Reduction of potential credit exposure	-1.8
Credit exposure with collateral agreements	8.3

dialogue was initiated with the counterparty with the objective of eliminating this exposure. The solution was that the liability leg of the swap (the central government's obligations under the swap) was increased to the market value of the swap at that time, which was then paid to the central government. At the same time, the swap became subject to the collateral agreement, so that any future positive market value will be covered. The adjustment of swap no. 793 has entailed a reduction of the central government's overall credit exposure by DKK 1.0 billion.

Overall, the credit risk on the central government's swap counterparties is still moderate.

Status of establishment of collateral agreements with swap counterparties

In May 1999 the central government began negotiations on the establishment of collateral agreements. Under these agreements the counterparties must pledge collateral for market values in the central government's favour on transacted swaps which exceed the agreed threshold value. The background to this initiative is the wish to limit as much as possible the central government's credit risk on swap counterparties. A more detailed description of the collateral agreements and their significance to the central government's credit risk on the swap portfolio is presented in Chapter 11.

The central government establishes new swaps only with counterparties which have signed, or are soon expected to sign, a collateral agreement. At the beginning of 2001 14 agreements have been signed and implemented. Moreover, 5 agreements have by and large been negotiated to completion and are expected to be signed within the next months. The most significant factor complicating the conclusion of collateral agreements is the finalisation of the related agreements with the custodian banks that will administer the pledged collateral.

At the close of 2000, 60 per cent of the principal of the swap portfolio was covered by collateral agreements. This cover ratio is expected to increase to approximately 80 per cent before the end of 2001.

Special-Topic Section

CHAPTER 7

Trends in the Government Debt Policies of EU Member States

SUMMARY 7.1

Internationally the trend for a number of years has been towards the standardisation of government debt policy. The development is in parallel with the gradual integration of the international financial markets, and has most recently been reinforced by the establishment of the euro. As a consequence, the countries, in particular the EU area, increasingly compete to achieve the cheapest funding.

Important common aspects of the government debt policies of the EU member states are described against the background of the development trends during the years up to and after the establishment of the euro. The development has been influenced by the considerations with respect to liquidity and investor diversification. In order to take these considerations into account, the focus has been on issue methods, buy-backs and switching operations, as well as electronic trading.

Liquidity is one of the key parameters of competition in the market for euro-denominated government bonds. In view of declining borrowing requirements and greater competition the EU countries have used buy-backs and switching operations to concentrate their debt in fewer, larger series. For some countries it is not possible to maintain liquid series across the entire maturity spectrum. In all EU member states high priority is given to the 10-year segment, with outstanding volumes of between EUR 5 and 24 billion, depending on the borrowing requirement of the issuer.

The smallest outstanding volume of EUR 5 billion corresponds to one of the criteria for participation in the electronic trading system EuroMTS. There is a tendency for expansion of electronic trading at both national and European level. This reduces the costs of trading certain government bonds, and at the same time increases liquidity.

Auctions are the issue method most commonly used among the EU member states. The publication of auction calendars has increased transparency. The smaller countries in particular combine auctions with the

syndication of benchmark bonds, in order to provide a quick build-up of outstanding volume and greater certainty of issue.

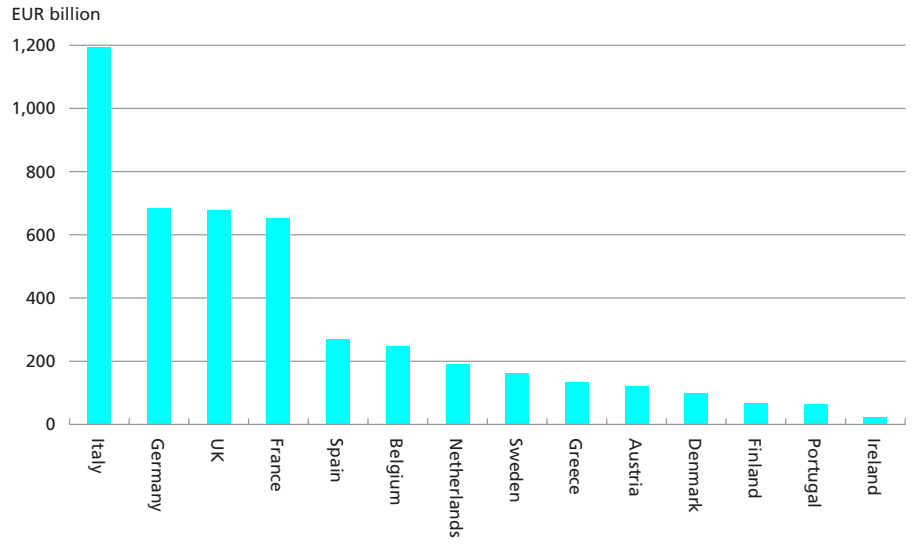
There is growing focus on the composition of the investor base. A broad international investor base of primarily major institutional investors contributes to low borrowing costs and facilitates sale of future issues. The elimination of the exchange-rate risk within the euro area in itself has stimulated diversification of the investor base.

THE BORROWING AND DEBT OF THE EU MEMBER STATES 7.2

The size of the debt and borrowing of the EU member states varies considerably. Italy has the largest central-government debt within the EU at EUR 1,200 billion as of end-1999, cf. Chart 7.2.1, followed by Germany, the UK and France with a debt of around EUR 650 billion. The debt of Spain, Belgium, the Netherlands and Sweden is EUR 150-300 billion, while the debt of the other EU member states is below EUR 130 billion.

The picture is somewhat different if the countries are ranked in terms of the debt relative to GDP. While Belgium, Greece and Italy have a ratio of debt to GDP of more than 100 per cent, Germany has one of the lowest ratios of debt to GDP at 35 per cent.[1]

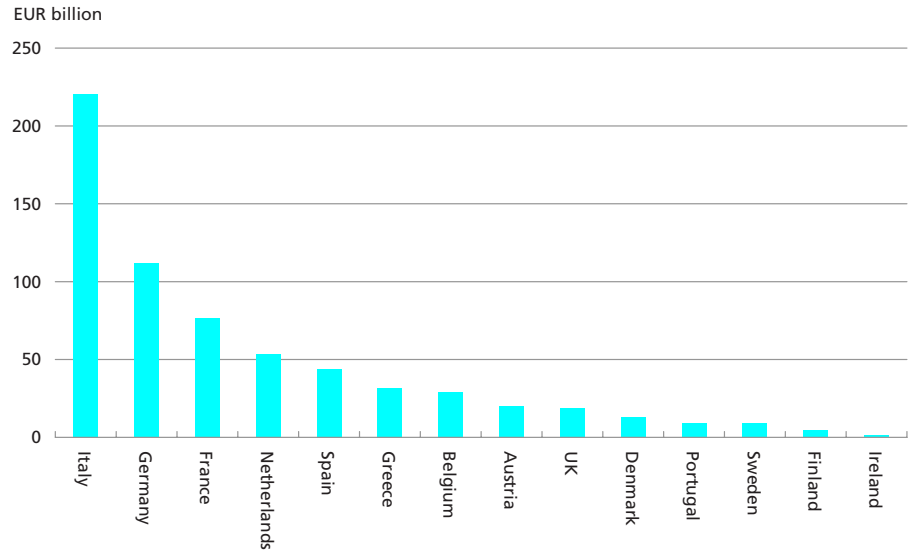
CENTRAL-GOVERNMENT DEBT OF THE EU MEMBER STATES, END-1999 Chart 7.2.1



Source: OECD Central Government Debt. *Statistical Yearbook*, February 2001.

[1] It should be noted that this concerns central-government debt, and thus not the debt of the general-government sector as defined in the EU Treaty.

GROSS ISSUES, 1999 Chart 7.2.2



Note: The statistics comprise issues of marketable bonds. However, for Greece gross domestic issues.
Source: OECD Central Government Debt. *Statistical Yearbook*, February 2001. For Greece, the publication *Recent Developments in Public Debt Management*, Hellenic Republic Ministry of Finance Public Debt Division, May 2000.

In recent years the EU member states' central-government borrowing requirements have shown a declining trend. To illustrate the borrowing requirements the EU member states' gross bond issues in 1999 are presented in Chart 7.2.2. It should be noted that in addition to redemptions on the central-government debt and the central-government surplus or deficit for the year, the gross borrowing requirement is also affected by buy-backs of outstanding bonds. If buy-backs in a given year are of a bond maturing in the following year, the borrowing requirement will increase in the buy-back year.

GENERAL DEVELOPMENT TRENDS 7.3

The adjustments made by the EU member states to their debt management in recent years have led to a growing degree of harmonisation of the issuing policies of the member states. This trend is characterised by a number of general themes, of which the most important aspects are liquidity and investor diversification.

Liquidity

Liquidity is a key parameter of competition in the market for euro-denominated government bonds, and most EU member states focus on large liquid issues. This is related to the fact that after the elimination of

DISTRIBUTION OF SALE, 2000 Table 7.3.1

Per cent	Year of maturity				
	2001-04	2005-08	2009-12	2013-20	2021-
Belgium	1	29	52	8	10
Denmark	42	20	38	-	-
UK	-	-	-	-	100
Finland	29	-	71	-	-
France	21	31	39	-	8
Greece	23	28	26	23	-
Netherlands	44	-	56	-	-
Ireland	-	51	38	11	-
Italy	38	27	19	-	16
Portugal	-	33	67	-	-
Spain	27	27	30	8	8
Sweden	20	16	61	4	-
Germany	22	25	40	-	13
Austria	4	52	35	-	10

Source: The Web sites of the debt-management administrations. The statistics cover sales of domestic fixed-rate bonds.

the exchange-rate risk among the euro-area member states liquidity has become a key factor in the markets for government bonds. Moreover, the increase in supply of corporate bonds presents investors with an alternative to less liquid government bonds.

The countries' strategy is based on the assumption that liquidity premiums reduce borrowing costs, cf. Chapter 7 of Danish Government Borrowing and Debt, 1998. The current issues open for sale are therefore typically concentrated on a limited number of securities. As an indication, the distribution of sales in a particular year is presented in Table 7.3.1, while the build-up of outstanding volume is shown in Table 7.3.2. In 2000 all member states, with the exception of the UK, have issued in the internationally important 10-year segment, while in some cases lower priority has been given to other segments. In the large countries (France, Italy and Germany) the outstanding volume in the 10-year series exceeds EUR 20 billion, while in Belgium, the UK, the Netherlands and Spain the volume is EUR 10-15 billion. The level is around EUR 5 billion in the smallest countries. It should be noted that an outstanding volume of at least EUR 5 billion is one of the requirements for a euro-denominated bond to be accepted for trading in the trading system EuroMTS, cf. section 7.6.

The determination of current issues open for sale has an additional dimension for the EU member states outside the euro area. Several member states have the objective that their government debt policy should contribute to supporting an efficient domestic financial market. For the euro-area member states this objective has changed, since their domestic financial market is the euro market, while the EU member

BUILD-UP OF OUTSTANDING VOLUME Table 7.3.2

EUR billion	2-year	5-year	10-year	30-year
Belgium	12.6	10.1	15.1	9.4
Denmark	4.7	6.9	8.9	-
UK	-	11.8	14.0	18.4
Finland	6.0	-	5.2	-
France	21.7	17.2	24.1	15.6
Netherlands	14.0	11.0	12.1	8.9
Ireland	3.0	5.3	6.6	-
Italy	10.0	19.2	22.5	23.2
Portugal	-	3.5	5.2	-
Spain	9.7	9.1	12.5	12.2
Sweden	7.3	7.9[1]	8.7[2]	-
Germany	8.0	15.0	23.0	11.1
Austria	7.5	7.8	8.8	5.2

Source: The Web sites of the debt-management administrations. Compiled at end-2000. Series in which there has been issued after 1 January 1999.

[1] Parallel issue in SEK/EUR, of which EUR 2.5 billion issued in EUR.

[2] Parallel issue in SEK/EUR, of which EUR 3 billion issued in EUR.

states not participating in the euro area must still take into account the maintenance of an efficient domestic financial market.

A combination of improvement in the underlying budgetary situation, together with large one-off receipts from e.g. sale of third-generation mobile telephone licences (UMTS licences) has diminished the borrowing requirements. This has made it necessary to take active steps to ensure liquidity.

Firstly, buy-backs are used to a greater extent than before. By buying back less liquid series and issuing in benchmark series the issues are concentrated in fewer, larger series, cf. section 7.5. Secondly, interest-rate swaps are used to manage the interest-rate risk. The issuing strategy can thus be planned independently of the management of the interest-rate risk. Finally, a number of countries such as Sweden and the UK undertake foreign borrowing by raising domestic loans combined with swaps to foreign currency, thereby supporting the liquidity of the domestic series. Other countries have reduced their foreign borrowing in favour of domestic borrowing.

Finally, coordinated issuance in order to pool liquidity from several countries have been subject to consideration. In this respect the Giovannini Group has prepared a report to the European Commission. The EU member states take varying standpoints on joint issuance, and several factors impede the evaluation of the advantages of such issuance. However, these considerations in themselves indicate that liquidity is a key parameter of competition in the market for euro-denominated government bonds. The report is presented in further detail in Box 7.1.

COORDINATED EURO ISSUANCE? Box 7.1

The importance of liquidity has led to considerations regarding coordinated issuance so as to pool liquidity from several countries. In this connection the European Commission has prepared the report "Co-ordinated Public Debt Issuance in the Euro Area", November 2000. The report points out that joint issuance can be an advantage to the smaller countries which can achieve a reduction of costs due to a larger liquidity premium.

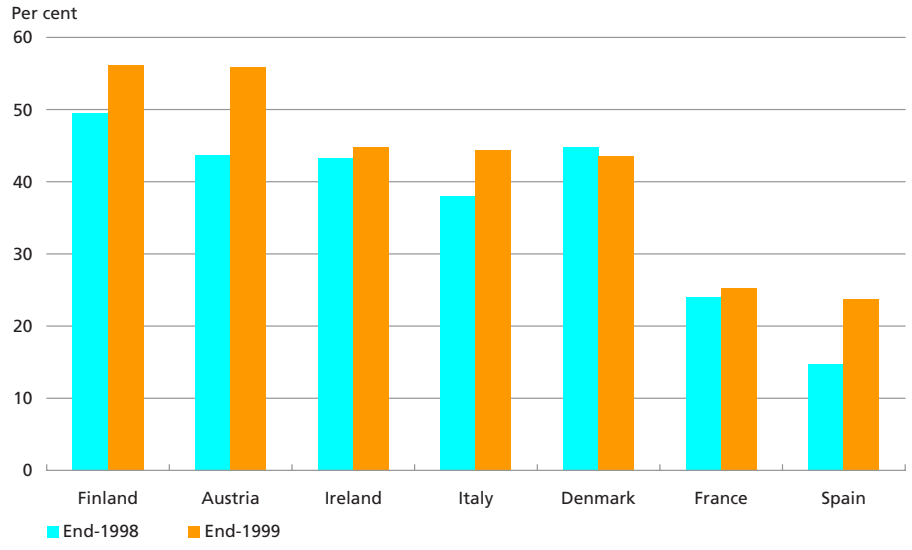
The EU member states' standpoints on joint issuance diverge and several factors impede evaluation of the advantages of such issues. Firstly, it is uncertain how the market will perceive an issue for which the participating member states have varying credit ratings. Secondly, joint issuance entail that the participating member states are liable for each other's debt, which is not admissible under the EU Treaty.

The report was prepared by the Giovannini Group which advises the EU on topics related to the integration of the financial market in the Economic and Monetary Union. The report can be seen at the following Web site:
www.europa.eu.int/comm/economy_finance/document/euro/giovannini081100en.pdf

Investor diversification

In the planning of issuing policy there has been greater focus on the composition of the investor base in recent years. To increase the proportion of foreign investors, there is a wish to develop new investor segments. This interest in attracting international investors is related to the fact that demand from these investors helps to ensure low borrowing

PROPORTION OF CENTRAL-GOVERNMENT DEBT
HELD BY NON-RESIDENTS, SELECTED COUNTRIES Chart 7.3.1



Source: OECD Central Government Debt. *Statistical Yearbook*, February 2001.

costs and facilitates future issues. This is especially the case if the international investor base primarily comprises major institutional investors.

In recent years the tendency in the euro-area member states has been for an increasing proportion of the government debt to be held by non-residents, cf. Chart 7.3.1. This is a natural consequence of the fact that investors can now spread their investments on several countries without undertaking an exchange-rate risk. This has been of great importance to the institutional investors, which are normally subject to placement rules restricting the scope of investments denominated in foreign currencies.

The smaller countries in particular have sought to attract a broader, more internationally-oriented investor base by undertaking first issues of benchmark bonds through syndication, cf. section 7.4.

ISSUE METHODS 7.4

For a number of years domestic government securities have mainly been issued by either auction or on tap. After the introduction of the euro a number of countries have added syndication to these methods. An overview of the issue methods used by the EU member states is presented in Table 7.4.1.

Auctions are used on a wide scale for both short-term and long-term loans. The Netherlands applies a special kind of mini-auction which takes place on a monthly basis over a period of three days.

OVERVIEW OF ISSUE METHODS Table 7.4.1

	Syndication of benchmark bonds	Auctions		Tap issues	
		Long-term loans	Short-term loans	Long-term loans	Short-term loans
Belgium	✓	✓	✓		✓
Denmark			✓	✓	
UK		✓	✓	✓	
Finland	✓	✓			✓
France		✓	✓		
Greece	✓	✓	✓		
Netherlands ...		✓	✓		
Ireland		✓		✓	✓
Italy		✓	✓		
Portugal	✓	✓	✓		✓
Spain		✓	✓		
Sweden		✓	✓		✓
Germany		✓	✓	✓	
Austria	✓	✓	✓	✓	

Source: Report on National Issuing Procedures and Calendars, Economic and Financial Committee Group on EU Government Bills and Bonds, November 2000, and Web sites of the debt-management administrations.

PRIMARY DEALERS Box 7.2

Primary dealers are banks which by agreement with the government issuer, and in return for payment or special privileges, undertake certain commitments in the primary and/or secondary market for specific government securities.

Today all EU member states, except Denmark and Germany, use primary dealers as an important means to generate turnover in government securities and to ensure a broad international group of investors. Most member states use around 10-20 primary dealers, cf. the Table below. The greater integration of the financial markets, and recent years' increased interest in attracting foreign investors, has caused many countries to add more foreign banks to the group of primary dealers.

Germany and Denmark do not use primary dealer systems as such in connection with the sale of government securities. Germany uses a permanent group of 46 German and international banks in conjunction with its auctions (as of 1 January 2001). In Denmark, all members of the Copenhagen Stock Exchange have access to purchase government securities in the primary market. Moreover, the monetary-policy counterparties have access to bid at Treasury bill auctions.

Examples of obligations under primary dealership are:

- Primary dealers must acquire a certain minimum proportion of the amounts issued at auction, or submit bids for a given minimum.
- Market-making commitments whereby the participants must set two-way prices vis-à-vis customers and other primary dealers for certain amounts within certain spreads.
- The primary dealers must each subscribe for a certain minimum proportion of the turnover of the secondary market.

Examples of privileges include:

- Sole right to bid at auctions of government securities.
- Sole right of access to securities lending and stripping facilities
- Direct payment.

PRIMARY DEALER SYSTEMS IN THE EU MEMBER STATES Table

Number of primary dealers	Total	Of which foreign banks
Belgium	16	13
UK	17[1]	13
Finland	10	9
France	19	11
Greece	11	5
Netherlands	13	10
Ireland	6	3
Italy	16	9
Portugal	12	8
Spain	18	8
Sweden	8[2]	4
Austria	28	19

Source: Progress Report on Primary Dealership in EU Public Debt Management, Economic and Financial Committee Group on EU Government Bills and Bonds, November 2000.

[1] Gilt-edged Market Makers (GEMM). There is also a separate group of primary dealers for central-government index-linked bonds.

[2] Authorised dealers. There are also 4 authorised dealers for central-government index-linked bonds.

SYNDICATION IN PRACTICE Box 7.3

Syndication is typically used by the smaller countries to ensure large issues on the opening of a domestic paper. Sale is thereafter supplemented with auctions or sales on tap.

Role of the banks

Syndication entails the mediation of sale to investors via a consortium of banks. This group typically comprises 1-2 lead managers and 5-10 co-lead managers. The lead managers are responsible for the sale of by far the largest proportion of the issue (typically over 90 per cent), while the remainder is sold by the other banks.

In the period up to the issue, price and volume, as well as the fixing of a precise time of issue, are discussed by the issuer with the lead managers in the group. During this period the banks are in continuous contact with investors, in preparation for the issue.

The banks are paid for their participation in the syndication.

Targeting of investor base

One of the advantages of syndication is that investors can be targeted. Typically, sale is targeted at certain specific investors who are either already in the investor base, or are considered by the banks to be potential buyers on the basis of their experience with the market. Sale is targeted via "road shows" which are meetings of the participating banks and the issuer with selected potential investors.

Pricing

Based on the banks' contacts with investors the issuer can form an expectation of the demand curve. On the basis of the expected demand curve the issuer sets indicative prices in cooperation with the banks. The investors then submit bids on the basis of these indicative prices. This testing of investor interest helps the issuer to determine the final price.

Book building typically takes place electronically, so that the issuer can monitor receipt of the bids.

The large number of auctions in the market for euro-denominated government bonds has made it necessary for issuers to attract investors' attention to their particular auction. Most countries therefore have fixed auction days, or fixed periods between the auctions, and publish auction calendars, typically on a semi-annual basis. There is also a tendency for the countries to concentrate the sale on fewer, larger auctions.

Virtually all countries issuing government securities by auction make use of a more or less formalised primary dealer system. Primary dealers are banks which by agreement with the government issuer and in return for payment or special privileges are committed to ensuring liquidity and turnover in specific government securities. The use of primary dealers is described in Box 7.2.

Syndication is the mediation of sales to investors via a consortium of banks which in return for payment are responsible for the practical arrangement of the issue. Syndication is presented in Box 7.3.

Syndicated issue of benchmark bonds is used especially by the smaller euro-area member states (Belgium, Finland, Portugal, Greece and Austria). The method is used in order to achieve a high initial outstanding volume and thereby quickly build up liquidity in a particular issue. This has several advantages. Firstly, as stated liquidity is a key parameter of competition in the market for euro-denominated government bonds. Secondly, from the outset this ensures a liquidity premium which contributes to reducing the costs of borrowing. Finally, the series quickly achieves a volume and liquidity that makes it eligible for trading in the EuroMTS trading system, cf. section 7.6.

In addition to liquidity, syndication enables the issuer to influence the investor composition. This was an advantage on the transition to the euro, when the disappearance of convergence trade made it necessary to find new investors. Syndication exploits the investment banks' contact with investors. When the price is set, the issuer can also determine the allocation to the various bidders. If required by the issuer, particular investor groups can be allocated relatively more than other investor groups.

Finally, syndication facilitates control of pricing. The latter takes place via a type of "controlled auction", whereby the issuer uses indicative prices to get the feel of the market before the final price is set.

Syndication generates greater certainty of issue. The increased certainty should be weighed against the fact that the fees paid to the participating banks make the total (direct) costs of issue higher than for other issue methods.

None of the countries use syndication exclusively, but typically apply a combination of auction sale and syndication. The participants in both auctions and syndications are typically primary dealers. The opportunity to be a lead manager in future syndications is often an element of the privileges granted to primary dealers. Often the lead manager and co-lead manager are selected on the basis of the banks' auction participation.

BUY-BACKS AND SWITCHING OPERATIONS 7.5

In buy-backs the central government buys outstanding debt in the secondary market. If the outstanding government securities are acquired with payment in the form of other government securities, this operation is called switching. Both buy-backs and switching operations can be undertaken on either tap or auction.

Today virtually all EU member states make use of either buy-backs or switching operations, and the trend has been rising in recent years. This

can be attributed to the greater focus on liquidity, together with a reduced borrowing requirement. By buying back series with redemption in subsequent years the borrowing requirement in the buy-back year can be increased. The principal reason for buy-backs among the EU member states has been to build up large liquid benchmark series in order to achieve liquidity premiums. Other motives are:

- Management of the interest-rate and refinancing risk. Buy-backs can be used to smooth the redemption profile within the year or between years, thereby reducing the refinancing risk.
- Achievement of direct fiscal savings by buying back in non-market conforming bonds which are undervalued in the market.

Even though the use of buy-backs and switching operations has become generally prevalent, their use is often limited to occasional operations, such as in connection with the establishment of the euro. With the exception of a few countries calendars are therefore not published, as in the case of issues. Belgium has a regular switching operation programme for bonds with a remaining maturity of less than one year, and in Finland buy-backs and switching operations are undertaken in connection with normal auctions. In summer 2000 France announced an extensive buy-back programme for the 2nd half of 2000.

OVERVIEW OF BUY-BACK METHODS — Table 7.5.1

	Buy-back		Switching operation	
	Tap[1]	Auction	Tap[1]	Auction
Belgium				✓
Denmark	✓			
UK	✓	✓	✓	✓
Finland	✓	✓	✓	✓
France	✓	✓	✓	✓
Greece		✓	✓	✓
Netherlands	✓			✓
Ireland	✓		✓	
Italy		✓		
Portugal	✓		✓[2]	
Spain	✓	✓		✓
Sweden	✓	✓	✓	✓
Germany[3]				
Austria	✓			✓

Source: Web sites of the debt-management administrations.

[1] Tap covers both current buy-backs and switching operations and buy-backs and switching operations subject to pre-announcement of specific issues.

[2] Portugal has not yet undertaken buy-backs, but has announced that it will commence a switching operation programme in February 2001 in order to concentrate the debt in large series.

[3] Germany does not have a buy-back programme, but in 2000 part of the proceeds from the UMTS licences were used to buy back AfW (Ausgleichsfonds für Währungsumstellung) bonds for around EUR 34 billion.

Buy-back methods

Table 7.5.1 presents which of the countries use buy-backs and/or switching operations, and the methods applied.

The trends in the EU member states are for:

- Use of auctions for major operations, where the primary consideration is to build up large series.
- Use of the tap method for minor buy-backs and switching operations.

ELECTRONIC TRADING OF CENTRAL-GOVERNMENT SECURITIES 7.6

To a significant degree the euro has been a catalyst in increasing the prevalence of electronic securities trading.[1] Investors in the euro area no longer undertake exchange-rate risks related to their euro-denominated bond portfolios, and to an increasing degree diversify their portfolios. This greater diversification has led to a wish from the major investment banks in particular for a marketplace in which the government bonds of several member states are traded side by side.

The advantage of a common platform is a reduction of the costs of trading standardised products such as euro-denominated government bonds, while liquidity is increased. Since liquidity, as previously stated, is a key parameter of competition, it is important to the countries that their bonds are traded on a common platform such as EuroMTS and Brokertec, as described in more detail in Box 7.4.

Electronic trading has also become more common in the national marketplaces for securities trading. During the past few years, several euro-area member states (Belgium, France, the Netherlands, Italy and Portugal) have established national MTS systems based on the same technology as EuroMTS.[2] In these systems usually all bonds are traded, including those which are not traded on EuroMTS.

CONCLUSION 7.7

The central-government debt policies of the EU member states are developing continuously. The countries' government-debt administrations are in a process whereby government debt policy is being adapted to a situation with a declining government borrowing requirement and the establishment of the single market for euro-denominated government

[1] For a more detailed description of trends in electronic securities trading, see Birgitte Søgaard Jensen and Lone Natorp, A Changing Stock-Exchange Environment, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2000.

[2] Moreover, in May 1998 Greece established a trading system (HDAT), based on the same technology as the MTS systems.

bonds. The EU member states are focusing on building up a limited number of liquid series. This trend can be expected to continue towards even greater harmonisation, and thereby even more competition.

EXAMPLES OF ELECTRONIC TRADING SYSTEMS Box 7.4

Electronic inter-dealer brokers such as EuroMTS and Brokertec are expected to be of growing importance in the secondary market for government securities. An electronic inter-dealer broker is a system which offers electronic trading between securities dealers.

Both EuroMTS and Brokertec state their objective to be to minimise trading costs and increase liquidity, transparency and efficiency in the market. The shareholders are large international investment banks, and to some extent the shareholders of the two companies overlap. The systems are very similar, but differ in certain areas such as technology and the securities traded.

EuroMTS

EuroMTS is based on the electronic platform Telematico developed by the Italian company MTS (Mercato dei Titoli Stato). MTS was founded in 1988 and privatised in 1997 and has developed the first European electronic market for government bonds. In 1998 a separate private company, EuroMTS, was formed. It has undertaken to build up a trading system for benchmark bonds in the euro area, based on the same technology. Trading on EuroMTS began on 9 April 1999.

Originally, only German, French and Italian government securities were traded. Since then bonds issued by Belgium, Finland, Greece, the Netherlands, Portugal, Spain and Austria have been added.

A minimum outstanding volume of EUR 5 billion is required for acceptance of a bond for trading in EuroMTS. Moreover, the liquidity in the system is supported by market-making requirements.

Brokertec

Brokertec Global was founded in 1999. Brokertec comprises both a European and an American company, together forming one joint trading platform. Trading on Brokertec commenced in June 2000.

Brokertec uses a technology developed by the OM Group. OM owns e.g. the Swedish stock exchange and has developed the trading system SAXESS, on which the Nordic stock-exchange alliance NOREX is based.

American and European government securities (Belgian, Dutch, French, German, Spanish and Austrian) are traded on Brokertec.

CHAPTER 8

Coordinated Management of the Exchange-Rate Risk of the Central Government and Danmarks Nationalbank

SUMMARY 8.1

Since 1992 the exchange-rate risk on the central government's foreign debt and Danmarks Nationalbank's foreign-exchange reserve have been subject to coordinated management. The reason is that the purpose of the central government's foreign borrowing is to maintain an adequate foreign-exchange reserve. The objective of coordinated management has been to ensure that the central government did not borrow in one currency while Danmarks Nationalbank made placements in another. In this way the total exchange-rate risk could be limited.

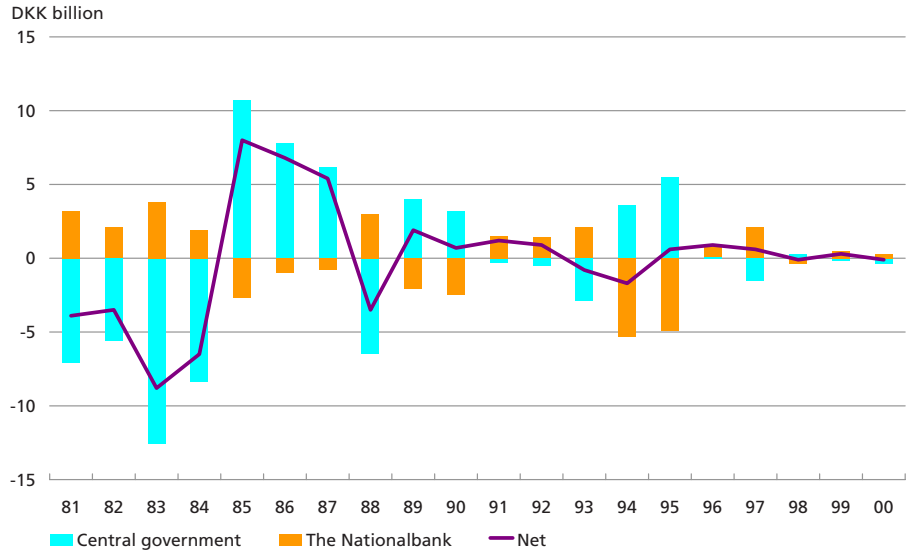
Coordinated management took place at quarterly meetings of the Ministry of Finance, the Ministry of Economic Affairs and Danmarks Nationalbank, where decisions on the total currency exposure of the central government and Danmarks Nationalbank were taken. This greater degree of coordination was appropriate since it reduced the overall exchange-rate risk and provided a framework for risk management. Moreover, after the introduction of coordinated management the total exchange-rate adjustments of the central government and Danmarks Nationalbank were reduced.

As from 2001 the formalised coordinated management has been abolished. It is still the objective not to borrow in one currency and thereafter place the proceeds in another, and that the central government should not be exposed to a significant indirect exchange-rate risk via the Nationalbank.

BACKGROUND TO THE INTRODUCTION OF COORDINATED MANAGEMENT 8.2

Prior to the introduction of coordinated management in 1992 situations could arise where the central government borrowed in one currency and the Nationalbank made placements in another. This was less appropriate since the purpose of foreign borrowing is to ensure an adequate for-

EXCHANGE-RATE ADJUSTMENTS TO THE CENTRAL GOVERNMENT'S FOREIGN DEBT AND THE NATIONALBANK'S FOREIGN-EXCHANGE RESERVE, 1981-2000 Chart 8.2.1



eign-exchange reserve. The central government's foreign borrowing is offset by an equivalent increase in the foreign-exchange reserve. If the currency distribution of the central government's foreign debt and the foreign-exchange reserve are not coordinated, the consequence may be that for certain periods the central government and the Nationalbank taken as one are exposed to a large and fluctuating exchange-rate risk. Especially in the 1980s this gave rise to extensive exchange-rate adjustments, cf. Chart 8.2.1. The office of the Auditor General thus remarked at the beginning of 1991 that "in the Government Debt Office's management of the foreign debt it appears that no consideration is made of the composition of the Nationalbank's foreign-exchange reserve".[1]

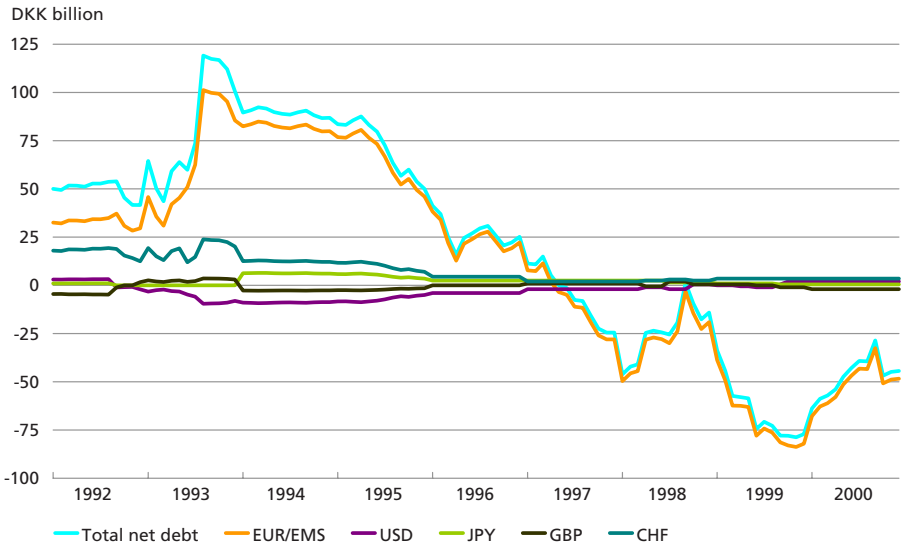
COORDINATED MANAGEMENT IN PRACTICE 8.3

In practice coordinated management took place at the quarterly government-debt meetings of the Ministry of Finance, the Ministry of Economic Affairs and Danmarks Nationalbank at which the currency distribution (neutral distribution) of the net debt was determined.[2]

In view of the fixed-exchange-rate policy the euro (and before 1 January 1999 the core EMS currencies[3]) is considered to be the currency entailing

1 Cf. Report to the government auditors on government borrowing and debt, January 1991.
2 In the following "net debt" indicates both net liabilities and net assets.
3 The core EMS currencies in this regard are DEM, FRF, NLG, BEF, XEU.

NET DEBT AND NET POSITIONS, 1992-2000 Chart 8.3.1



the lowest risk. The net debt in euro therefore reflects an unavoidable exchange-rate risk. Not all of the net currency distribution has been in euro, but positions in other currencies have been relatively small, cf. Chart 8.3.1.

The basis for determining the neutral distribution was the trade-off between expected return and the risk of taking positions vis-à-vis the euro exposure.

To support the determination of the actual neutral distribution a portfolio model was applied which took into account the long-term exchange-rate expectations and exchange-rate risks, and the correlations between currencies and interest-rate differentials.

From the introduction of coordinated management and up to 1995 the neutral distribution was determined as a *relative* distribution of the net debt. This was less appropriate, however, since the absolute exposure in the currencies, and thereby the total exchange-rate risk, changed with fluctuations in the size of the net debt, cf. Chart 8.3.1. As from 1996 the neutral distribution was determined as an *absolute* distribution for all currencies, except the core EMS currencies. This meant that the position in the EMS currencies was determined as the difference between the net debt and the positions in the other currencies. If the net debt fell in parallel with the Nationalbank's purchase of currency, as was the case in 1996 and 1997, this would be solely reflected in a decrease in the net debt in the EMS currencies.

Performance of the neutral distribution

On an ongoing basis returns on the currency composition of the net debt in the neutral distribution have been calculated. Performance of the neutral distribution has thereafter been calculated as the difference in returns on respectively the neutral distribution and exposure exclusively in euro. Since the introduction of coordinated management in 1992 performance has been positive at approximately DKK 0.2 billion, cf. Chapter 6, Chart 6.3.2.

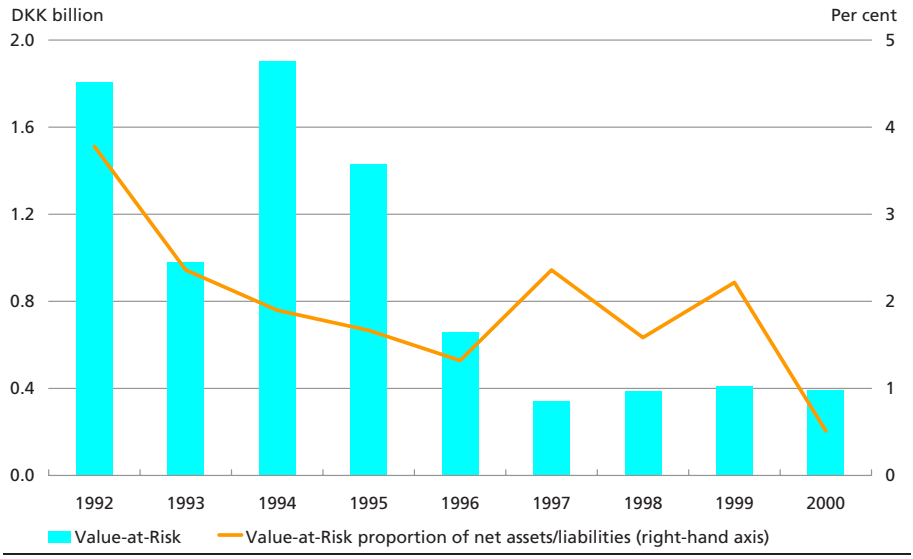
EXPERIENCE FROM COORDINATED MANAGEMENT 8.4

Coordinated management has generally fulfilled its purpose, since its introduction set a framework for the management of the exchange-rate risk, achieved greater awareness concerning the overall exchange-rate risk of the central government and the Nationalbank, and led to the required coordination between borrowing and placements.

Since the introduction of coordinated management the net positions in currencies other than euro have been reduced, thereby reducing the level of risk, cf. Chart 8.4.1.

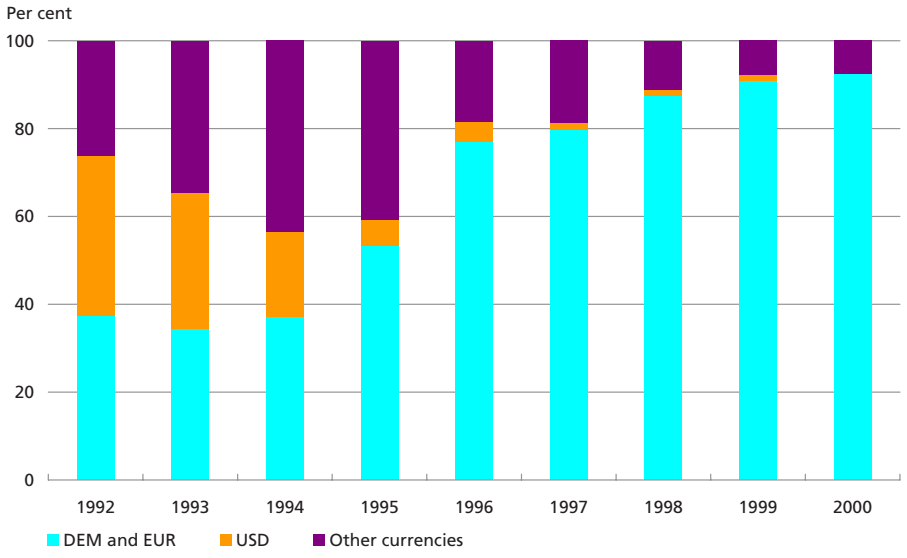
Chart 8.4.1 illustrates the development in Value-at-Risk. In this case the measure states with a probability of 95 per cent the maximum loss on the neutral distribution during the following year compared to an exposure exclusively in euro. In relation to the absolute size of the net debt the risk level has been relatively modest and declining.

VALUE-AT-RISK FOR THE NEUTRAL DISTRIBUTION, 1992-2000 Chart 8.4.1



Note: Compilation as of beginning of year.

DISTRIBUTION OF THE CENTRAL GOVERNMENT'S FOREIGN DEBT, 1992-2000 Chart 8.4.2



Note: Observations, end of year.

The basis for coordinated management of the exchange-rate risk of the central government and the Nationalbank is the net exposure. From the viewpoints of both the central government and the Nationalbank it is appropriate that there are no large gross exchange-rate adjustments, even if the net exchange-rate adjustments are small. In step with the expiry of the central government's dollar-denominated loans the gross positions in dollars – and in the other currencies – were reduced. Within the framework of the low risk on the net debt, there are no other factors in favour of the central government or the Nationalbank holding large gross positions. At the close of 2000 only a small proportion of the central government's foreign debt was not exposed to euro, cf. Chart 8.4.2, and at the beginning of 2001 this proportion was converted to euro.

NEW FRAMEWORK FOR COORDINATED MANAGEMENT 8.5

The reduction of gross exchange-rate exposures in other currencies than euro, and thereby of gross exchange-rate risks, by the central government and Danmarks Nationalbank have changed the terms for the management of the overall exchange-rate risk. Formalised coordinated management is therefore no longer required. It is still the objective not to borrow in one currency and thereafter place the proceeds in another, and that the central government should not be exposed to a significant

indirect exchange-rate risk via the Nationalbank. For this purpose it has been decided as from 2001 that the central government's foreign debt will be exposed exclusively to euro. At the same time the Nationalbank's exchange-rate exposure via the foreign-exchange reserve is predominantly in euro, and as a general rule changes in the size of the foreign-exchange reserve are denominated in euro.

CHAPTER 9

Scenario Analyses of the Government Debt

SUMMARY 9.1

In the long-term planning of government debt policy a scenario model is applied to analyse how the objectives of the government debt policy can be achieved. The model shows the development in the debt portfolio, subject to a number of standardised assumptions. The inclusion of this type of analysis in the basis for government debt policy decision-making ensures that a given strategy is consistent in the long term, and moreover also consistent with the expected future central government net financing requirement of the Ministry of Finance.

The first part of the chapter introduces the scenario model, including the model's function in the planning of government debt policy, and its use in practice. The second part of the chapter presents an example of the application of the model.

PRESENTATION OF THE SCENARIO MODEL 9.2

A scenario model is applied to the overall management of the government debt policy, in order to illustrate the interaction between the management of the interest-rate risk on the central-government debt and the build-up of large, liquid benchmark series. The span of time used in the model is 10 years. The model's strength is that it illustrates the effects of the individual instruments on the possibilities for the central government to achieve its sub-objectives, as well as the results of combining the instruments.

The scenario model is not used for actual forecasts of the development in the central-government debt. The model solely presents how the debt portfolio will develop, subject to a number of standardised assumptions. The model's scenarios thus show the range of possibilities available to a coherent government debt policy.

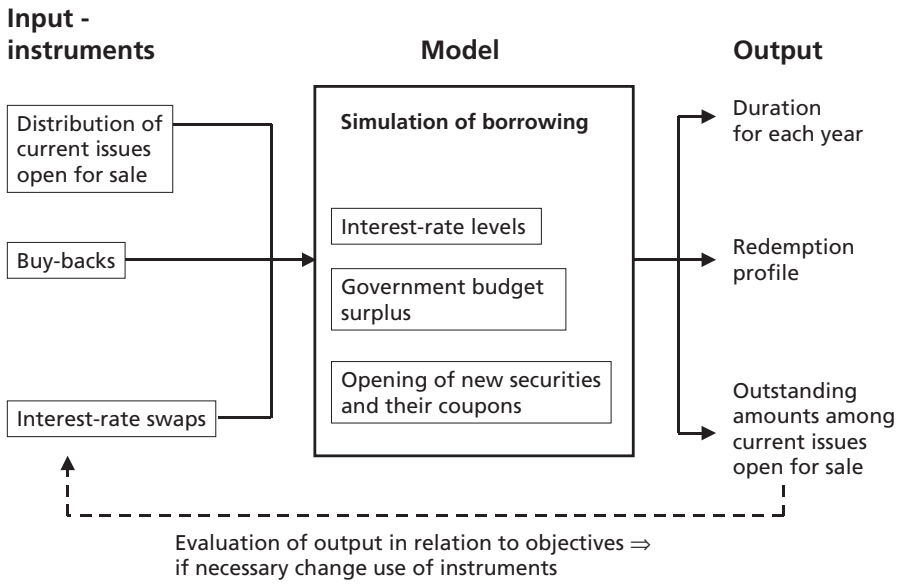
Although the entire government debt is covered by the scenarios, the focus of the model is on simulating domestic borrowing, which constitutes by far the greatest proportion of the government debt. The scenarios for the other elements of the government debt are determined outside the model.

The scenario model is used together with Cost-at-Risk (CaR), cf. Chapter 10, in the overall planning of government debt policy. In the scenario model various borrowing scenarios, and their effect on the duration, redemption profile, etc. of the debt, can be illustrated. The future interest costs of these scenarios can then be assessed using the CaR model. By combining use of the scenario model with the CaR model it is possible to achieve a comprehensive picture of possibilities to ensure low long-term costs, with due consideration of the interest-rate risk.

Use of the scenario model in practice

The scenario model is illustrated in Chart 9.2.1. First objectives for duration, redemption profile and outstanding amount in current issues open for sale are specified. Then the model's parameters for interest-rate levels, central-government budget surplus and the timing of opening of new securities are specified. Moreover, a percentage distribution of borrowing on current issues open for sale, as well as the use of buy-backs and interest-rate swaps, are specified for each year. On the basis of the given parameters and instruments the model calculates borrowing and debt 10 years ahead. For each year the model calculates outstanding amounts in current issues open for sale, as well as duration and redemption profile. The results of the model can then be compared to the objectives. If the objectives are not considered to have been fulfilled, the instruments are adjusted, and the model is run again. It is therefore an iterative process.

THE SCENARIO MODEL — Chart 9.2.1



The model is used in this way as part of the basis for decision on determining central-government debt policy strategies which are mutually consistent in the longer term, and moreover also consistent with the expected future central-government net financing requirement of the Ministry of Finance. Finally, the model can give an indication of the sensitivity of the development in the duration and redemption profile of the debt portfolio to adjustments to the use of the instruments.

Structure of the scenario model

In the model, duration, outstanding volume in current issues open for sale and a redemption profile for the central-government debt are calculated as of the end of each analysis year. The span of time used is 10 years. This illustrates the short-term effects of the central government's instruments on outstanding volume, duration and redemption profile, as well as how they develop in the longer term, should a particular strategy be maintained.

The *interest-rate levels* in the model are described via a zero-coupon yield curve. The zero-coupon yield curve is used to calculate the market value of government securities which are issued or bought back. Moreover, a swap interest rate is fixed in order to specify the duration of the fixed leg of the swap portfolio. The stated interest rates are assumed to be constant throughout the analysis period.

Moreover, the *central-government budget surplus* in each analysis year is specified. The budget surplus is obtained from the Ministry of Finance's medium-term forecast of the central government's net cash balance.

Finally, *the opening years and the coupons of the new current issues open for sale* are specified. The frequency of opening new issues is of importance to the size of the outstanding volume that can be built up in each issue. Usually, new 2-year securities are assumed to be opened every year, while new 5- and 10-year securities are opened every second year. The coupon is normally specified so as to make the price at issue around 100.

Effects of the instruments in the model

The instruments have an impact on the debt portfolio via a number of effects which mutually influence each other. In the first instance the *distribution of borrowing on current issues open for sale* is of importance to the outstanding volume in the individual series. This also affects the redemption profile and thereby the future borrowing requirement. Secondly, the borrowing distribution determines the duration of new issues in the model, thereby also influencing the duration of the total debt.

EFFECT ON SUB-OBJECTIVES Table 9.2.1

Management instruments	Outstanding amounts in current issues open for sale	Redemption profile	Duration
Distribution of borrowing on current issues open for sale	✓	✓	✓
Buy-backs	✓	✓	✓
Interest-rate swaps			✓

Buy-backs transfer the borrowing requirement from the year of maturity of the paper to the year in which the buy-back takes place. This affects both the build-up of the current issues open for sale and the redemption profile, thereby also affecting duration.

The model also gives an opportunity to transact domestic *interest-rate swaps.* By e.g. transacting interest-rate swaps from fixed 10-year rates to floating rates, the duration of the central-government debt is reduced, since the floating-rate debt has a shorter duration than the fixed-rate debt.

The direct effects of the instruments on the objectives are summarised in Table 9.2.1.

EXAMPLE OF USE OF THE SCENARIO MODEL 9.3

The following presents an example of how the model can be used to calculate scenarios of the development in the composition of the central-government debt. They are hypothetical scenarios chosen to illustrate how buy-backs and the use of interest-rate swaps affect the development in duration and the build-up of current issues open for sale.

Specification of objectives and model parameters

First the objectives of the government debt policy are specified. In this example the following have been selected:

- Outstanding volume in the 10-year segment is at least DKK 60 billion.
- The objective is a duration level which does not exceed 3.5 years.

Then the parameters to be included in the model are specified. In this example the following are selected:

- The zero-coupon yield curve and the swap interest rate from end-2000.
- The government budget surplus specified as the medium-term budget estimate of the Ministry of Finance, which shows a surplus in the range of DKK 20-26 billion in the years 2001-10.

ASSUMPTIONS USED IN THE EXAMPLE Box 9.1

- The basis is the existing debt at end-2000.
- Issues are made in the 2-, 5- and 10-year maturity segments. A new 2-year paper opens every year with an initial remaining maturity of 3 years, a new 5-year paper every second year with an initial remaining maturity of 5 years, and a new 10-year paper every second year with an initial remaining maturity of 11 years. The coupons are specified so that the price at issue is around 100. Coupons of respectively 5 per cent, 5 per cent and 6 per cent are specified for the three maturity segments.
- The zero-coupon yield structure and the swap interest rate at end-2000 are applied up to 2010.
- The total annual borrowing at market value is equivalent to the annual net financing requirement plus redemptions. The annual net financing requirement is in line with the medium-term budget forecast of the Ministry of Finance, showing a surplus in the range of DKK 20-26 billion for the years up to 2010.
- The nominal value of the total outstanding amount in Treasury bills is held constant at approximately DKK 34 billion during the period.
- It is assumed that throughout the period nominal outstanding and duration for the foreign debt, the Social Pension Fund and the central government's account are constant at the level at end-2000.
- Macaulay duration is calculated as of year-end.

- 2-year Treasury notes opening every year, with a coupon of 5 per cent; 5-year government bonds opening every second year, with a coupon of 5 per cent; and 10-year government bonds opening every second year, with a coupon of 6 per cent.

The assumptions on which the calculations in the example are based are summarised in Box 9.1.

Specification of the use of instruments

Afterwards the use of the instruments, of which the effect is to be calculated in the model, is specified. In this example, three hypothetical scenarios are illustrated, cf. Table 9.3.1. First, the scenario without use of buy-backs and new interest-rate swaps is presented, then buy-backs are introduced, and finally, both buy-backs and new interest-rate swaps are used. The borrowing is distributed so that 40 per cent of the borrowing requirement is assumed to be covered by issues in the 10-year segment, 20 per cent by issues in the 5-year segment and 40 per cent by issues in the 2-year segment. This corresponds approximately to the structure of borrowing in recent years.

Model simulates borrowing and produces output

Once parameters and use of instruments have been specified, the development in duration, redemption profile and build-up of current issues

SCENARIO OVERVIEW Table 9.3.1

Instruments	Scenario without buy-backs and new swaps	Scenario with buy-backs, without new swaps	Scenario with buy-backs and new swaps
Distribution of borrowing on current issues open for sale	40-20-40	40-20-40	40-20-40
Buy-backs	•	Annual buy-backs are made in short-term securities with a few years' remaining maturity in order to ensure the build-up of the 10-year securities. The buy-backs increase gradually from DKK 5 to 35 billion up to 2010.	Annual buy-backs are made in short-term securities with a few years' remaining maturity in order to ensure the build-up of the 10-year securities. The buy-backs increase gradually from DKK 5 to 35 billion up to 2010.
Interest-rate swaps	•	•	Transact interest-rate swaps so that duration does not exceed 3.5 years.

Note: By 40-20-40 is meant that 40 per cent of the borrowing requirement each year is covered by issues in 10-year securities, 20 per cent by issues in 5-year securities and 40 per cent by issues in 2-year securities.

open for sale for each year of analysis is calculated. The development in duration for the three scenarios is summarised in Chart 9.3.1.

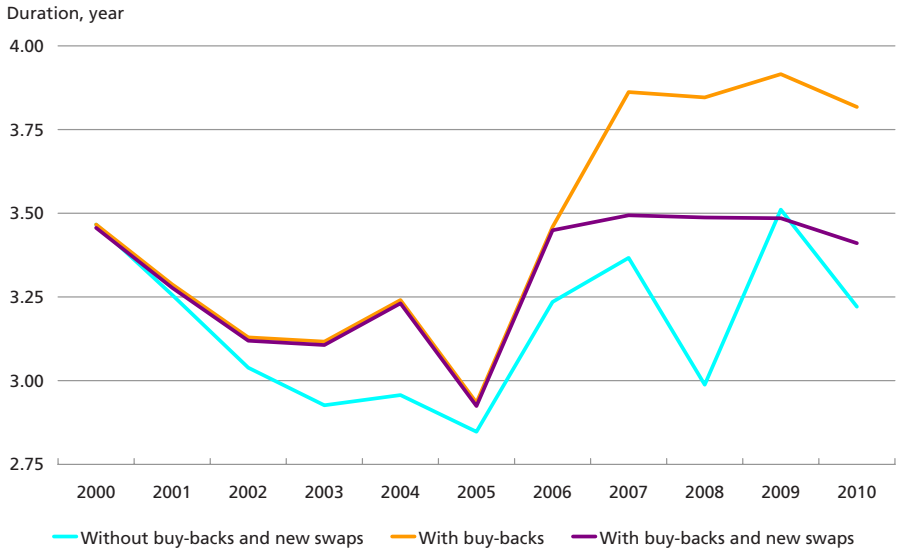
The Chart shows that if neither buy-backs nor interest-rate swaps are used, the duration of the central-government debt is relatively low in the period 2001-05. This is because the domestic debt portfolio for this period includes relatively large loans with a short remaining maturity. As from 2006, the duration increases to up to 3.5 years.

By using buy-backs to ensure an outstanding volume of at least DKK 60 billion in the 10-year issues duration is increased. This is because it is hypothetically assumed that in most years buy-backs are in securities with a shorter remaining maturity than new issues.

Finally, Chart 9.3.1 presents the effect of interest-rate swaps. In the last part of the period new interest-rate swaps from fixed to floating interest rates are transacted, bringing the duration down to below 3.5 years.

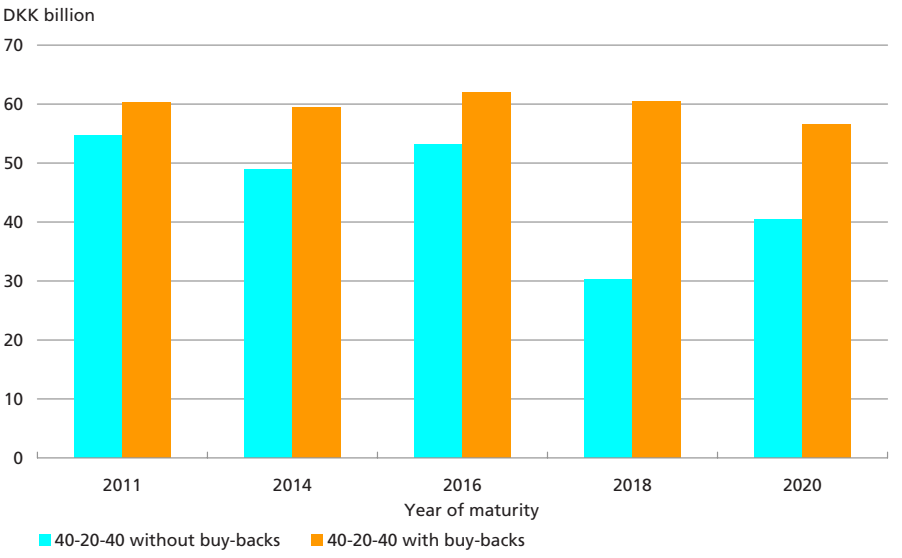
In Chart 9.3.2 the model results for build-up of the 10-year securities in the various scenarios are summarised. Interest-rate swaps do not have a direct impact on the build-up of securities. Therefore comparison is made solely of the scenarios respectively with and without buy-backs.

EFFECT OF INTEREST-RATE SWAPS AND BUY-BACKS
ON THE DEVELOPMENT IN DURATION, 2000-10 Chart 9.3.1



Buy-backs generally increase the size of the 10-year issues due to an increase in the borrowing requirement in the buy-back year. An outstanding volume of at least DKK 60 billion in the 10-year issues can thus be ensured.

OUTSTANDING VOLUME BUILT-UP IN 10-YEAR
CURRENT ISSUES OPEN FOR SALE Chart 9.3.2



CONCLUSION 9.4

When planning government debt policy it is important to be able to illustrate the short- and long-term effects of various borrowing strategies on the development in the duration and redemption profile of the government debt, and the outstanding volume in benchmark securities. The scenario model reviewed here makes it possible to include this type of analysis as a regular part of the basis for government debt policy decisions.

CHAPTER 10

Cost-at-Risk

SUMMARY 10.1

The interest-rate risk on the central-government debt is managed via duration and redemption profile. However, these measures do not provide a basis for a quantification of the risk related to the central-government debt. In order to evaluate this risk, Cost-at-Risk (CaR) analyses are used. CaR helps to quantify the risk on the basis of the estimated future development in interest rates. This provides an important input to the assessment of the trade-off between interest-rate risk and costs.

In CaR calculations, risk is defined as the risk of an increase in the annual costs of the central-government debt. The central government is exposed to interest-rate and refinancing risks because the interest rates for future borrowing are unknown. Thus the future costs are also unknown. A high level of interest rates in a given year will entail relatively expensive refinancing of the central-government debt, and thereby higher interest costs in the following years.

In the CaR analysis interest-rate scenarios are generated, and the future costs of the domestic government debt are calculated for each interest-rate scenario. On the basis of these computations, probability distributions of the central government's future interest costs can be set up as a means to evaluate the interest-rate risk on the domestic government debt.

In 2001 the CaR model will be subject to further development. The intention is for it to also be applied to the other areas of central-government debt. There is also a need to expand the model with buybacks. Another objective is to work on the interest-rate input to CaR, since this is of crucial importance to the outcome of the results.

The first part of this Chapter is in general terms identical to Chapter 9 of Danish Government Borrowing and Debt 1999. Compared to the CaR model of 1999, the span of time covered has been extended from 5 to 10 years, and the model includes krone-denominated interest-rate swaps. The last part of the Chapter presents new analyses of the interest-rate input to the model.

METHOD 10.2

The primary risk related to the domestic government debt is unexpectedly high interest costs. In the CaR model, future interest costs for the domestic government debt are calculated, and the interest-rate risk is quantified.

The basis for the calculation of CaR is data on the existing debt and the central government's expected future budget surplus. Moreover future interest-rate scenarios are generated. Based on this input, future costs can be calculated.

The future costs of the debt are highly dependent on the future development in interest rates. The generation of a large number of interest-rate scenarios provides a means to set up probability distributions of the future costs. The expected costs in a given year are defined as the mean value of the future costs. Absolute CaR indicates the maximum costs with a probability of 95 per cent, while relative CaR is the difference between absolute CaR and the mean value, cf. Box 10.1.

The time span of the calculations is set at 10 years. Costs for each year are calculated. A period of 10 years gives an insight on the risk in both the long and the short run.

The interest-rate input is a crucial factor in the calculation of CaR. There are many theoretical and empirical interest-rate models. Here a one-factor model, developed by Cox, Ingersoll and Ross, also called the CIR model, is chosen[1]. This interest-rate model features the required stochastic structure and is fairly easy to handle in practice.

Quarterly future spot interest rates, also called spot rates, are generated, i.e. each interest-rate scenario contains 40 spot rates, equivalent to a period of 10 years. The method used to generate future spot rates is described in Box 10.2. A total of 2,500 future spot-rate scenarios are generated.

A zero-coupon yield curve can be calculated from each spot rate. As there are 40 spot rates in each interest-rate scenario, and a total of 2,500 interest-rate scenarios, the CaR calculations are based on 100,000 yield curves.

The remaining data input to the CaR model is information on the existing debt, i.e. accrued costs and payments on the debt. Assumed values for the central government's budget surplus before interest costs 10 years forward are also included.

[1] Cox, J. C., Ingersoll, J. E. and Ross, S. A., 1985, A Theory of the Term Structure of Interest Rates, *Econometrica*, vol. 53, no. 2, p. 385-407.

CaR DEFINITIONS Box 10.1

In the CaR model expected costs are defined as the mean value of the calculated future costs. Absolute CaR for a given year indicates the maximum costs with a probability of 95 per cent. Relative CaR is the difference between absolute CaR and the mean value. Relative CaR thereby indicates the maximum increase in costs in comparison to the mean value for a given year, with a probability of 95 per cent. The evaluation can also be based on other percentiles than the 95th, e.g. the 99th percentile, when more extreme situations are considered.

In terms of methodology CaR is related to Value-at-Risk (VaR), which expresses the maximum decline in a portfolio's market value with a given probability over a given, typically relatively short, period. For both VaR and CaR the calculations to a high degree depend on the interest-rate model used and the assumptions made.

Finally, values are assumed for the structure of borrowing, e.g. that 40-20-40 per cent of respectively 2-, 5- and 10-year government securities are issued per year, and that the outstanding volume in the Treasury bill programme is constant.

On the basis of the above input annual costs are calculated 10 years forward. The output from the calculations is thus 2,500 scenarios of future annual costs of the domestic debt. Based on these scenarios, the mean value and the 95th percentile of the costs are calculated, and thereby absolute and relative CaR.

GENERATION OF SPOT RATES Box 10.2

The CIR model is a one-factor model in which the stochastic element is the spot rate. This means that the spot rate determines the entire term structure to a given point in time.

The change in the spot rate is described by a stochastic process. The parameters in this process are respectively the equilibrium value for the spot rate, the adjustment rate of the spot rate, i.e. the speed at which the spot rate moves back to the equilibrium value, and the volatility of the spot rate.

The parameters in the CIR model are estimated on the basis of historical data. The method applied is presented in Overbeck, L. and Rydén, R., 1997, Estimation in the Cox-Ingersoll-Ross Model, Econometric Theory, vol. 13, p. 430-461. The estimation is based on quarterly observations of the spot rate in 1987-2000. The result of the estimation is: adjustment parameter=0.1670, equilibrium spot rate=7.20 per cent and spot-yield volatility=0.09845. The estimated parameters are subsequently used to generate future spot rates.

The model has mean reversion characteristics, i.e. the spot rate will tend to move towards the equilibrium level.

DOMESTIC INTEREST-RATE SWAPS 10.3

In 1998 the central government introduced interest-rate swaps in Danish kroner as a new instrument of domestic government debt policy. An interest-rate swap where for instance a floating 6-month interest rate is paid and a fixed 10-year interest rate is received in isolated terms implies a reduction of the duration of the debt. This should be viewed against the fact that this type of interest-rate swap is an alternative to short-term borrowing. A shorter duration of the debt results in a higher risk, but lower expected interest-rate costs. A more detailed review of domestic interest-rate swaps is given in Chapter 8 of Danish Government Borrowing and Debt 1998.

In the modelling of interest-rate swaps in CaR a fixed spread between the zero-coupon yield curve and the swap curve is assumed. The swap rate is determined so that the swap has a value of zero at the time of entering into the contract. The method to calculate the swap rate is presented in Box 10.3.

The outstanding amount in domestic interest-rate swaps was DKK 21 billion at end-2000. Chart 10.3.1 presents the distribution of the costs in 2001 with and without the existing interest-rate swaps. It is shown that the cost distribution with interest-rate swaps has thicker tails. In other words, the risk of extreme costs is greater with swaps than is the case without swaps. In addition to this the mean value of the cost distribution with swaps is lower. This shows that the existing interest-rate swaps have entailed lower borrowing costs due to shorter duration, but on the other hand a higher interest-rate risk.

THE SWAP RATE Box 10.3

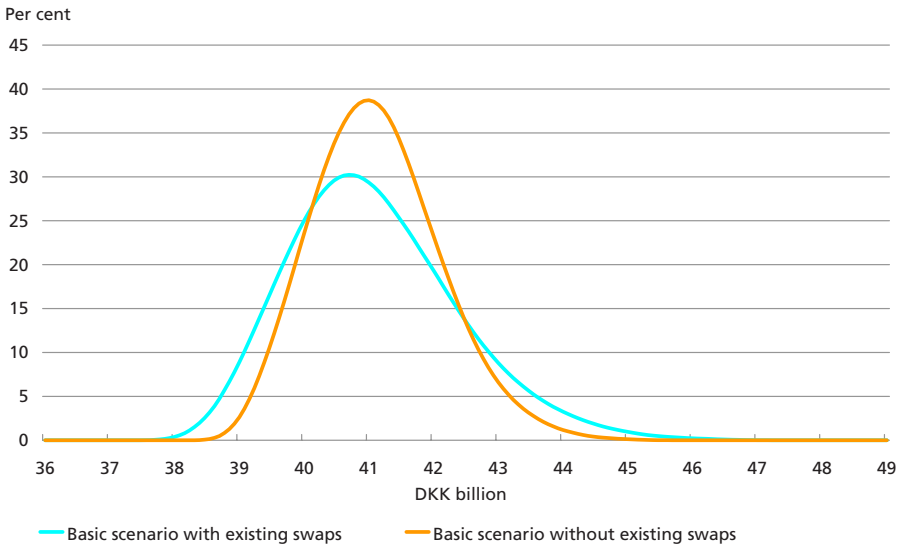
The swap rate is calculated by the following formula, cf. Danish Government Borrowing and Debt 1998, p. 103:

$$c = \frac{1 - d(0, T)}{\sum_{i=1}^{f} d(0, t(i, F))}$$

where c is the swap rate, d(0,t) is the discounting factor between the time 0 and t, and t(i,F) is the time of payment of the i'th payment of the swap's fixed-rate leg out of a total of f payments, t(f,F)=T.

The swap rate is determined exclusively by the aforementioned discounting factors and these can be calculated with the help of the swap curve, which is known at the time 0. In the calculations a fixed spread between the zero-coupon yield curve and the swap curve is assumed.

DISTRIBUTION OF COSTS WITH AND WITHOUT SWAPS IN 2001 Chart 10.3.1



CaR FOR SELECTED BORROWING STRATEGIES 10.4

The following reviews the CaR calculations for four different borrowing strategies. For all borrowing strategies a fixed distribution of borrowing on maturity segments from 2001 to 2010 is assumed. A constant outstanding amount in Treasury bills and in interest-rate swaps is assumed. Table 10.4.1 presents the distribution of borrowing on maturity segments.

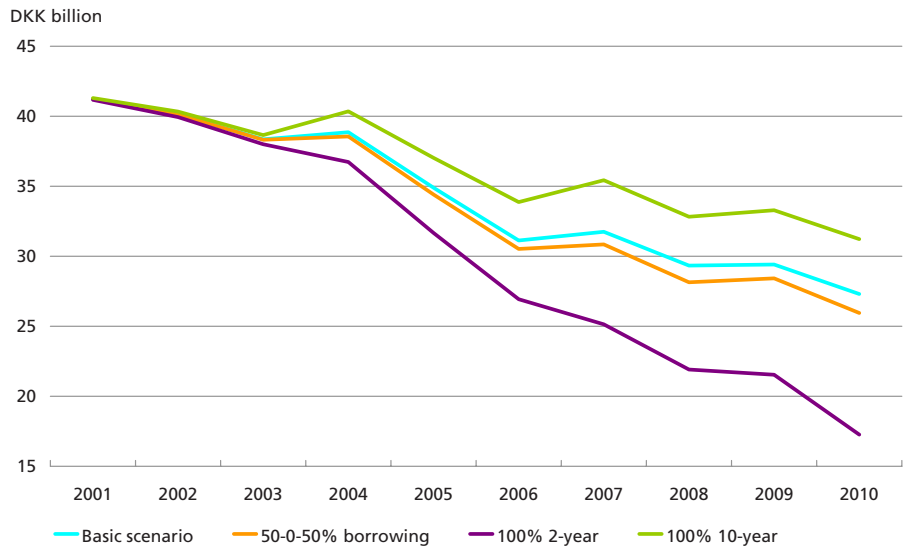
The same interest-rate input is used in each borrowing strategy. It is also assumed that the central-government budget surplus before interest costs on the domestic debt is unchanged. The data is based on the Ministry of Finance's medium-term budget forecast and on average shows a net cash surplus of DKK 24 billion per year.

Chart 10.4.1 shows that the expected costs for all strategies are decreasing during the period. The reason is the estimated government budget surpluses in the period considered, entailing a lower financing requirement and thereby a declining debt. The expected costs in 2001 are approximately DKK 41 billion for all scenarios.

BORROWING STRATEGIES Table 10.4.1

Per cent	2-year	5-year	10-year
Basic scenario	40	20	40
50-0-50% borrowing	50	0	50
100% 2-year	100	0	0
100% 10-year	0	0	100

MEAN VALUE OF COSTS Chart 10.4.1



The costs are relatively stable towards changes in borrowing strategies in the short run (2001 and 2002). The difference between the borrowing strategies becomes more apparent over time as the effects are accumulated. This reflects that it takes time to change the risk profile of the debt when the debt is distributed evenly on maturities. The difference between the borrowing scenarios is due mainly to the differing interest costs on various loan segments. These differences arise because normally the yield curve is increasing.

Table 10.4.2 shows that the borrowing strategy with the most short-term borrowing strategy gives the lowest expected costs, but in return the highest interest-rate risk.

SELECTED CaR DATA Table 10.4.2

DKK billion	2001	2002	2005	2010
Mean value				
Basic scenario	41.2	40.2	34.9	27.3
50-0-50% borrowing	41.2	40.1	34.4	26.0
100% 2-year	41.2	39.9	31.7	17.3
100% 10-year	41.3	40.3	37.0	31.2
Relative CaR				
Basic scenario	2.3	4.9	8.1	8.3
50-0-50% borrowing	2.3	5.0	8.2	7.6
100% 2-year	2.5	5.6	11.0	13.1
100% 10-year	2.1	4.3	6.0	6.5

RELATION BETWEEN MEAN VALUE AND RELATIVE CaR IN 2005, DKK BILLION Chart 10.4.2

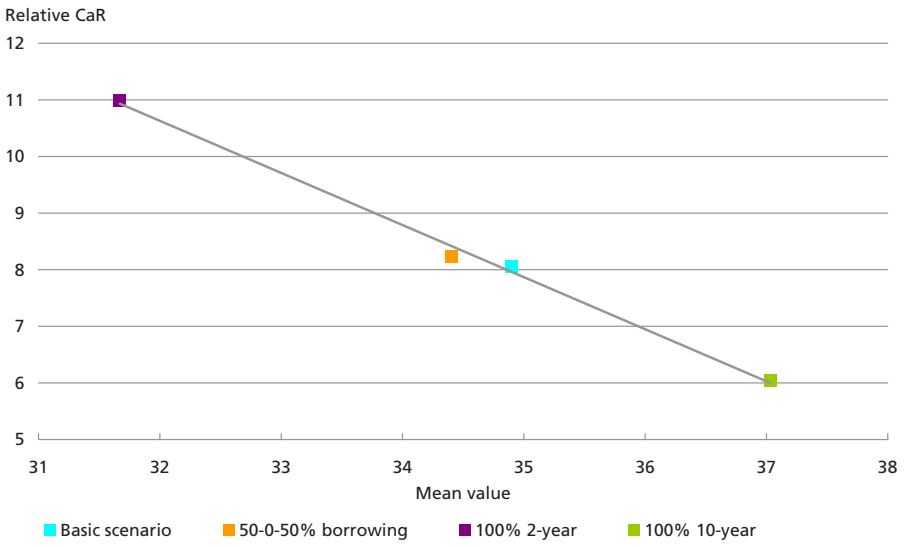


Chart 10.4.2 presents the relation between expected costs and relative CaR for 2005 for the four borrowing strategies. It is shown in the Chart that the costs cannot be reduced without increasing the risk. The relation between expected costs and relative CaR in 2005 can be approximated linearly. Relative CaR increases by approximately DKK 1 billion when the expected costs are reduced by DKK 1 billion.

COST DISTRIBUTIONS FOR THE BASIC SCENARIO Chart 10.4.3

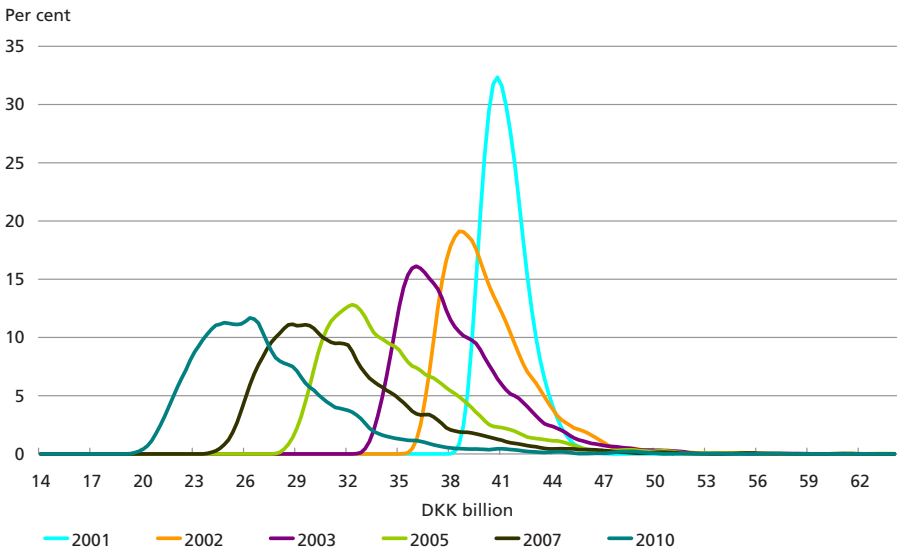


Chart 10.4.3 presents selected cost distributions for the basic scenario in the period considered. It shows that the curves flatten out over time. This reflects the uncertainty concerning the future interest rates. Flatter curves imply that the probability of costs around the mean value is reduced, while the probability of more extreme costs is increased.

Furthermore, the Chart shows that the mean value (the expected costs) is reduced over time. As stated, the reason is the estimated government budget surpluses in the period considered. A government budget surplus entails a lower financing requirement, leading to a reduction of borrowing and thereby lower interest costs over time.

INTEREST-RATE INPUT AND STRESS TEST 10.5

The CaR calculations require a large amount of input and assumptions concerning interest rates, financing requirements, etc. Changes to these variables entail changes in the CaR results. In the following the model's current interest-rate input is described and compared to historical interest rates. The characteristics of some of the more extreme interest-rate scenarios are also illustrated.

Characteristics of the applied interest rates

The applied interest rates are generated in the CIR model. The parameters are estimated on the basis of historical interest-rate data from the period 1987-2000. The generation of future interest rates is based on the level of interest rates at the time of calculation.

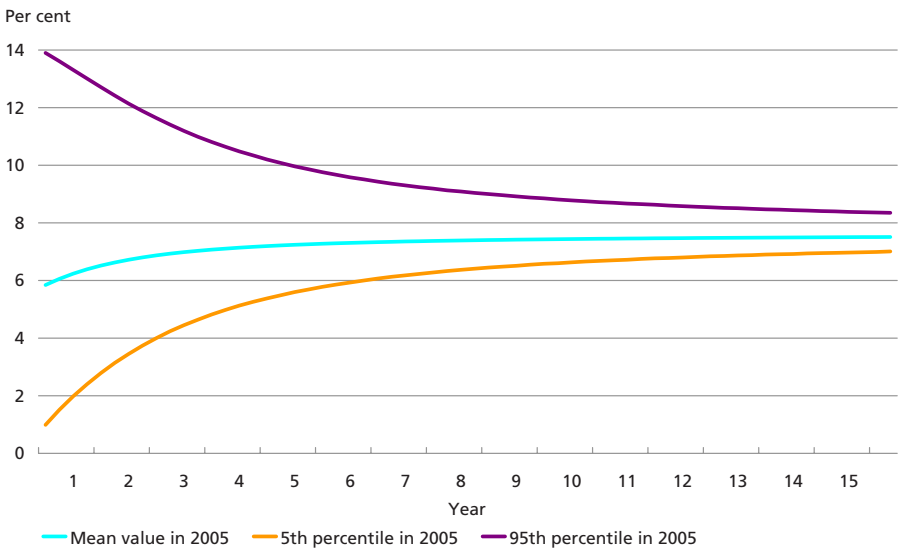
Chart 10.5.1 presents the structure of the generated yield curves in 2005. The zero-coupon interest rates in the average yield curve range from 6 to 8 percentage points. Furthermore, the percentiles show that the short-term interest rates are far more volatile than the long-term interest rates, i.e. short-term borrowing is less expensive, but the fluctuations in the annual costs will be greater.

In Table 10.5.1 the historical yield curves are compared with the simulated yield curves. The yield curves are categorised under two main categories, i.e. normal curves and inverse curves.

The Table shows that the yield curves in the simulated data reveal approximately the same distribution for respectively normal and inverse curves as in the historical interest-rate data. This means that at the overall level the CIR model is in accordance with the empirical findings.

Comparison of the curves at the detailed category level, however, shows that hump-shaped yield curves represent a large proportion of the historical interest-rate data. A problem with the CIR model is

THE GENERATED YIELD CURVES — Chart 10.5.1



therefore that it generates relatively few yield curves of this type. This can result in erroneous assessment of the risk in the short-term segment.

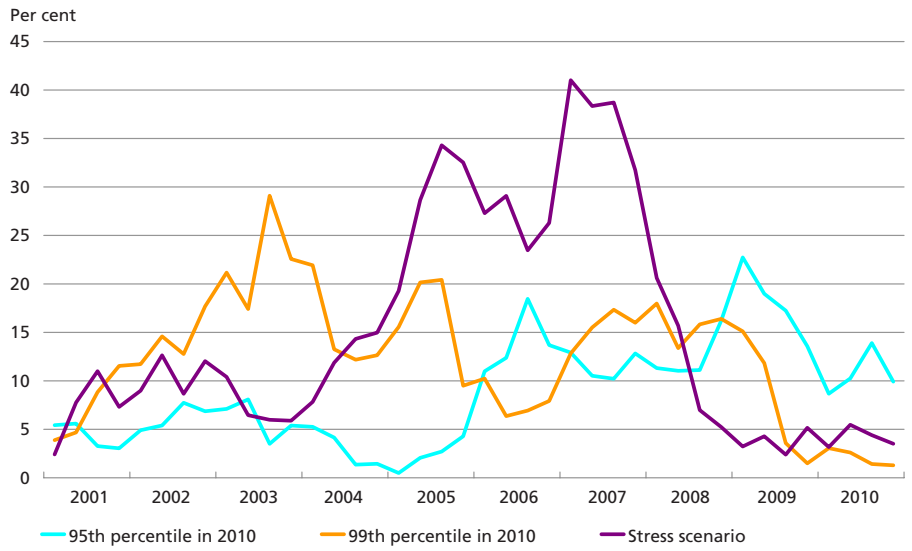
Moreover Chart 10.5.1 shows that volatility in the generated long-term interest rates is relatively small compared to volatility in the short-term

SHAPE OF YIELD CURVES — Table 10.5.1

Type of yield curve	Historical yield curves	Simulated yield curves
	Per cent	
Normal curves		
Flat	0	3
Ordinary	26	34
Steep	17	33
Hump-shaped	33	•
Normal curves, total	76	70
Inverse curves		
Flat	0	0
Ordinary	2	8
Steep	4	8
Hump-shaped	18	14
Inverse curves, total	24	30
Total	100	100

Note: A normal (inverse) curve is monotonously increasing (decreasing). A hump-shaped curve is not monotonously increasing or decreasing. A normal hump-shaped curve is defined as first decreasing and then increasing. The absolute difference between the spot and 10-year interest rate is for a flat, ordinary and steep curve respectively <1, 1-4 and >4 percentage points. The simulated curves are generated by the CIR process, while the empirical curves are estimated via the Nelson-Siegel method. The CIR process cannot generate normal hump-shaped curves.

STRESS SCENARIOS FOR SPOT RATES Chart 10.5.2



interest rates. This corresponds to observed data. However, compared to the observed data the CIR model underestimates volatility in the long-term interest rates. This may lead to underestimation of the risk on the long-term segments.

The above shows that continued work on interest-rate input to the CaR calculations is necessary, including work on alternative term-structure models, e.g. multi-factor models.

Stress test

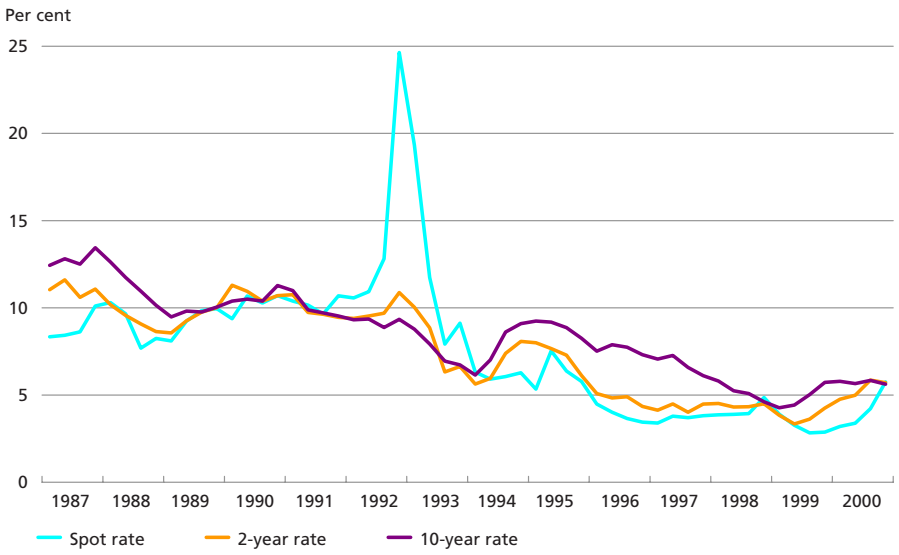
The 95th cost percentile is applied to the risk evaluation. Chart 10.5.2 shows the spot-rate scenario which results in an interest cost equivalent to the 95th percentile in 2010. For comparison, two other spot-rate scenarios are also shown. One leads to the 99th percentile in the distribution of costs in 2010. The other is the spot-rate scenario in which the highest spot rates occur (the stress scenario).

The spot-rate scenario resulting in the 95th percentile in 2010 lies at around 5 percentage points from 2001 to 2007, after which the spot rates rise to 25 percentage points towards the end of the period. The

COSTS IN STRESS INTEREST-RATE SCENARIOS, BASIC SCENARIO Table 10.5.2

DKK billion	2001	2002	2003	2005	2007	2008	2010
95th percentile in 2010	40.9	39.9	38.6	31.6	36.3	35.5	35.6
99th percentile in 2010	41.7	45.4	51.2	52.0	48.3	48.9	42.6
Stress scenario	42.1	43.4	41.6	50.5	70.3	64.9	51.5

HISTORICAL ZERO-COUPON INTEREST RATES, QUARTERLY OBSERVATIONS Chart 10.5.3



two other spot-rate scenarios show greater volatility, and on average at a higher interest-rate level. The cost scenarios in Table 10.5.2 correspond to the spot-rate scenarios in Chart 10.5.2.

The historical development in interest rates in the period 1987-2000 for respectively the spot rate, the 2-year and the 10-year rates are presented in Chart 10.5.3. Comparison of the historical spot rates, shown in Chart 10.5.2, with the simulated spot rates shows that for a short period the historical spot rates have been at the same level as the interest rates in the spot-rate scenario of the 95th percentile.

CONCLUSION 10.6

A key element of government debt policy is to find an appropriate trade-off between expected costs and risk. CaR is a supplement to duration and redemption profile in the management of the domestic government debt, and is of particular use because it quantifies the interest-rate risk.

The CaR results indicate that the risk associated with the domestic government debt in its present structure is relatively low. The primary reason is that the debt is distributed evenly on maturities.

In future, the work will focus on including the effect of buy-backs in the CaR model, and on developing different types of interest-rate input. Moreover, the present CaR calculations solely include domestic debt. The objective is for the CaR model in due course to include the other areas of the central-government debt.

CHAPTER 11

Credit Risks on Swap Counterparties

SUMMARY 11.1

Since 1983 the central government has used swaps to reduce the costs of borrowing, and to manage the currency distribution and interest-rate risk on the debt.

Swaps can entail losses in the event of default by the swap counterparty. It is sought to limit the credit risk on swap counterparties via a restrictive credit policy, and via ongoing monitoring of the credit risk on the counterparties. There have been no cases of counterparty default on obligations concerning swaps transacted with the central government.

In spite of the requirement that the counterparty to a swap must have a high credit standing, the risk of default can never be eliminated completely. For this reason, the central government now requires counterparties to sign a collateral agreement whereby market values of transacted swaps which exceed a threshold value in the central government's favour are covered by collateral.

In order to achieve the full benefit of the collateral agreements, in conjunction with the establishment of the agreements certain adjustments have been made to the central government's credit-risk management of the swap portfolio. Moreover, the agreements have led to a revision of the way that the credit exposure on swap counterparties is calculated.

Notwithstanding the collateral agreements, it is still considered important that all swap counterparties have a high credit standing. For this reason, the central government's ISDA Master Agreements with the counterparties include rating triggers and cross-default clauses. These provisions make it possible for the central government to terminate the swaps prematurely, should the counterparty's rating (credit standing) be downgraded to an unsatisfactory level, or should the counterparty face liquidity problems.

CREDIT-RISK MANAGEMENT OF SWAP COUNTERPARTIES 11.2

Background to credit-risk management of swap counterparties

A swap is a contract whereby two parties agree to make payments to each other which are equivalent to each party having raised a loan from

the other party. When a swap is transacted the market values of the payments (cash flows) which the parties agree to exchange will normally be equal. However, fluctuations in interest-rate levels and exchange rates lead to the net market value of the swap normally differing from zero. If one party fails to honour its payment obligations in the swap, e.g. due to compulsory liquidation, the other party will incur a loss, if the market value of the swap is positive for the latter.

It is considered very important to keep the credit risk on swap counterparties at a very low level. To date, the central government has not incurred any credit loss on a swap counterparty as a consequence of default. Chapter 6 concerning risk management presents the central government's swap portfolio and the credit risk thereon.

To maintain a low credit risk on the swap portfolio, a restrictive credit policy for the central government's use of swaps has been formulated. The credit policy includes a number of specific rules designed to minimise the credit risk by limiting:

- the credit exposure on the counterparty
- the probability of default by the counterparty, and
- the expected loss in the event of counterparty default.

Appendix 11.A presents the key elements of the central government's credit policy.

It is important to emphasise that the explicitly formulated credit policy can never stand alone. The central government bases its approval of counterparties on ratings and therefore e.g. finds it necessary to monitor continually whether the rating agencies' ratings are a relevant measure of the credit risk. The crisis in Southeast Asia in 1997 thus showed that in certain cases there is a lag in the rating agencies' downward adjustment of their ratings.

Collateral agreements

The most important expansion of the central government's credit policy in recent years is that now swaps can only be transacted with counterparties with whom a collateral agreement has been, or is close to being, established.[1]

The loss on an uncollateralised claim on a counterparty that defaults can be considerable. However, the size of any possible loss can be re-

[1] Since September 1999 14 counterparties have signed a collateral agreement. This means that 60 per cent of the swap portfolio is covered by a collateral agreement. Swaps with counterparties who do not wish to establish a collateral agreement will normally continue on the originally agreed terms. This implies that it will take a number of years for all swaps to be subject to collateral agreements. It is expected that the central government will sign at least 5 new agreements during 2001, whereby the ratio covered will rise to approximately 80 per cent.

duced significantly if the claim is secured with collateral of high quality.

The central government's collateral agreements are established as Credit Support Annexes to the ISDA Master Agreements which on an overall basis regulates the relationship between the central government and the swap counterparties. The principal elements of the annexes are:

- The annexes are unilateral, so that only the central government's counterparties can be required to provide collateral.
- Collateral does not have to be provided until the market value in the central government's favour exceeds an agreed amount (the threshold value). The threshold value will depend on the counterparty's rating, cf. Table 11.A.1.
- The market value of swaps is revaluated on a regular basis. Should a revaluation of swaps show that the market value less existing collateral exceeds the threshold value, the counterparty is required to pledge further collateral to the central government.
- Additional collateral is only required to be transferred (carried back) if the collateral shortfall (surplus) is DKK 10 million or more.
- Appropriate collateral is normally government bonds with a rating of minimum Aa3/AA-. Other bonds, e.g. Danish mortgage-credit bonds, can also be accepted, subject to concrete evaluation. The collateral value of the bonds is calculated as the market value after a price deduction (haircut). Haircuts will depend on the remaining maturity of the bonds and must take the risk of depreciation in the bonds' market value into account.
- In addition to bonds, bank deposits are also authorised collateral. The cash must be deposited with a bank with a minimum rating of Aa3/AA-. The bank in question cannot have close links with the counterparty.
- The administration of bonds pledged as collateral to the central government is transferred to the custodian bank with which the collateral is deposited. On behalf of the central government the custodian bank will request additional collateral from the counterparty if the collateral value of the deposited bonds is insufficient to cover the market value of transacted swaps after deduction of the threshold value. In the event of surplus cover the custodian bank is likewise authorised to release bonds to the counterparty.

By setting a threshold for the uncollateralised proportion of the actual credit exposure the collateral agreements have led to a significant reduction of the expected losses in the event of counterparty default. In addition the agreements have also led to a reduction of the potential (future) credit exposure on counterparties.

Section 11.3 reviews the handling of collateral agreements. The significance of the agreements to the credit exposure and thereby the credit risk on the swap counterparties is described in further detail in section 11.4.

Terms and conditions for early termination of swaps

Another area in which the central government's credit policy has been formalised concerns the opportunity to terminate swaps prematurely should a counterparty's credit standing become unsatisfactory, or the counterparty face liquidity problems. It is now a requirement that ISDA Master Agreements with counterparties include a cross-default clause, as well as a rating trigger.[1]

A cross-default clause enables the central government to terminate swaps should a counterparty default on payment obligations to a third party. The clauses will normally be formulated in such a way that they can only be activated in the event of payment default which complies with certain criteria, e.g. size, cause, etc.

The significance of rating triggers to the central government's credit risk is reviewed in section 11.5.

HANDLING OF COLLATERAL AGREEMENTS 11.3

Outstanding claims and thereby credit risks derived from e.g. swaps increased to a very high level in global terms during the 1990s. Therefore major banks, primarily in the USA, began to establish mutual agreements on securing this type of claim with collateral. This requirement arose in recognition of the fact that swaps are often long-term transactions whereby, in certain cases, the counterparty could face serious difficulties even if its credit standing had previously been satisfactory. In recent years the use of collateral agreements has become more common and is now also applied by a number of central governments and supranational institutions.

As a consequence of this trend ISDA (International Swaps and Derivatives Association) has issued recommendations for the handling of collateral agreements on claims derived from swaps, etc.[2]

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1 In certain cases the central government also takes the initiative to reduce the credit exposure on a counterparty even if a rating trigger or a cross-default clause is not activated. An example is described in Chapter 6.

2 The recommendations are reviewed in *ISDA 1999 Collateral Review*. This report was followed up with *ISDA Collateral Survey 2000*, which reports on how the recommendations are followed among 46 market participants, primarily major internationally operating banks. Some end-users, including the Danish central government, also participated in this survey. Moreover, in 1998 ISDA published *Guidelines for Collateral Practitioners*, which gives a general introduction to the use of collateral to manage the credit risk on derivatives. The reports can be viewed at www.isda.org/publications.

RISKS DERIVED FROM COLLATERALISATION Box 11.1

Credit risk: The collateral value of securities depends on the credit standing of the issuer. This means that for bonds there will often be a minimum rating requirement for being eligible as collateral.

The central government accepts only bonds with a rating of minimum Aa3/AA- as collateral.

Correlation risk: In certain cases the collateral value of an asset may seem satisfactory. However, the collateral value can be limited by the fact that the value of the asset is positively correlated with the counterparty's credit standing.

This risk is of no great significance to the central government, since primarily only government securities are accepted as collateral.

Market risk: If the collateral is e.g. bonds a rise in interest rates will entail a loss, whereby the value of the collateral falls below the market value of the swaps to be covered. The collateral value of the bonds is therefore normally fixed at the market value less a "haircut". Haircuts are related to the interest-rate risk on the bonds, as well as how quickly the bonds can be realised, if necessary.

The haircut applied to the central government's calculation of the collateral value of received bonds is in the range of 2 to 8 per cent. In the central government's agreements the interest-rate risk is also often limited by setting a maximum remaining maturity for received bonds.

Liquidity risk: There is a risk that the value of the collateral is subject to pressure on realisation. Illiquid bonds should therefore either be excluded from the collateral basis or a particularly high haircut should be deducted when calculating the collateral value.

The central government's agreements are drawn up in order to avoid as far as possible counterparties providing illiquid bonds as collateral to the central government.

Legal risk: The pledging of collateral will be based on legal agreements. Uncertainty concerning the validity of the agreements, as well as the opportunities to exercise the agreements, are described as legal risk on collateral.

An example of legal risk concerns the netting provisions of the central government's ISDA Master Agreements. According to these provisions, the central government may undertake netting of gains and losses on various swap contracts with a counterparty which defaults. This significantly reduces the collateral requirement. If the netting provisions – against expectations – are not legally sustainable, the collateral requirement will be significantly higher. In that case the risk of loss constitutes the gains on a gross basis, without deduction of any losses.

Another example of legal risk is a court's reversal of the mortgagee's realisation of collateral on the grounds that the deed of security was not complete. By deed of security is meant the procedures to be observed for it to be possible to invoke a pledge vis-à-vis other creditors).

Concentration risk: The securing of large-scale credit exposures with the same asset can entail a reduction of the collateral value of the asset. For the individual credit exposure the concentration risks on an asset will particularly comprise liquidity risk. The concentration risk on an asset for the overall credit exposures include credit risk.

Concentration risks are not assessed to be of any great significance to the central government's agreements.

As stated, the collateral agreements have led to a significant reduction of the central government's credit risk on swap counterparties, cf. Chapter 6. However, it must be emphasised that collateralisation is a supplement to, and not a substitute for, the ordinary credit-risk management of counterparties. The agreements thus do not entail any cover for the market value which is below the agreed threshold value.

The collateralisation also entails other types of risks. These must also be managed in order to obtain the full benefit of the agreements. This applies to risks related directly to the value of the pledged collateral, cf. Box 11.1, as well as to operational risks linked to the handling of the collateral agreements. However, the size of these risks is assessed to be moderate in comparison to the reduction of the credit risk resulting from the agreements.

With regard to the handling of the collateral agreements, the settlement of disputes presents a particular problem. In periods of unrest on the financial markets two parties may disagree on the market value of a swap portfolio, and thereby on the size of the collateral one party is required to provide to the other. ISDA states that disputes can often be attributed to dissent concerning:

- the rates/parameters to be applied to the revaluation of swaps (especially relevant for structured or illiquid swaps),
- choice of revaluation time (should the basis be close of business in London, Copenhagen or New York?),
- the contracts covered by the collateral agreement (especially a problem for large portfolios not subject to automatic reconciliation), and
- the procedures to be followed on requests for and transfers of collateral (especially a problem if the terms and conditions of collateral agreements are not followed consistently).

The collateral agreements set out some very general terms and conditions for settlement of disputes concerning the market value of swaps. However, these are applied only rarely, probably because they require the involvement of third parties. The third parties will thus gain insights on the internal affairs of the parties, which may be less appropriate in the case of third parties that are competitors. ISDA therefore recommends its members to establish guidelines to ensure the informal settlement of disputes, including the revaluation of swaps' market value.

Another issue is that the transfer of collateral may be delayed, with the result that for a period credit exposure may be unsecured, even though the terms and conditions stipulate that collateral should be pledged. One solution might be to pledge cash deposits, which can normally be transferred quickly between the parties, as temporary collateral.

ISDA also states that the growing use of collateral agreements in relation to swaps and other derivatives may lead to a need to increase the types of securities that can be pledged as collateral. Today there is a tendency to concentrate collateral on a few categories of assets.

COLLATERAL AGREEMENTS AND CREDIT EXPOSURE ON SWAPS 11.4

The introduction of collateral agreements in the central government's credit-risk management gives rise to a number of theoretical and practical considerations concerning the calculation of the credit exposure on swaps. Below, the credit exposure on swaps is discussed: first in the general case without collateral agreements, and thereafter with collateral agreements.

The principles applied to the calculation of the credit exposure on the central government's swap counterparties are presented in Appendix 11.B.

Credit exposure without collateral

In the event of default by one of the parties in a swap a credit loss could arise if the swap has a positive market value for the other party. On the other hand, if the swap has a positive value for the party in jeopardy, the other party will not incur a loss. As a consequence, the *actual credit exposure* on a swap corresponds to the market value if the swap's market value is positive for the central government, and to zero if the market value is negative.

The market value of a swap is not constant, but will depend on the development in the interest rates and currencies which are elements of the swap. To allow for the fact that the market value of the swap can increase, the *potential credit exposure* must be added to the actual credit exposure. The size of the potential credit exposure will depend on:

- The *interest-rate and exchange-rate risk* on the cash flows in the swap. An increasing risk (volatility) will imply greater potential changes in market value.
- *Remaining maturity*. If the remaining maturity is longer, the market value of the swap may show greater fluctuation.
- *Market value*. An increase in a swap's market value – but by no more than for the market value still to be negative – will not affect the actual credit exposure. As described above, it will continue to be zero. Negative market values thus reduce the potential credit exposure. However, even if the market value is very negative at a given time, the potential credit exposure will still be positive. This is because, with whatever little probability, the swap's market value can always become positive at a later time.

To summarise, the *total credit exposure* on a swap will consist of the actual credit exposure plus the potential credit exposure.

The credit exposure on a counterparty with which several swaps have been transacted will often be less than the sum of the credit exposure on the individual swaps. This is firstly because changes in interest rates and currencies are *correlated* to a varying degree. At present, these correlations are not taken into account when calculating the credit exposure on the central government's swap counterparties.[1]

Secondly, the central government's ISDA agreements contain terms and conditions on *netting* according to which it is assumed that gains can be set off against losses in the event of default by one of the parties. This likewise entails a reduction of both the actual and potential credit exposure.

Credit exposure with collateral agreement

When a collateral agreement is signed, a threshold value which the actual credit exposure may not exceed is agreed on. If the market value exceeds the threshold value the counterparty must pledge securities as collateral for the excess amount.[2]

The potential credit exposure is also affected by the threshold value. To the extent that the total credit exposure without a collateral agreement exceeds the threshold value, the potential credit exposure will be reduced. Assuming that the collateral is delivered immediately when the actual credit exposure (market value) exceeds the threshold value, a total credit exposure greater than the threshold value does not make sense. This gives the following expression of the total credit exposure:

Min{threshold value, actual credit exposure + potential credit exposure}

The aforementioned condition entails that to the extent that the total credit exposure without a collateral agreement does not exceed the threshold value, the collateral agreement will not affect the calculated credit exposure.

The principles for calculating the credit exposure on swaps are illustrated in Chart 11.4.1. The Chart presents two swaps, with different volatility of market value (potential credit exposure). The potential credit exposure of the two swaps is determined so that with a given

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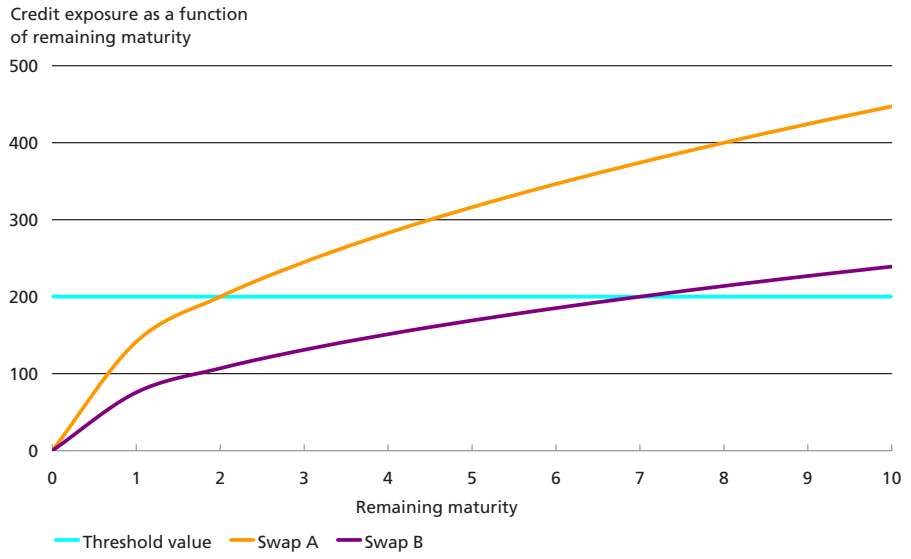
1 Correlation effects can also apply to swaps transacted with various counterparties. Simple addition of the credit exposure on the individual counterparties will thus not take into account that a given change in interest or exchange rates might lead to increases in the credit exposure on some counterparties, but decreases on others.

2 In precise terms, the threshold value indicates the maximum value of the *net* actual credit exposure, i.e. the *gross* actual credit exposure less the value of collateral.

CREDIT EXPOSURE ON SWAPS Chart 11.4.1



probability, e.g. 90 per cent, the market value does not exceed the curves shown prior to maturity. The curves thus indicate the *calculated* total credit exposure as a function of the remaining maturity, without considering the collateral agreement.

For swap A – with high volatility in market value – the threshold value will have a limiting effect on the credit exposure if the remaining maturity exceeds 2 years. On the other hand, swap B – with a low volatility in market value – will only be limited by the threshold value if the remaining maturity exceeds 7 years.

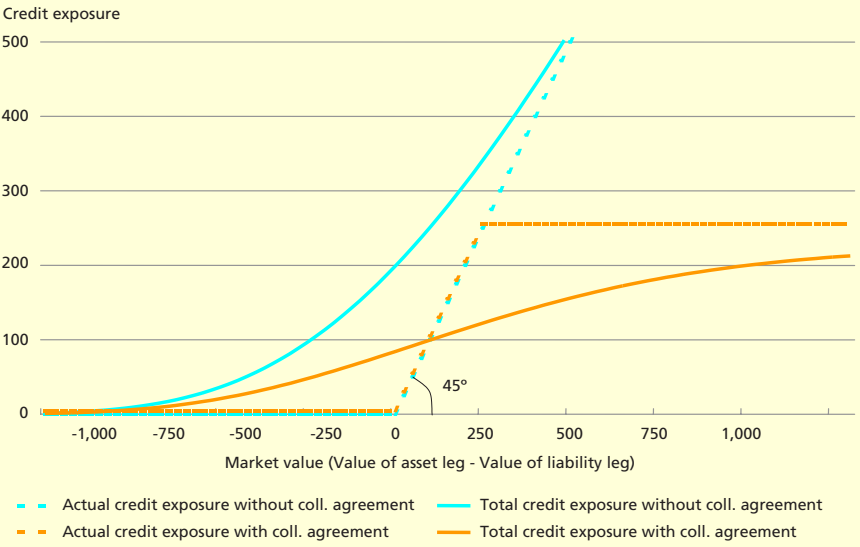
Depending on the chosen confidence level (percentile), potential credit exposures derived on the basis of the method illustrated in Chart 11.4.1 will entail that the expected future credit exposure (market value) is overestimated. The size of the calculated potential credit exposure is therefore not immediately comparable with the actual credit exposure.

Instead of determining the potential credit exposure on a swap as e.g. the 90th percentile for its market value, an option formula can be used to determine the credit exposure as the expected future market value. By using an option formula a potential credit exposure will be calculated which can be compared directly with the actual credit exposure. This is described in Box 11.2.

CREDIT EXPOSURE ON SWAPS ILLUSTRATED BY OPTIONS Box 11.2

In general, a swap with a positive market value has an actual credit exposure equivalent to the market value, while the actual credit exposure is zero if the swap's market value is negative. This asymmetry makes it relevant to consider a swap's credit exposure as the value of the purchased option containing the same upside potential as the swap, see the Chart below. In this context the actual credit exposure can be set as the option's *intrinsic value*, while the potential credit exposure is equal to the option's *time value*.

Chart



In a situation without a collateral agreement there will always be an expectation that the credit exposure will on average rise towards maturity. This is a result of the downward limitation to zero of the actual credit exposure. This implies that the potential (expected change in) credit exposure is always positive.

A collateral agreement will put a ceiling on the net actual credit exposure (threshold value). In the Chart this can be equated to the inclusion of a sold option with a strike rate equal to the threshold value, equivalent to a sale (i.e. collateralisation) of credit exposures which exceed the threshold value. The collateral agreement thus implies that the total credit exposure cannot be higher than the threshold value.

The gap between the total credit exposure calculated respectively with and without a collateral agreement increases continuously with the market value of the swap. As the market value increases, the total credit exposure with collateral agreements will converge towards the threshold value. When the swap's market value increases above a certain point, the potential credit exposure becomes even negative. This is because the collateral agreement beyond this point is so binding that the potential for increase in the net actual credit exposure is less than the potential for decline.

RATING TRIGGERS 11.5

Rating triggers imply that swaps can be terminated should a counterparty's rating fall to a given level.

In most of the central government's ISDA Master Agreements the rating trigger used is BBB+/Baa1.[1] The central government's rating triggers can thus be used at a time when the rating agencies still consider counterparty claims to be "Investment Grade".

Rating triggers are a natural element of the central government's credit policy since great emphasis is placed on having the lowest possible default risk on the swap portfolio at all times. When a rating requirement is fixed in connection with the transaction of a swap, cf. Appendix 11.A, it is therefore natural for the central government to ensure that it can terminate the swap prematurely, should a counterparty's rating fall to an unacceptable level at any time.

Rating triggers in the central government's ISDA Master Agreements are mutual and as such may also be applied by the counterparty vis-à-vis the central government.

During the few years in which rating triggers have been included in the central government's ISDA Master Agreements no rating trigger has ever been released. However, on the basis of the rating agencies' experience with the development in corporate ratings over time, it is estimated that just over 7 per cent of the central government's present swap counterparties during a 5-year period will be downgraded so that a rating trigger can be released. The basis for this estimate is described in Box 11.3.

In practice, a decision to terminate as a consequence of a rating trigger being reached will always be based on concrete assessment of the credit exposure on the swap counterparty concerned. If the remaining term to maturity of the total swap outstanding is very short, or the market value is very low, or even negative, termination will not necessarily take place, even if a rating trigger is reached. The reason for this decision might be that the cost of early termination exceeds the value of eliminating a small credit risk. An alternative to termination might also be to require the counterparty to provide additional collateral, so that the total collateral exceeds the actual credit exposure on the swap outstanding.

With regard to the counterparties which have signed collateral agreements rating triggers mainly protect the proportion of the credit exposure which is not covered by collateral.

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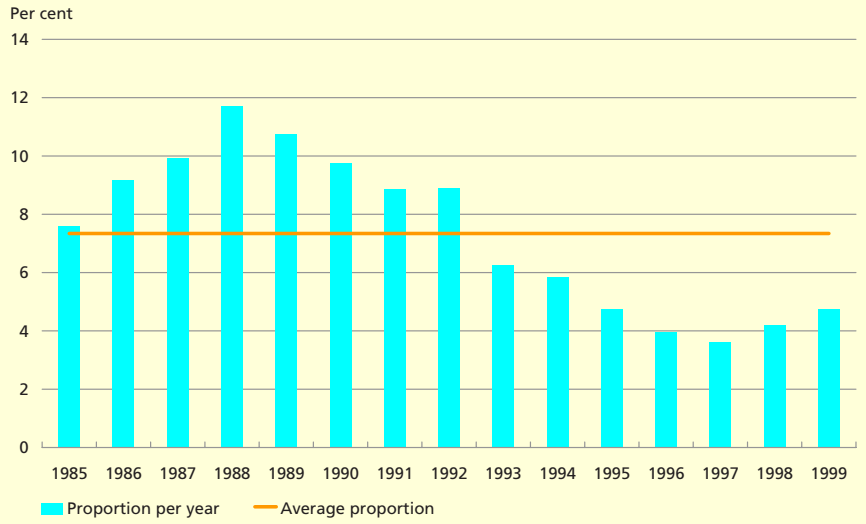
[1] A few Master Agreements from before the requirement of rating triggers was formalised have no or a lower trigger.

PROBABILITY OF RELEASE OF A RATING TRIGGER Box 11.3

A rating reflects an issuer's credit standing at a given time. In step with the issuer's credit standing the rating may change over time. This process can be analysed with the help of transition matrices prepared by the rating agencies. The transition matrices show the development in the issuers' ratings over a period.

On the basis of Standard & Poor's 1-year transition matrices for the period 1981-99[1] it is estimated how the ratings of the central government's swap counterparties can be expected to develop over a 5-year period. The estimates, based on the distribution of ratings for the central government's swap counterparties as of 1 January 2001, are shown in the Chart. It is seen that over a 5-year period on average just over 7 per cent of the central government's counterparties are expected to be downgraded to BBB+ or lower, thereby releasing the rating triggers. However, the Chart also shows that there will be periods in which a considerably larger proportion of the counterparties might hit the rating trigger.

PROPORTION OF THE CENTRAL GOVERNMENT'S SWAP COUNTERPARTIES OVER A 5-YEAR PERIOD EXPECTED TO BE REDUCED TO BBB+ OR LOWER Chart



The proportion of expected downgrades to BBB+ or lower is not higher because the average initial rating requirement is high compared to the rating triggers. 90 per cent of the central government's counterparties must thus be downgraded 4-7 notches to hit the trigger.

The transition matrices are compiled from ratings for all companies rated by Standard & Poor's in the period. All the central government's swap counterparties are financial institutions, so that the calculation results cannot be transferred directly to the central government's swap portfolio. The fluctuations in the proportion of financial institutions downgraded to BBB+ or below during 1981-99 will not have been distributed over time in the same way as in the Chart. The average proportion is, however, approximately the same for financial institutions as for all corporate sectors taken as one. It should also be noted that the transition matrices used are dominated by American companies.

[1] *Ratings Performance 1999*, Standard & Poor's, February 2000.

APPENDIX: LIST OF KEY ELEMENTS OF THE CENTRAL GOVERNMENT'S CREDIT POLICY 11.A

Counterparties' credit standing (rating): To limit the credit risk on swap counterparties, swaps are only transacted with counterparties with a very high credit standing.

Normally, a counterparty must have a rating of minimum Aa3/AA- with at least two reputed rating agencies, (Moody's, Standard & Poor's or Fitch IBCA). However, for krone-denominated interest-rate swaps counterparties with a rating of minimum A3/A- are eligible.

Limits for credit exposure (lines): To avoid disproportionally high credit exposures the credit exposure on a counterparty must be kept within an authorised line. The size of the lines granted depends on the counterparty's rating and equity, cf. Table 11.A.1.

Calculation of credit exposure on counterparty: Counterparties' credit exposure and utilisation of lines are closely monitored in the central government's swap-limit system. The calculation principles are described in Appendix 11.B.

Handling of excess credit exposure: New swaps may only be transacted with a counterparty for as long as the credit exposure is less than 75 per cent of the authorised line. The remaining 25 per cent of the line is a buffer to limit the extent of excess credit exposure.

In the event of excess credit exposure the counterparty relationship is monitored closely. If the excess exposure is considered to be unacceptably high, it is sought to reduce the credit exposure.

LIMITS ON CREDIT EXPOSURE Table 11.A.1

Counterparty rating		Lines (max. total credit exposure)		Threshold value (max. uncollateralised market value)
Moody's	Standard & Poor's, Fitch IBCA	DKK million	Per cent of counterparty's equity	DKK million
Aaa	AAA	2,000	8.0	500
Aa1	AA+	1,500	7.0	400
Aa2	AA	1,000	6.0	300
Aa3	AA-	700	5.0	200
A1	A+	600	5.0	150
A2	A	400	4.5	100
A3	A-	200	4.0	50

Note: If there are split ratings, the lowest rating of the counterparty is applied when granting a line and determining the threshold value for maximum uncollateralised market value in favour of the central government.
If the counterparty is rated A1/A+ or below, the granted line can only be used for krone-denominated interest-rate swaps with a maturity of maximum 10 years.

Eligible swaps: Only plain-vanilla interest and exchange-rate swaps may be transacted. The maturity will normally not exceed 10 years.

Dual-currency swaps and zero-coupon swaps are considered to be plain-vanilla swaps.

Structured swaps are no longer transacted. The same applies to transactions which include option elements, including swaptions, interest-rate caps, etc.

Legal documentation: Swaps are only transacted with counterparties with whom an ISDA Master Agreement has been signed which on an overall basis regulates the business transactions between the central government and the counterparty, as well as a collateral agreement, see below.

Netting: ISDA Master Agreements contain terms and provisions for netting whereby gains and losses on transacted swaps can be set off in the event of a counterparty default.

Master Agreements are signed only with counterparties domiciled in countries whose legislation provides for netting.

Early termination: It must be possible to terminate all swaps with a counterparty, should the counterparty's rating fall to an unsatisfactory level. All new ISDA Master Agreements therefore contain rating triggers, cf. section 11.5.

As a subsequent safeguard against credit losses cross-default clauses are also used. These allow swaps to be terminated if the counterparty defaults on its payment obligations to a third party.

Collateralisation: To limit any losses in the event of counterparty default new swaps may only be transacted with counterparties that have signed a collateral agreement (ISDA Credit Support Annex). These are unilateral agreements whereby only the counterparty is required to pledge collateral if the actual credit exposure (market value) on transacted swaps is in the favour of the central government and exceeds an agreed threshold value, cf. Table 11.A.1. The contents of the agreements are described in further detail in section 11.2.

APPENDIX: CALCULATION OF CREDIT EXPOSURE ON SWAPS 11.B

General calculation of credit exposure on swaps

Since the central government's ISDA Master Agreements include *netting* provisions, the credit exposure on a counterparty is calculated, subject to the assumption that gains and losses on swaps can be set off against each other should the counterparty default.

In general, the total credit exposure (TCE) on a swap is calculated as the actual credit exposure (ACE) less the collateral pledged (COL), with the addition of the potential credit exposure (PCE):

$$TCE_1 = ACE - COL + PCE_{Remaining\ maturity}$$

ACE for a given counterparty is equivalent to the positive net market value (MV) on all swaps with this counterparty. If the net market value is negative, ACE is zero, since in such case the central government has no actual risk of loss:

$$ACE = Max\{MV, 0\}$$

The calculation of PCE is more complex. PCE expresses that the swap's market value has a potential to increase on changes in the interest rates and currencies on which the swap is based. The potential of a decreasing market value is disregarded in the calculation of PCE. PCE therefore cannot be negative. The longer the remaining maturity and the greater the volatility of interest and exchange rates, the larger PCE will be.

PCE is quantified by multiplying the numerical value of a swap's asset and liability legs (AL and LL) by respectively an interest-rate and an exchange-rate risk weight ($w_{currency}$ and $w_{interest\ rate}$). These weights are divided into maturity bands and increase with the remaining maturity, cf. Table 11.B.1.

If the market value is negative at the time of calculation, adjustment is required for the fact that a proportion of the potential for increase must be used before the market value becomes positive. If the negative market value exceeds the calculated risk-weighted amount, PCE is zero, however. Overall the following applies:

$$PCE_{Remaining\ maturity} = Max\{AL*(w_{currency}+w_{interest\ rate}) + LL*(w_{currency}+w_{interest\ rate}) + Min\{MV, 0\},0\}$$

Supplementary calculation for swaps covered by collateral agreements

If a counterparty is subject to a collateral agreement, the credit exposure is influenced in two ways. If the market value of a swap portfolio exceeds

RISK WEIGHTS FOR CALCULATING POTENTIAL CREDIT EXPOSURE Table 11.B.1

Maturity	Interest-rate risk weight	Exchange-rate risk weight
0-1 month	0.0000	0.0000
1-3 months	0.0020	0.0040
3-6 months	0.0040	0.0080
6-12 months	0.0070	0.0140
1-2 years	0.0125	0.0250
2-3 years	0.0175	0.0350
3-4 years	0.0225	0.0500
4-5 years	0.0275	0.0550
5-7 years	0.0325	0.0650
7-10 years	0.0375	0.0750

Note: The risk weights may be revised during 2001.

the threshold value of the collateral agreement, the counterparty is requested to provide collateral, whereby the net actual credit exposure (ACE-COL) is reduced to the threshold value.

The collateral requirement is calculated as a minimum on a monthly basis. It is therefore possible that the market value exceeds the threshold value within a month. The maximum credit exposure is therefore the threshold value with addition of the PCE, calculated on the basis of a time span of one month:

$$TCE_2 = Threshold\ value + PCE_{1\ month}$$

For counterparties with a collateral agreement the credit exposure is thereafter equivalent to the lowest of the two calculations of the total credit exposure.

$$TCE = Min\{TCE_1, TCE_2\}$$

TCE_1 will be lowest and thus the appropriate calculation when the market value of a swap portfolio is far from the threshold value and/or the remaining maturity is very short, so that the potential credit exposure is low. If on the other hand the market value is high and/or the remaining maturity is high, so that the potential credit exposure is likewise high, the collateral agreement will be binding. In that case TCE_2 is the relevant expression of the total credit exposure.

Appendices

Announcements on the Central Government's Borrowing and Debt (Translations)

SECURITIES LENDING FACILITY, EXTRACT FROM ANNOUNCEMENT ON CENTRAL-GOVERNMENT DOMESTIC BORROWING, 22 JUNE 1999

Principles for lending of government securities which are current issues open for sale (cf. announcement in Danish Government Borrowing and Debt 1999):

1. Lending is in government bonds and Treasury notes which are current central-government issues open for sale. The more specific terms for lending in the individual government securities series are announced in the central government's announcements concerning current issues open for sale. If deemed appropriate, no lending facility will be established for certain current issues of government securities.
2. Lending in government securities is to all members of Copenhagen Stock Exchange.
3. In normal circumstances the maximum lending in each paper is DKK 2 billion. However, this limit may be raised in the event of abnormal price formation on the private market for securities lending. The securities lending facility can be terminated at any time. Lending in individual government bond series will lapse when the bonds cease to be current issues open for sale. In certain cases the facility may continue for a few months after a paper has been withdrawn from current issues.
4. Securities lending transactions are settled on the following trading day. The securities may be borrowed for a period from 1 to 5 trading days. Transactions can be made during the day between 9.00 a.m. and 3.30 p.m., but as far as possible should be concluded before 2.00 p.m. Lending in securities is granted in the order that requests to Danmarks Nationalbank are received from securities dealers on the relevant day. The right to make discretionary allocations is reserved if deemed appropriate.
5. Danish government securities (bullet loans) denominated in Danish kroner issued via the Danish Securities Centre (VP) in series with an outstanding amount of at least DKK 3 billion are accepted as collateral.
6. Collateral is provided by deducting 5 points from the market price of the securities provided as collateral by the borrower.
7. Transactions are settled as trading transactions in the VP system.
8. The fee is 0.5 per cent per year. The fee can be changed without further notice.
9. Transactions are reported as two or more separate repurchase agreements to Copenhagen Stock Exchange under code 30.
10. Any enquiries concerning securities lending transactions should be made to Danmarks Nationalbank, Market Operations, on tel. (+45) 33 63 67 13 or (+45) 33 63 67 14.

REDUCTION OF TIME INTERVAL BETWEEN BIDS AND RESULT AT TREASURY BILL AUCTIONS, 30 MARCH 2000

With effect from the Treasury bill auction on 27 April 2000 the time between deadline for submission of bids and announcement of the auction result will be reduced from 1 hour to ½ hour.

The reduced time interval between bids and result makes it appropriate to clarify the procedure that will be followed in case of technical difficulties preventing the auction to be held within the normal framework, see appendix to this announcement on the conditions for Treasury bill auctions. Furthermore, a revised description of borrowing terms for Treasury bills has been prepared. It can be ordered on tel. (+45) 33 63 61 05 or viewed on Danmarks Nationalbank's Web site (www.nationalbanken.dk).

Further information

For further information concerning the aforementioned please contact Danmarks Nationalbank, Ove Sten Jensen, Head of Government Debt Management, on tel. (+45) 33 63 61 02.

Information on the government debt management can be found on Danmarks Nationalbank's Web site (www.nationalbanken.dk).

Appendix: Conditions for Treasury bill auctions

Treasury bills are issued at auctions which are normally held on the penultimate trading day of each month.

Before an auction, Danmarks Nationalbank issues announcement thereof on behalf of the central government. The announcement is issued via the Copenhagen Stock Exchange and contains deadline for submission of bids, time for announcement of the auction result and information on the bills offered for sale. Normally the ultimate deadline for submitting bids will be 11:30 a.m. on the auction day with subsequent announcement of the auction result at 12:00 a.m. At the auctions bids are received in the series which have a remaining maturity of minimum 3 months.

Auction bids may be submitted by entities authorised to trade on the Copenhagen Stock Exchange and by Danmarks Nationalbank's monetary-policy counterparties which fulfil the requirements for the electronic Treasury bill auction system. Bids that have come to the knowledge of Danmarks Nationalbank before the deadline for submission, and that are entered in the electronic auction system, will be considered at the auction.

The bid must be for a yield specified to two decimal points. On the basis of the bids received, a cut-off yield will be fixed. Bids for this yield or

below will be accommodated at the cut-off yield. A pro-rata accommodation of bids at the cut-off yield may be made. The cut-off yield will be converted to a price according to current money-market practice. The price will be rounded up or down to the nearest whole krone amount. An auction can be terminated without accommodation.

The cut-off yield, any percentage pro-rata allocation and the total allocation will be published by Danmarks Nationalbank on the auction day. Settlement will normally take place in accordance with the current market convention.

In case of technical difficulties preventing the auction to be held within the normal framework, the auction will be terminated without accommodation. Should it be decided to hold a new auction on the same day, the submission of bids will take place by telephone with confirmation by fax and with a time interval of 1 hour between the submission of bids and the announcement of the result. Notice of the new auction will be given by an announcement via the Copenhagen Stock Exchange.

CENTRAL-GOVERNMENT DOMESTIC BORROWING IN 2ND HALF OF 2000, 20 JUNE 2000

In Budget Review – Public Finances no. 1, 2000 the central government's gross domestic borrowing requirement for 2000 is estimated at DKK 61.7 billion. The borrowing requirement will be covered by issuing domestic government securities.

On 29 June 2000 a new series of Treasury notes 2003 will open. The interest payment date will be 15 November and the coupon rate 5 per cent (ID Code DK000992003-5). The Treasury notes will be repaid in full on 15 November 2003.

Sale of 5 per cent Treasury notes 2003 will commence at 11.00 a.m. on 29 June via the Match System of the Copenhagen Stock Exchange. Further details of the amounts offered on the first day will be announced at 9.00 a.m. on 29 June.

A description of terms of borrowing in Danish and English for 5 per cent Treasury notes 2003 has been prepared. It can be ordered on tel. (+45) 33 63 61 05 or viewed on Danmarks Nationalbank's Web site (www.nationalbanken.dk).

Sale of 4 per cent Treasury notes 2002 will be discontinued on 30 June 2000.

In the 2nd half of 2000 new 9-month Treasury bills will be opened at auctions with the settlement dates of 1 August and 1 November 2000.

The current issues open for sale will thus be as follows:

Current issues open for sale July 2000

Series	Interest payment date
Government bonds	
7 per cent bullet loans 2024	10 November
6 per cent bullet loans 2011	15 November
5 per cent bullet loans 2005	15 August
Treasury notes	
5 per cent Treasury notes 2003 (opens on 29 June)	15 November
Treasury bills	
Treasury bills 2000 IV	1 November
Treasury bills 2001 I	1 February

Buy-back

Buy-backs will be used to smooth out the refinancing of loans maturing during 2000.

Securities maturing during 2001 can be bought back to smooth out the borrowing requirement between 2000 and 2001.

Furthermore, there can be buy-backs in a wider range of securities. The objective is to support a range of current issues open for sale which comprise liquid market-conform issues.

For 2000 there can be buy-backs in the following securities:

All securities maturing during 2000 and 2001
8 per cent bullet loans 2003
7 per cent bullet loans 2004
8 per cent bullet loans 2006
10 per cent serial loans S 2004
5 per cent serial loans S 2007
4 per cent serial loans S 2017

Government securities lending

5 per cent Treasury notes 2003 opening on 29 June 2000 will be included in the government securities lending facility. 4 per cent Treasury notes 2002 exit the facility on 30 June 2000.

On 1 July 2000 the facility thus comprises the following government bonds and Treasury notes:

5 per cent Treasury notes 2003
5 per cent bullet loans 2005
6 per cent bullet loans 2009
6 per cent bullet loans 2011

Under normal circumstances the maximum lending in each paper is set at DKK 2 billion.

The securities lending facility is described in further detail in the annex to the announcement of Central-Government Domestic Borrowing in 1999 of 22 June 1999.

Further information

For further information concerning the aforementioned please contact Danmarks Nationalbank, Ove Sten Jensen, Head of Government Debt Management, on tel. (+45) 33 63 61 02.

CHANGE OF MARKET CONVENTIONS ON THE DANISH BOND MARKET – GOVERNMENT BONDS, 12 OCTOBER 2000

As of 8 February 2001 market conventions for the Danish bond market are changed to the standards that apply to other major bond markets. The changes are described in "Change of Market Conventions on the Danish Bond Market, 18 March 1999".

The changes consist of two elements:

- The present convention for the calculation of accrued interest is changed from the day-count basis 30/360 to actual/actual.
- The ex-coupon period is abolished.

At the same time the drawing procedure for the central government's serial loans is adjusted to follow a purely mathematical model rather than the present group drawing principle (lottery). This change was announced in "Central government domestic borrowing in 1999" from 22 June 1999.

In connection with the new drawing system the smallest denomination of central government bonds is changed to 0.01 DKK.

All Danish central-government securities registered in the Danish Securities Centre are subject to the changes described in the above-mentioned announcements. Foreign issues are not affected by the changes.

Moreover the following issues are exempt from the change in calculation of accrued interest:

ISIN Code	Name	Maturity
DK000991740-3	8.5% DK Stat EUR	24-04-2002
DK000990159-7	3.5% 1886/	perpetual
DK000990175-3	3.5% 1909/	perpetual
DK000990167-0	3.5% 1901/	perpetual
DK000990140-7	3% 1894/	perpetual

CENTRAL-GOVERNMENT BORROWING IN 2001, 15 DECEMBER 2000

Central-government domestic borrowing in 2001

In Budget Review of December 2000, the central government's gross domestic borrowing requirement for 2001 is estimated at DKK 50.3 billion. The borrowing requirement will be covered by issuing domestic government securities.

Central-government issues open for sale in 2001

Current issues open for sale January 2001

Series	Interest payment date
Government bonds	
6 per cent bullet loans 2011	15 November
5 per cent bullet loans 2005	15 August
Treasury notes	
5 per cent Treasury notes 2003	15 November
Treasury bills	
Treasury bills 2001 I	1 February
Treasury bills 2001 II	1 May
Treasury bills 2001 III	1 August

The government debt policy will be designed to build up large and liquid series in the 2-, 5- and 10-year segments. The objective is an outstanding amount of at least DKK 60 billion in the 10-year issue open for sale, 6 per cent bullet loans 2011.

7 per cent bullet loans 2024 are excluded from current issues open for sale.

Treasury bills

The Treasury bill programme continues with monthly auctions. In the 1st half of 2001 new 9-month Treasury bills will be opened at auctions with settlement dates in February and May.

A few adjustments to the Treasury bill programme are planned in May 2001. The intention is to introduce a 12-month bill and include Treasury bills in the government securities lending facility. A separate announcement to this effect will be published later.

Buy-back

Buy-backs of government securities maturing in 2001 and 2002 can be used to smooth out the borrowing requirement within the year and between 2001 and 2002.

Furthermore, there can be buy-backs in a wider range of securities to support a range of current issues open for sale which comprise liquid market-conform issues.

For 2001 there can be buy-backs in the following securities:

All securities maturing during 2001 and 2002
8 per cent bullet loans 2003
7 per cent bullet loans 2004
8 per cent bullet loans 2006
7 per cent bullet loans 2007
10 per cent serial loans S 2004
5 per cent serial loans S 2007
4 per cent serial loans S 2017

The government securities lending facility

The government securities lending facility comprises the following government bonds and Treasury notes as of 1 January 2001:

5 per cent Treasury notes 2003
5 per cent bullet loans 2005
6 per cent bullet loans 2011

Under normal circumstances the maximum lending in each of the three papers is set at DKK 2 billion.

6 per cent bullet loans 2009 are excluded from the lending facility.

The securities lending facility is described in further detail in the annex to the announcement of Central-Government Domestic Borrowing in 1999 of 22 June 1999. The announcement is reprinted in Danish Government Borrowing and Debt 1999, which can be found at the following address on the Web site of Danmarks Nationalbank:

www.nationalbanken.dk/nb/nb.nsf/alldocs/Fdanish_government_debt

Central-government foreign borrowing in 2001

The central government's gross foreign borrowing requirement for 2001 is DKK 18.0 billion.

As a supplement to direct foreign borrowing and to support the liquidity of current issues open for sale the government can issue domestic securities and use currency swaps from kroner to euro. In order not to influence the swap market only limited amounts will be transacted. For a number of years, currency and interest-rate swaps in other currencies as well as interest-rate swaps in kroner have been used in connection with the administration of the government debt.

Duration of the government debt

The duration band of 3.5 +/- 0.5 years for the government debt continues to apply in 2001.

Further information

Information on the government debt management can be found on the Web site of Danmarks Nationalbank (www.nationalbanken.dk). It is possible to join Danmarks Nationalbank's subscription service and get direct mail with new and updated information about the government borrowing and debt.

Danish Government Borrowing and Debt 2000 is expected to be published at the end of February 2001.

For further information concerning the aforementioned please contact Danmarks Nationalbank, Ove Sten Jensen, Head of Government Debt Management, on tel. (+45) 33 63 61 02.

Appendix of Tables

CENTRAL-GOVERNMENT DEBT, YEAR-END 1990-2000 Table 1

DKK million	1990	1991	1992
A. Debt			
Domestic debt denominated in DKK[1]			
- Fixed-rate bonds	229,221	252,481	316,690
- Floating-rate bonds	85,010	85,010	57,147
- Lottery bonds	1,200	1,200	1,200
- Compulsory savings	864	392	-
- Treasury notes	68,850	74,050	71,150
- Treasury bills	21,350	49,250	55,485
- Government securities held by the central government	-5	-1	0
- Interest-rate swaps, notional amount			
from fixed rate	-	-	-
to floating rate	-	-	-
Domestic debt denominated in DKK, total	406,490	462,382	501,672
Domestic debt denominated in EUR[2 3]			
- Fixed-rate bonds	-	-	9,827
- Government securities held by the central government	-	-	-
Domestic debt, total	406,490	462,382	511,499
Foreign debt			
- in USD	15,556	17,103	37,802
- in CHF	21,034	15,785	13,952
- in JPY	3,597	1,866	3,159
- in EUR[3]	67,909	54,955	48,237
- in other currencies	11,006	2,630	1,482
- Government securities held by the central government[4]	-1,126	-1,374	-1,151
Foreign debt, total	117,975	90,965	103,482
Domestic and foreign debt, total	524,465	553,347	614,981
B. Government deposits with the central bank[5]	-45,206	-11,649	-30,927
C. The Social Pension Fund			
- Government securities	-36,193	-38,872	-43,611
- Other securities	-82,254	-86,836	-88,583
The Social Pension Fund, nominal value, total[6]	-118,447	-125,708	-132,194
Central-government debt, total (A+B+C)	360,812	415,990	451,860
Central-government debt, per cent of GDP	43.7	48.5	50.9

Note: +denotes liabilities, - denotes assets.

[1] Does not include the holdings of the central government under the location-swap facility. The facility was established in July 1993 and ended in April 1998.

[2] In connection with the introduction of new accounting principles for the government debt the 8.5 per cent EUR bullet loan 2002 has been reclassified as foreign debt instead of domestic debt as of 1 January 1998.

[3] Comprises loans in EUR, currencies of the euro-area member states and XEU. Debt in GRD is included under other currencies.

[4] Recorded at acquisition price. From 1993 exchange-rate-adjusted.

CENTRAL-GOVERNMENT DEBT, YEAR-END 1990-2000 Table 1

1993	1994	1995	1996	1997	1998	1999	2000
357,346	409,565	466,608	516,812	556,874	550,989	537,289	506,992
41,241	30,345	20,722	16,760	9,848	4,346	-	-
1,200	1,200	1,200	1,200	1,200	1,000	900	900
-	-	-	-	-	-	-	-
94,200	111,705	102,697	84,499	49,140	58,830	74,040	81,257
58,339	56,238	58,385	51,234	50,001	41,255	36,350	36,846
-	-	-	-	-	-	-	-2,000
-	-	-	-	-	-500	-7,950	-20,950
-	-	-	-	-	500	7,950	20,950
552,326	609,053	649,612	670,505	667,063	656,420	648,579	623,995
9,824	9,697	9,244	9,597	6,634	-	-	-
-	-970	-1,138	-2,372	-	-	-	-
562,150	617,781	657,719	677,730	673,697	656,420	648,579	623,995
50,889	24,913	6,425	4,562	1,514	1,336	1,187	0
20,914	18,393	13,836	6,179	3,974	1,094	3,616	3,822
5,612	10,419	9,329	2,396	1,047	562	2,453	1,672
73,621	64,887	69,975	88,826	90,661	84,982	82,386	79,287
14,575	12,954	11,599	6,519	6,418	365	383	428
-1,338	-1,784	-5,516	-6,986	0	0	0	0
164,274	129,782	105,647	101,495	103,613	88,338	90,025	85,209
726,424	747,563	763,366	779,225	777,310	744,758	738,604	709,204
-88,781	-55,266	-33,677	-31,052	-29,024	-30,400	-35,231	-34,651
-45,270	-50,143	-68,889	-83,435	-92,453	-100,135	-105,432	-106,312
-93,105	-96,689	-82,517	-65,336	-54,368	-43,468	-36,207	-33,244
-138,375	-146,832	-151,406	-148,772	-146,821	-143,603	-141,640	-139,556
499,268	545,465	578,283	599,401	601,465	570,755	561,733	534,997
55.5	56.5	57.3	56.5	53.9	48.8	45.7	41.7

[5] For 2000 the central government's account is compiled in accordance with the monthly balance sheet of Danmarks Nationalbank.

[6] Index-linked bonds are at indexed value.

DOMESTIC GOVERNMENT SECURITIES ISSUED IN 2000 — Table 2

No. 358, 6 per cent government bonds 2011 (6 pct. stående lån 2011)	
Issued in 2000, DKK million	15,695
Interest payable	15 Nov
Stock exchange code	0991996
Issue commenced	4 May 2000
Redemption date	15 Nov 2011
No. 291, 6 per cent government bonds 2009 (6 pct. stående lån 2009)	
Issued in 2000, DKK million	9,955
Interest payable	15 Nov
Stock exchange code	0991953
Issue commenced	14 Jan 1998
Redemption date	15 Nov 2009
No. 286, 5 per cent government bonds 2005 (5 pct. stående lån 2005)	
Issued in 2000, DKK million	13,240
Interest payable	15 Aug
Stock exchange code	0991945
Issue commenced	14 Jan 1997
Redemption date	15 Aug 2005
No. 371, 5 per cent Treasury notes 2003 (5 pct. statsgældsbevis 2003)	
Issued in 2000, DKK million	10,827
Interest payable	15 Nov
Stock exchange code	0992003
Issue commenced	29 Jun 2000
Redemption date	15 Nov 2003
No. 319, 4 per cent Treasury notes 2002 (4 pct. statsgældsbevis 2002)	
Issued in 2000, DKK million	17,890
Interest payable	15 May
Stock exchange code	0991988
Issue commenced	7 Jul 1999
Redemption date	15 Mar 2002
No. 321, Treasury bills 2000 II (Skatkammerbevis 2000 II)	
Issued in 2000, DKK million	4,383
Interest payable	-
Stock exchange code	0980749
Issue commenced	2 Aug 1999
Redemption date	1 May 2000
No. 334, Treasury bills 2000 III (Skatkammerbevis 2000 III)	
Issued in 2000, DKK million	13,401
Interest payable	-
Stock exchange code	0980757
Issue commenced	1 Nov 1999
Redemption date	1 Aug 2000

DOMESTIC GOVERNMENT SECURITIES ISSUED IN 2000	Table 2
No. 340, Treasury bills 2000 IV (Skatkammerbevis 2000 IV)	
Issued in 2000, DKK million	13,539
Interest payable	-
Stock exchange code	0980765
Issue commenced	1 Feb 2000
Redemption date	1 Nov 2000
No. 353, Treasury bills 2001 I (Skatkammerbevis 2001 I)	
Issued in 2000, DKK million	10,495
Interest payable	-
Stock exchange code	0980773
Issue commenced	1 May 2000
Redemption date	1 Feb 2001
No. 373, Treasury bills 2001 II (Skatkammerbevis 2001 II)	
Issued in 2000, DKK million	18,251
Interest payable	-
Stock exchange code	0980781
Issue commenced	1 Aug 2000
Redemption date	1 May 2001
No. 385, Treasury bills III (Skatkammerbevis 2001 III)	
Issued in 2000, DKK million	8,100
Interest payable	-
Stock exchange code	0980803
Issue commenced	1 Nov 2000
Redemption date	1 Aug 2001

CENTRAL-GOVERNMENT FOREIGN BORROWING TRANSACTIONS IN 2000[1] Table 3

Loan no.	Accept-ance date	Issue date	Nominal rate of interest, per cent p.a.	Type of loan	Maturity date	Nominal amount in million	Lead manager/Lender
920	05-01-00	27-01-00	7	EMTN	15-12-03	200 USD	ABN AMRO Bank N.V.
924	25-01-00	08-02-00	5 s.a.	EMTN Dual Cur.	06-02-03	10,000 JPY	Daiwa Securities SBCM
925	16-02-00	23-02-00	0	EMTN	08-02-01	33 USD	HSBC Bank plc
928	30-03-00	05-04-00	6.77	EMTN	05-04-01	70 USD	J.P. Morgan Securities Ltd.
917[2]	13-04-00	19-04-00	6.375	EMTN	25-10-02	100 USD	HSBC Bank plc
929	28-04-00	04-05-00	0	EMTN	30-04-01	50 USD	Morgan Stanley & Co. Intl.
930	18-05-00	24-05-00	0	EMTN	14-11-02	21 USD	Credit Suisse First Boston
-	18-05-00	24-05-00	0	EMTN	15-11-02	21 USD	Credit Suisse First Boston
-	18-05-00	24-05-00	0	EMTN	18-11-02	21 USD	Credit Suisse First Boston
-	18-05-00	24-05-00	0	EMTN	19-11-02	21 USD	Credit Suisse First Boston
-	18-05-00	24-05-00	0	EMTN	20-11-02	21 USD	Credit Suisse First Boston
-	18-05-00	24-05-00	0	EMTN	21-11-02	21 USD	Credit Suisse First Boston
931	30-05-00	07-06-00	0	EMTN	31-05-01	25 USD	HSBC Bank plc
932	02-06-00	16-06-00	0.24	EMTN	28-08-02	5,000 JPY	Goldman Sachs Intl.
298	03-07-00	05-07-00	0	ECP	28-07-00	50 USD	UBS Warburg
298	03-07-00	05-07-00	0	ECP	31-07-00	20 USD	J.P. Morgan
298	05-07-00	07-07-00	0	ECP	31-07-00	50 USD	Citibank N.A.
298	06-07-00	10-07-00	0	ECP	31-07-00	8 EUR	UBS Warburg
244	07-07-00	11-07-00	0	USCP	31-07-00	50 USD	J.P. Morgan
298	07-07-00	11-07-00	0	ECP	31-07-00	25 EUR	UBS Warburg
298	10-07-00	13-07-00	0	ECP	31-07-00	15 USD	Deutsche Bank AG
937	06-07-00	17-07-00	0	EMTN	14-09-01	9 USD	Credit Suisse First Boston
-	06-07-00	17-07-00	0	EMTN	17-09-01	9 USD	Credit Suisse First Boston
-	06-07-00	17-07-00	0	EMTN	18-09-01	9 USD	Credit Suisse First Boston
-	06-07-00	17-07-00	0	EMTN	19-09-01	9 USD	Credit Suisse First Boston
-	06-07-00	17-07-00	0	EMTN	20-09-01	9 USD	Credit Suisse First Boston
-	06-07-00	17-07-00	0	EMTN	21-09-01	9 USD	Credit Suisse First Boston
942	12-07-00	19-07-00	6.8	EMTN	19-07-01	50 USD	Morgan Stanley & Co. Intl.
906[3]	12-07-00	20-07-00	5.875	EMTN	28-06-04	50 GBP	Royal Bank of Canada
939	10-07-00	31-07-00	7	EMTN	31-07-03	250 USD	Royal Bank of Canada
908[4]	02-08-00	16-08-00	5.75	EMTN	03-12-01	50 GBP	Goldman Sachs Intl.
944	08-08-00	04-09-00	11.375	EMTN	04-09-03	50 ZAR	Royal Bank of Canada
943[5]	13-07-00	07-09-00	3-month Libor -0.20%	EIB pro-ject loan	07-09-09	6 GBP	EIB
941[5]	11-07-00	15-09-00	3-month Libor -0.20%	EIB pro-ject loan	15-09-09	41 GBP	EIB
920[8]	11-09-00	21-09-00	7	EMTN	15-12-03	100 USD	Tokyo-Mitsubishi Intl.
945	07-09-00	03-10-00	6.875	EMTN	03-10-02	300 USD	ABN AMRO/Merrill Lynch
913[9]	28-11-00	05-12-00	6.625	EMTN	14-09-05	30 USD	Goldman Sachs Intl.

[1] Including swaps, if any, in connection with new issues.
[2] Increase of loan no. 917. The Kingdom of Denmark received accrued interest of USD 3,081,000 on the issue date.
[3] Increase of loan no. 906. The Kingdom of Denmark received accrued interest of USD 179,500 on the issue date.
[4] Increase of loan no. 908. The Kingdom of Denmark received accrued interest of USD 2,020,485 on the issue date.
[5] Redeemable at par on any payment date at 30 days' notice.

CENTRAL-GOVERNMENT FOREIGN BORROWING TRANSACTIONS IN 2000[1] Table 3

Issue price	Commissions and expenses, per cent	Start date	Counterparty	Notional amount in million	Nominal rate of interest	Amount in DKK million
101.66	1.635	27-01-00	ABN AMRO	192.77 EUR	6-month Euribor -0.20%	1,435.0
99.98	3.25	08-02-00	RBS	90.74 EUR	6-month Euribor -0.27%	675.4
93.984849	0	23-02-00	MSDP	31.68 EUR	6-month Euribor -0.20%	235.9
100	0	05-04-00	GSMMDP	73.45 EUR	6-month Euribor -0.195%	546.9
98.595	0.15	19-04-00	MSDP	104.50 EUR	6-month Euribor -0.20%	778.5
93.554	0	04-05-00	MSDP	55.04 EUR	6-month Euribor -0.20%	410.3
83.71	0	24-05-00	Deutsche Bank	19.19 EUR	6-month Euribor -0.20%	143.1
83.70	0	24-05-00	Deutsche Bank	19.64 EUR	6-month Euribor -0.20%	146.5
83.65	0	24-05-00	Deutsche Bank	19.63 EUR	6-month Euribor -0.20%	146.4
83.63	0	24-05-00	Deutsche Bank	19.63 EUR	6-month Euribor -0.20%	146.4
83.61	0	24-05-00	Deutsche Bank	19.62 EUR	6-month Euribor -0.20%	146.3
83.60	0	24-05-00	Deutsche Bank	19.62 EUR	6-month Euribor -0.20%	146.3
93.27	0	07-06-00	MSDP	24.81 EUR	6-month Euribor -0.21%	185.1
100	0	16-06-00	BoA	49.20 EUR	6-month Euribor -0.22%	367.1
99.58644						391.0
99.53275						156.3
99.56986						389.0
99.74863						59.6
99.63944						390.9
99.76113						186.2
99.67804						116.9
92.7607	0	17-07-00	Deutsche Bank	8.71 EUR	6-month Euribor -0.22%	65.0
92.7106	0	17-07-00	Deutsche Bank	8.71 EUR	6-month Euribor -0.22%	65.0
92.6939	0	17-07-00	Deutsche Bank	8.71 EUR	6-month Euribor -0.22%	65.0
92.6773	0	17-07-00	Deutsche Bank	8.71 EUR	6-month Euribor -0.22%	65.0
92.6607	0	17-07-00	Deutsche Bank	8.70 EUR	6-month Euribor -0.22%	64.9
92.6441	0	17-07-00	Deutsche Bank	8.75 EUR	6-month Euribor -0.22%	65.3
99.943	0	19-07-00	MSDP	52.69 EUR	6-month Euribor -0.20%	393.0
99.934	1.655	20-07-00	RBC	79.74 EUR	6-month Euribor -0.20%	594.6
101.273	1.387	31-07-00	GSMMDP	262.94 EUR	6-month Euribor -0.19%	1,960.5
99.26	0.1	16-08-00	GSMMDP	81.25 EUR	6-month Euribor -0.20%	606.1
99.215	0.5	04-09-00	GSMMDP	7.93 EUR	6-month Euribor -0.22%	59.1
100	0	07-09-00[6]	Barclays Bank	9.89 EUR	6-month Euribor -0.191%	73.7
100	0	15-09-00[7]	Barclays Bank	65.02 EUR	6-month Euribor -0.191%	485.4
100.6132	0.1875	21-09-00	MSDP	116.50 EUR	6-month Euribor -0.20%	869.9
101.176	1.125	03-10-00	ABN AMRO	345.62 EUR	6-month Euribor -0.19%	2,577.0
100.792	0.25	05-12-00	GSMMDP	35.10 EUR	6-month Euribor -0.24%	261.7

[6] The swap matures on 7 September 2003.
[7] The swap matures on 15 September 2003.
[8] Increase of loan no. 920. The Kingdom of Denmark received accrued interest of USD 4,550,000 on the issue date.
[9] Increase of loan no. 913. The Kingdom of Denmark received accrued interest of USD 447,300 on the issue date.

CENTRAL-GOVERNMENT DOMESTIC INTEREST-RATE SWAPS, 2000 Table 4a

Loan no.	Accepted in	Terminates in	Amount in DKK million
335	Jan 2000	Jan 2010	200
336	Jan 2000	Jan 2010	200
337	Jan 2000	Jan 2010	200
338	Jan 2000	Jan 2010	200
339	Jan 2000	Jan 2010	200
341	Feb 2000	Feb 2010	400
342	Feb 2000	Feb 2010	200
343	Feb 2000	Feb 2010	200
344	Feb 2000	Feb 2010	200
345	Mar 2000	Mar 2010	200
346	Mar 2000	Mar 2010	200
347	Mar 2000	Mar 2010	200
348	Mar 2000	Mar 2010	400
349	Apr 2000	Apr 2010	300
350	Apr 2000	Apr 2010	400
351	Apr 2000	Apr 2010	500
352	Apr 2000	Apr 2010	200
354	Apr 2000	Apr 2010	200
355	Apr 2000	Apr 2010	200
356	May 2000	May 2010	200
357	May 2000	May 2010	300
359	May 2000	May 2010	200
360	May 2000	May 2010	300
361	May 2000	May 2010	200
362	May 2000	May 2010	400
363	May 2000	May 2010	200
364	Jun 2000	Jun 2010	400
365	Jun 2000	Jun 2010	300
366	Jun 2000	Jun 2010	200
367	Jun 2000	Jun 2010	200
368	Jun 2000	Jun 2010	300
369	Jun 2000	Jun 2010	200
370	Jun 2000	Jun 2010	200
372	Jul 2000	Jul 2010	500
374	Aug 2000	Aug 2010	200
375	Aug 2000	Aug 2010	200
376	Aug 2000	Aug 2010	200
377	Sep 2000	Sep 2010	500
378	Sep 2000	Sep 2010	500
379	Sep 2000	Sep 2010	300
380	Sep 2000	Sep 2010	400
381	Sep 2000	Sep 2010	200
382	Oct 2000	Oct 2010	200
383	Oct 2000	Oct 2010	200
384	Oct 2000	Oct 2010	200
386	Nov 2000	Nov 2010	200
387	Nov 2000	Nov 2010	400
388	Nov 2000	Nov 2010	200
389	Nov 2000	Nov 2010	200
Total			13,000

Note: The Kingdom of Denmark receives 10-year fixed interest and pays 6-month Cibor on all domestic interest-rate swaps entered into in 2000.

CENTRAL-GOVERNMENT DOMESTIC INTEREST-RATE SWAPS
AS OF 31 DECEMBER 2000 Table 4b

Termination year	Notional amount in DKK million
2008	500
2009	7,450
2010	13,000
Total domestic interest-rate swaps	20,950

Note: The Kingdom of Denmark receives 10-year fixed interest and pays 6-month Cibor on all domestic interest-rate swaps.

CENTRAL-GOVERNMENT FOREIGN SWAPS UNCONNECTED TO NEW ISSUES, 2000 Table 4c

Loan no.	Start date	Receiving			Paying			Termination date	Fee in DKK million
		Currency	Million	Interest	Currency	Million	Interest		
793[1]	23-01-97	USD	300.0	0	DEM	591.6	6-month Libor -0.22%	23-12-02	1,006.3
921[2]	12-01-00	EUR	4.0	6-month Euribor -0.03%	EUR	4.0	3.40	23-03-04	-1.1
922[2]	20-01-00	EUR	3.0	6-month Euribor –0.03%	EUR	3.0	3.40	23-03-04	-0.8
923[2]	20-01-00	EUR	3.0	6-month Euribor -0.03%	EUR	3.0	4.05	16-09-03	-0.4
926[2]	28-03-00	EUR	4.0	6-month Euribor –0.05%	EUR	4.0	3.40	23-03-04	-1.7
927[2]	28-03-00	EUR	8.0	6-month Euribor -0.05%	EUR	8.0	4.05	16-09-03	-0.3
933[2]	03-07-00	EUR	4.7	6-month Euribor	GRD	1,589.5	7.5	03-06-03	0.0

[1] The DEM notional amount has been increased by DEM 265,060,687 as of 27 December 2000 against the Kingdom of Denmark receiving DEM 263,764,777. This reduces the market value to zero.
[2] Asset swap connected to buy-back of bonds.

CENTRAL-GOVERNMENT FOREIGN-EXCHANGE FORWARD TRANSACTIONS
WITH DANMARKS NATIONALBANK, 2000[1] Table 4d

Loan no.	Start date	Receiving on the termination date USD million	Paying on the termination date EUR million	Termination date
934	05-07-00	50.0	52.6	28-07-00
935	05-07-00	20.0	21.0	31-07-00
936	07-07-00	50.0	52.3	31-07-00
938	11-07-00	50.0	52.5	31-07-00
940	13-07-00	15.0	15.7	31-07-00

[1] Foreign-exchange transactions connected to Commercial Paper issues.

CENTRAL-GOVERNMENT DOMESTIC DEBT AS OF 31 DECEMBER 2000 Table 5

Serial no.	Coupon, per cent	Name Issue Period[1]	Redemption date	Outstanding amount, DKK million
Government bonds, fixed interest rate				
Bullet loans				
246	8	Stående lån 2003 2 Jan 1992-30 Dec 1993	15 May 2003	65,750.0
257	7	Stående lån 2004 25 May 1993-5 Dec 1994	15 Dec 2004	74,450.0
264	7	Stående lån 2024 6 Apr 1994-31 Dec 2000	10 Nov 2024	25,000.0
269	8	Stående lån 2006 5 Dec 1994-10 Apr 1996	15 Mar 2006	70,000.0
272	8	Stående lån 2001 9 Jan 1995-18 Jun 1996	15 Nov 2001	39,635.0
279	7	Stående lån 2007 10 Apr 1996-30 Dec 1997	15 Nov 2007	52,605.0
280	6	Stående lån 2002 18 Jun 1996-30 Dec 1998	15 Nov 2002	38,907.0
286	5	Stående lån 2005 14 Jan 1997-	15 Aug 2005	51,660.0
291	6	Stående lån 2009 14 Jan 1998-4 May 2000	15 Nov 2009	66,645.0
358	6	Stående lån 2011 4 May 2000-	15 Nov 2011	15,695.0
Serial loans				
14	5	S 2007 20 Oct 1953-12 Sep 1958	15 Sep 2007[2]	38.5
16	4	S 2017 29 Nov 1955-12 Sep 1958	15 Jun 2017[2]	89.5
38	12	S 2001 6 Oct 1980-9 May 1983	15 Feb 2001	
		Outstanding amount 2,667.5 Of which bought back 2,000.0 Outstanding amount, total 667.5		667.5
57	10	S 2004 10 May 1983-30 Aug 1985	15 Oct 2004	3,792.0
85	10	S 2001 15 Jul 1985-30 Aug 1985	15 Jul 2001	0.5
Perpetuals				
1	3.5	Dansk Statslån 11 Dec 1886	perpetuals[2]	46.2
80	5	Dansk-Islandsk Fond 1918 20 May 1919	perpetuals	1.0
Government bonds, fixed interest rate, total				504,992.2

CENTRAL-GOVERNMENT DOMESTIC DEBT AS OF 31 DECEMBER 2000 Table 5

Serial no.	Coupon, per cent	Name Issue Peiod[1]	Redemption date	Outstanding amount, DDK million
Treasury notes				
Bullet loans				
290	4.00	Statsgældsbevis 2001 I 7 Jan 1998-6 Jul 1999	15 Feb 2001	35,355.0
319	4	Statsgældsbevis 2002 7 Jul 1999-19 Jun 2000	15 Mar 2002	35,075.0
371	5	Statsgældsbevis 2003 29 Jun 2000-	15 Nov 2003	10,827.0
Treasury notes, total				81,257.0
Treasury bills				
Zero-coupon loans				
353	0	Skatkammerbevis 2001 I 1 May 2000-1 Nov 2000	1 Feb 2001	10,495.0
373	0	Skatkammerbevis 2001 II 1 Aug 2000-	1 May 2001	18,251.0
385	0	Skatkammerbevis 2001 III 1 Nov 2000-	1 Aug 2001	8,100.0
Treasury bills, total				36,846.0
Lottery bonds				
20	7	Præmieobligationslån af 1965/2010 22 Sep 1965	22 Sep 2010	100.0
21	7	Præmieobligationslån af 1969/2009 1 Oct 1969	31 Dec 2009	100.0
24	8	Præmieobligationslån af 1977/2002		
		I 14 Apr 1977	15 Feb 2002	100.0
		II 3 Jun 1977	15 May 2002	100.0
		III 24 Jun 1977	15 Jun 2002	100.0
		IV 28 Jul 1977	15 Jul 2002	100.0
		V 30 Aug 1977	15 Aug 2002	100.0
39	10	Præmieobligationslån af 1980/2005 28 Oct 1980	1 Jul 2005	200.0
Lottery bonds, total				900.0
Central-government domestic debt, total				623,995.2

[1] The issue period refers to the period the series has been open for issue. For Treasury bills the dates refer to settlement date. Series still open for issue are marked with "-" after the first day of issue. Certain securities are only sold on one single date. For these securities only this date is stated.

[2] May be redeemed by the central government at three months' notice.

CENTRAL-GOVERNMENT FOREIGN DEBT AS OF 31 DECEMBER 2000[1] Table 6

Loan no.	Rate of interest, per cent p.a.	Title	Outstanding amount, million of currency	Outstanding amount, DKK million (1)	Note
AUD loans					
838	3.46	1997/07 AUD(interest on 33.86 million)/JPY (redemption)	0.0	0.0	
-	3.46	1997/07 swap to DEM with floating rate	-0.0	-0.0	
869	5.625	1998/03	100.0	445.0	
-	5.625	1998/03 swap to DEM with floating rate	-100.0	-445.0	
Total AUD			0.0	0.0	
BEF loans					
619	0	1995/03 swap to floating rate	-5,000.0	-925.1	(2)
-	float.	1995/03 swap from fixed rate	2,705.3	500.5	(2)
Total BEF			-2,294.8	-424.6	
CAD loans					
802	6	1997/02	100.0	534.4	
-	6	1997/02 swap to DEM with floating rate	-100.0	-534.4	
876	5.25	1998/03	100.0	534.4	
-	5.25	1998/03 swap to DEM with floating rate	-100.0	-534.4	
Total CAD			0.0	0.0	
CHF loans					
313	0	1987/02	50.8	249.0	
796	2.25	1997/04	200.0	979.9	
-	2.26688	1997/04 swap to DEM with floating rate	-200.0	-979.9	
893	float.	1999/04 swap from EUR with floating rate	335.0	1,641.4	
894	0	1999/02 swap from EUR with floating rate (Swap concerning buy-back (CHF 34.34 million of loan no. 313)	34.3	168.3	
901	float.	1999/02 swap from EUR with floating rate	112.0	548.8	
903	float.	1999/02 swap from EUR with floating rate	112.0	548.8	
910	float.	1999/03 swap from EUR with floating rate	64.0	313.6	
911	float.	1999/03 swap from EUR with floating rate	72.0	352.8	
Total CHF			780.2	3,822.5	
CZK loans					
871	13.75	1998/02	1,000.0	213.0	
-	13.75	1998/02 swap to DEM with floating rate	-1,000.0	-213.0	
Total CZK			0.0	0.0	

[1] All loans are repaid at maturity unless otherwise stated.
The outstanding amount of some loans has been reduced during the term of the loan through buy-backs to which asset swaps often have been connected.
The redemptions are in some cases structured, i.e. they are calculated according to a certain formula and can be bigger or smaller than the outstanding amounts mentioned in the Table.

CENTRAL-GOVERNMENT FOREIGN DEBT AS OF 31 DECEMBER 2000[1] Table 6

Loan no.	Rate of interest, per cent p.a.	Title	Outstanding amount, million of currency	Outstanding amount DKK million (1)	Note
DEM loans					
509	8.345	1992/02 swap from floating rate	100.0	381.6	
-	float.	1992/02 swap to fixed rate	-100.0	-381.6	
512	8.3	1992/02 swap from floating rate	100.0	381.6	
-	float.	1992/02 swap to fixed rate	-100.0	-381.6	
515	8.285	1992/02 swap from floating rate	50.0	190.8	
-	float.	1992/02 swap to fixed rate	-50.0	-190.8	
516	8.31	1992/02 swap from floating rate	50.0	190.8	
-	float.	1992/02 swap to fixed rate	-50.0	-190.8	
524	8.03	1992/02 swap from floating rate	100.0	381.6	
-	float.	1992/02 swap to fixed rate	-100.0	-381.6	
528	7.94	1992/01 swap from floating rate	100.0	381.6	
-	float.	1992/01 swap to fixed rate	-100.0	-381.6	
643	6.33	1995/01 swap from floating rate	100.0	381.6	
-	float.	1995/01 swap to fixed rate	-100.0	-381.6	
644	6.31	1995/01 swap from floating rate	100.0	381.6	
-	float.	1995/01 swap to fixed rate	-100.0	-381.6	
646	6.46	1995/02 swap from floating rate	100.0	381.6	
-	float.	1995/02 swap to fixed rate	-100.0	-381.6	
647	6.44	1995/02 swap from floating rate	100.0	381.6	
-	float.	1995/02 swap to fixed rate	-100.0	-381.6	
648	6.4	1995/02 swap from floating rate	100.0	381.6	
-	float.	1995/02 swap to fixed rate	-100.0	-381.6	
649	6.39	1995/02 swap from floating rate	100.0	381.6	
-	float.	1995/02 swap to fixed rate	-100.0	-381.6	
710	float.	1996/01 swap from LUF with fixed rate	48.6	185.4	
711	5.74	1996/01 swap from floating rate	48.6	185.4	
-	float.	1996/01 swap to fixed rate	-48.6	-185.4	
713	float.	1996/06 swap from FRF with floating rate	146.6	559.5	
714	float.	1996/02 swap from EUR with floating rate	94.0	358.6	
716	float.	1996/02 swap from EUR with floating rate	93.7	357.5	
717	float.	1996/02 swap from EUR with floating rate	188.0	717.5	
721	float.	1996/02 swap from EUR with floating rate	189.0	721.2	
723	8.05	1996/02 swap from EUR with fixed rate	283.2	1,080.8	
725	float.	1996/02 swap from EUR with floating rate	284.4	1,085.1	
734	0	1996/01 swapped to floating rate	12.0	45.8	
735	6.3875	1996/06 swap from floating rate	146.6	559.5	
-	float.	1996/06 swap to fixed rate	-146.6	-559.5	
760	5	1996/01	500.0	1,907.9	
772	float.	1996/06 swap from USD with fixed rate	29.9	114.2	
780	4.75	1997/02	474.5	1,810.6	
790	5.925	1996/06 swap from floating rate	29.9	114.2	
-	float.	1996/06 swap to fixed rate	-29.9	-114.2	
793	float.	1997/02 swap from USD with fixed rate	591.6	2,257.5	
794	float.	1997/07 swap from JPY with structured rate	13.6	52.0	
795	4.75	1997/02	670.0	2,556.6	
796	float.	1997/04 swap from CHF with fixed rate	228.7	872.6	
798	4.885	1997/02 swap from floating rate	326.6	1,246.1	
-	float.	1997/02 swap to fixed rate	-326.6	-1,246.1	
799	5.73	1997/07 swap from floating rate	13.6	52.0	
-	float.	1997/07 swap to fixed rate	-13.6	-52.0	

CENTRAL-GOVERNMENT FOREIGN DEBT AS OF 31 DECEMBER 2000[1] Table 6

Loan no.	Rate of interest, per cent p.a.	Title	Outstanding amount, million of currency	Outstanding amount DKK million (1)	Note
DEM loans – continued					
800	5.275	1997/04 swap from floating rate	228.7	872.6	
-	float.	1997/04 swap to fixed rate	-228.7	-872.6	
802	float.	1997/02 swap from CAD with fixed rate	121.5	463.6	
812	4.748	1997/02 swap from floating rate	121.5	463.6	
-	float.	1997/02 swap to fixed rate	-121.5	-463.6	
835	float.	1997/07 swap from JPY with fixed rate	69.4	264.9	
837	float.	1997/01 swap from USD with structured rate	166.1	633.6	
838	float.	1997/07 swap from AUD(interest)/JPY (redemption) with fixed rate	44.3	169.2	
841	float.	1997/03 swap from USD with fixed rate	862.5	3,291.1	
842	5.826	1997/07 swap from floating rate	69.4	264.9	
-	float.	1997/07 swap to fixed rate	-69.4	-264.9	
843	5.0625	1997/03 swap from floating rate	862.5	3,291.1	
-	float.	1997/03 swap to fixed rate	-862.5	-3,291.1	
844	5.6925	1997/07 swap from floating rate	44.3	169.2	
-	float.	1997/07 swap to fixed rate	-44.3	-169.2	
845	5	1997/03	500.0	1,907.9	
846	float.	1997/01 swap from USD with fixed rate	517.7	1,975.4	
847	3.992	1997/01 swap from floating rate	166.1	633.6	
-	float.	1997/01 swap to fixed rate	-166.1	-633.6	
848	4.224	1997/01 swap from floating rate	517.7	1,975.4	
-	float.	1997/01 swap to fixed rate	-517.7	-1,975.4	
849	float.	1997/04 swap from USD with fixed rate	926.0	3,533.4	
850	float.	1997/07 swap from JPY with structured rate	31.0	118.3	
851	float.	1997/01 swapped to fixed rate, 4.7425 pct.	1,465.0	5,590.1	
852	5.4675	1997/04 swap from floating rate	926.0	3,533.4	
-	float.	1997/04 swap to fixed rate	-926.0	-3,533.4	
853	float.	1997/07 swap from JPY with structured rate	7.6	28.9	
854	5.25	1997/04	1,000.0	3,815.8	
855	float.	1997/07 swap from JPY with fixed rate	49.3	188.0	
862	float.	1997/07 swap from USD with fixed rate	43.5	166.1	
863	float.	1997/04 swapped to floating rate	125.0	477.0	
864	5	1998/03	424.0	1,617.9	
869	float.	1998/03 swap from AUD with fixed rate	120.0	457.9	
870	float.	1998/05 swap from USD with fixed rate	908.6	3,467.0	
871	float.	1998/02 swap from CZK with fixed rate	53.2	202.9	
872	4.29	1998/01 swap from GBP with fixed rate	61.3	233.8	
873	float.	1998/03 swap from GRD with fixed rate	57.7	220.1	
875	float.	1998/01 swap from GRD with fixed rate	60.2	229.9	
876	float.	1998/03 swap from CAD with fixed rate	121.5	463.4	
881	float.	1998/07 swap from NOK with fixed rate	74.3	283.5	
888	float.	1998/07 swap from SEK with fixed rate	102.0	389.2	
890	float.	1998/07 swap from SEK with fixed rate	101.5	387.3	
891	float.	1998/06 swap from SEK with fixed rate	81.9	312.5	
Total DEM			11,942.8	45,571.5	

CENTRAL-GOVERNMENT FOREIGN DEBT AS OF 31 DECEMBER 2000[1] Table 6

Loan no.	Rate of interest, per cent p.a.	Title	Outstanding amount, million of currency	Outstanding amount, DKK million (1)	Note
DKK loans					
1	3	1894 perpetual	55.6	55.6	(3)
2	3.5	1901 perpetual	29.2	29.2	(3)
3	3.5	1909 perpetual	38.4	38.4	(3)
Total DKK			123.3	123.3	
EUR loans					(4)
493	8.5	1992/02	880.8	6,573.8	
510	float.	1992/02 swap from fixed rate	50.0	373.2	
-	9.73	1992/02 swap to floating rate	-50.0	-373.2	
511	float.	1992/02 swap from fixed rate	50.0	373.2	
-	9.69	1992/02 swap to floating rate	-50.0	-373.2	
518	float.	1992/02 swap from fixed rate	50.0	373.2	
-	9.63	1992/02 swap to floating rate	-50.0	-373.2	
519	float.	1992/02 swap from fixed rate	50.0	373.2	
-	9.63	1992/02 swap to floating rate	-50.0	-373.2	
520	float.	1992/02 swap from fixed rate	50.0	373.2	
-	9.61	1992/02 swap to floating rate	-50.0	-373.2	
522	float.	1992/02 swap from fixed rate	100.0	746.3	
-	9.29	1992/02 swap to floating rate	-100.0	-746.3	
523	float.	1992/02 swap from fixed rate	50.0	373.2	
-	9.33	1992/02 swap to floating rate	-50.0	-373.2	
529	float.	1992/02 swap from fixed rate	25.0	186.6	
-	9.38	1992/02 swap to floating rate	-25.0	-186.6	
530	float.	1992/02 swap from fixed rate	25.0	186.6	
-	9.4	1992/02 swap to floating rate	-25.0	-186.6	
714	float.	1996/02 swap to DEM with floating rate	-50.0	-373.2	
716	float.	1996/02 swap to DEM with floating rate	-50.0	-373.2	
717	float.	1996/02 swap to DEM with floating rate	-100.0	-746.3	
721	float.	1996/02 swap to DEM with floating rate	-100.0	-746.3	
723	8.5	1996/02 swap to DEM with fixed rate	-150.0	-1,119.5	
725	float.	1996/02 swap to DEM with floating rate	-150.0	-1,119.5	
877	4.05	1998/03 swapped to floating rate	113.0	843.3	
878	3.7	1998/01 swapped to floating rate	211.0	1,574.7	
879	4.625	1998/08 swapped to floating rate	475.0	3,545.0	
887	3.105	1999/02 swap from USD with fixed rate	85.5	638.1	
-	3	1999/02 swap from USD with fixed rate	44.0	328.4	
889	3.4	1998/04 swapped to floating rate	89.0	664.2	
893	float.	1999/04 swap to CHF with floating rate	-209.0	-1,559.8	
894	float.	1999/02 swap to CHF with fixed rate (Swap concerning buy-back (CHF 34.34 million) of loan no. 313)	-21.4	-159.7	
895	float.	1999/06 swap to USD with fixed rate (Swap concerning buy-back (USD 20 million) of loan no. 772)	-17.1	-127.5	
896	2.985	1999/02 swap from GRD with fixed rate	31.0	231.6	
899	float.	1999/04 swap to JPY with floating rate	-50.0	-373.2	
900	float.	1999/04 swap to JPY with floating rate	-80.0	-597.0	
901	float.	1999/02 swap to CHF with floating rate	-70.0	-522.4	
903	float.	1999/02 swap to CHF with floating rate	-70.0	-522.4	
904	float.	1999/04 swap to JPY with floating rate	-55.0	-410.5	

CENTRAL-GOVERNMENT FOREIGN DEBT AS OF 31 DECEMBER 2000[1] Table 6

Loan no.	Rate of interest, per cent p.a.	Title	Outstanding amount, million of currency	Outstanding amount, DKK million (1)	Note
EUR loans – continued					
906	float.	1999/04 swap from GBP with fixed rate	231.7	1,728.9	
-	float.	2000/04 swap from GBP with fixed rate	79.7	595.1	
907	float.	1999/05 swap from NOK with fixed rate	61.7	460.7	
908	float.	1999/01 swap from GBP with fixed rate	384.5	2,869.6	
-	float.	2000/01 swap from GBP with fixed rate	81.2	606.4	
909	float.	1999/03 swap from USD with fixed rate	233.7	1,744.1	
910	float.	1999/03 swap to CHF with floating rate	-40.0	-298.5	
911	float.	1999/03 swap to CHF with floating rate	-45.0	-335.8	
912	float.	1999/03 swap from SEK with fixed rate	171.4	1,278.8	
913	float.	1999/05 swap from USD with fixed rate	465.0	3,470.3	
-	float.	2000/05 swap from USD with fixed rate	35.1	262.0	
914	5.125	1999/05 swap from floating rate	100.0	746.3	
-	float.	1999/05 swap to fixed rate	-100.0	-746.3	
915	5.1625	1999/05 swap from floating rate	100.0	746.3	
-	float.	1999/05 swap to fixed rate	-100.0	-746.3	
917	float.	1999/02 swap from USD with fixed rate	375.6	2,803.0	
-	float.	2000/02 swap from USD with fixed rate	104.5	779.9	
920	float.	2000/03 swap from USD with fixed rate	309.3	2,308.1	
921	3.4	2000/04 swap from floating rate	4.0	29.9	
-	float.	2000/04 swap to fixed rate (Swap concerning buy-back (EUR 4 million) of loan no. 889)	-4.0	-29.9	
922	3.4	2000/04 swap from floating rate	3.0	22.4	
-	float.	2000/04 swap to fixed rate (Swap concerning buy-back (EUR 3 million) of loan no. 889)	-3.0	-22.4	
923	4.05	2000/03 swap from floating rate	3.0	22.4	
-	float.	2000/03 swap to fixed rate (Swap concerning buy-back (EUR 3 million) of loan no. 877)	-3.0	-22.4	
924	float.	2000/03 swap from JPY(interest)/USD (redemption) with fixed rate	90.7	677.2	
925	float.	2000/01 swap from USD with fixed rate	31.7	236.4	
926	3.4	2000/04 swap from floating rate	4.0	29.9	
-	float.	2000/04 swap to fixed rate (Swap concerning buy-back (EUR 4 million) of loan no. 889)	-4.0	-29.9	
927	4.05	2000/03 swap from floating rate	8.0	59.7	
-	float.	2000/03 swap to fixed rate (Swap concerning buy-back (EUR 8 million) of loan no. 877)	-8.0	-59.7	
928	float.	2000/01 swap from USD with fixed rate	73.5	548.2	
929	float.	2000/01 swap from USD with fixed rate	55.0	410.7	
930	float.	2000/02 swap from USD with fixed rate	117.3	875.6	
931	float.	2000/01 swap from USD with fixed rate	24.8	185.1	
932	float.	2000/02 swap from JPY with fixed rate	49.2	367.2	
933	float.	2000/03 swap to GRD with fixed rate (Swap concerning buy-back (GRD 1,589.5 million) of loan no. 873)	-4.7	-35.3	
937	float.	2000/01 swap from USD with fixed rate	52.3	390.3	
939	float.	2000/03 swap from USD with fixed rate	262.9	1,962.3	

CENTRAL-GOVERNMENT FOREIGN DEBT AS OF 31 DECEMBER 2000[1] Table 6

Loan no.	Rate of interest, per cent p.a.	Title	Outstanding amount, million of currency	Outstanding amount, DKK million (1)	Note
EUR loans – continued					
941	float.	2000/03 swap from GBP with floating rate	65.0	485.3	
942	float.	2000/01 swap from USD with fixed rate	52.7	393.2	
943	float.	2000/03 swap from GBP with floating rate	9.9	73.8	
944	float.	2000/03 swap from ZAR with fixed rate	7.9	59.2	
945	float.	2000/02 swap from USD with fixed rate	345.6	2,579.4	
Total EUR			4,439.2	33,130.0	
FRF loans					
514	float.	1992/02 swap from fixed rate	250.0	284.4	
-	9.43	1992/02 swap to floating rate	-250.0	-284.4	
713	float.	1996/06	500.0	568.9	
-	float.	1996/06 swap to DEM with floating rate	-500.0	-568.9	
Total FRF			0.0	0.0	
GBP loans					
120	13	1980/05	25.5	304.8	
872	6.69	1998/01 EIB loan, Danish Motorways III	20.0	239.2	
-	6.69	1998/01 swap to DEM with fixed rate	-20.0	-239.2	
906	5.875	1999/04	200.0	2,391.6	
-	5.875	1999/04 swap to EUR with floating rate	-150.0	-1,793.7	
-	5.875	2000/04 swap to EUR with floating rate	-50.0	-597.9	
908	5.75	1999/01	300.0	3,587.5	
-	5.75	1999/01 swap to EUR with floating rate	-250.0	-2,989.6	
-	5.75	2000/01 swap to EUR with floating rate	-50.0	-597.9	
941	float.	2000/09 EIB loan, Danish Higher Education Framework A	40.8	487.9	
-	float.	2000/03 swap to EUR with floating rate	-40.8	-487.9	
943	float.	2000/09 EIB loan, Danish Motorways III B	6.2	73.5	
-	float.	2000/03 swap to EUR with floating rate	-6.2	-73.5	
Total GBP			25.5	304.8	
GRD loans					
873	7.5	1998/03	8,410.5	184.2	
-	7.5	1998/03 swap to DEM with floating rate	-10,000.0	-219.0	
875	8.5	1998/01	10,000.0	219.0	
-	8.5	1998/01 swap to DEM with floating rate	-10,000.0	-219.0	
896	6	1999/02	10,000.0	219.0	
-	6	1999/02 swap to EUR with fixed rate	-10,000.0	-219.0	
933	7.5	2000/03 swap from EUR with floating rate (Swap concerning buy-back (GRD 1,589.5 million) of loan no. 873)	1,589.5	34.8	
Total GRD			0.0	0.0	
JPY loans					
794	float.	1997/07	1,000.0	69.8	
-	float.	1997/07 swap to DEM with floating rate	-1,000.0	-69.8	

CENTRAL-GOVERNMENT FOREIGN DEBT AS OF 31 DECEMBER 2000[1] Table 6

Loan no.	Rate of interest, per cent p.a.	Title	Outstanding amount, million of currency	Outstanding amount, DKK million (1)	Note
JPY loans – continued					
835	2.63	1997/07	5,000.0	349.0	
-	2.63	1997/07 swap to DEM with floating rate	-5,000.0	-349.0	
838	0	1997/07 JPY(redemption)/AUD(interest)	3,000.0	209.4	
-	0	1997/07 swap to DEM with floating rate	-3,000.0	-209.4	
850	float.	1997/07	2,000.0	139.6	
-	float.	1997/07 swap to DEM with floating rate	-2,000.0	-139.6	
853	float.	1997/07	500.0	34.9	
-	float.	1997/07 swap to DEM with floating rate	-500.0	-34.9	
855	2.02	1997/07 EIB loan, Danish Road By-passes B	3,400.0	237.3	
-	2.02	1997/07 swap to DEM with floating rate	-3,400.0	-237.3	
899	float.	1999/04 swap from EUR with floating rate	6,515.0	454.8	
900	float.	1999/04 swap from EUR with floating rate	10,424.0	727.6	
904	float.	1999/04 swap from EUR with floating rate	7,009.8	489.3	
924	5	2000/03 JPY(interest on 10,000 million)/ USD (redemption)	0.0	0.0	
-	5	2000/03 swap to EUR with floating rate	-0.0	-0.0	
932	0.24	2000/02	5,000.0	349.0	
-	0.24	2000/02 swap to EUR with floating rate	-5,000.0	-349.0	
Total JPY			23,948.8	1,671.6	
LUF loans					
619	0	1995/03	5,000.0	925.1	
710	5.45	1996/01	1,000.0	185.0	
-	5.45	1996/01 swap to DEM with floating rate	-1,000.0	-185.0	
Total LUF			5,000.0	925.1	
NLG loans					
211	9.5	1984/04	25.0	84.7	(5)
Total NLG			25.0	84.7	
NOK loans					
881	6.25	1998/07	330.0	299.1	
-	6.25	1998/07 swap to DEM with floating rate	-330.0	-299.1	
907	5.75	1999/05	500.0	453.2	
-	5.75	1999/05 swap to EUR with floating rate	-500.0	-453.2	
Total NOK			0.0	0.0	
SEK loans					
888	5	1998/07	500.0	422.6	
-	5	1998/07 swap to DEM with floating rate	-500.0	-422.6	
890	5.12	1998/07	500.0	422.6	
-	5.12	1998/07 swap to DEM with floating rate	-500.0	-422.6	
891	5.065	1998/06	400.0	338.0	
-	5.065	1998/06 swap to DEM with floating rate	-400.0	-338.0	

CENTRAL-GOVERNMENT FOREIGN DEBT AS OF 31 DECEMBER 2000[1] Table 6

Loan no.	Rate of interest, per cent p.a.	Title	Outstanding amount, million of currency	Outstanding amount, DKK million (1)	Note
SEK loans – continued					
912	5.375	1999/03	1,500.0	1,267.7	
-	5.375	1999/03 swap to EUR with floating rate	-1,500.0	-1,267.7	
Total SEK			0.0	0.0	
USD loans					
772	6.065	1996/06 swap to DEM with floating rate	-20.0	-160.4	
793	0	1997/02	300.0	2,406.2	
-	0	1997/02 swap to DEM with floating rate	-300.0	-2,406.2	
837	float.	1997/01	97.6	782.5	
-	float.	1997/01 swap to DEM with floating rate	-97.6	-782.5	
841	6.625	1997/03	500.0	4,010.3	
-	6.625	1997/03 swap to DEM with floating rate	-500.0	-4,010.3	
846	6.375	1997/01	300.0	2,406.2	
-	6.375	1997/01 swap to DEM with floating rate	-300.0	-2,406.2	
849	6.25	1997/04	500.0	4,010.3	
-	6.25	1997/04 swap to DEM with floating rate	-500.0	-4,010.3	
862	4	1997/07	30.0	240.6	
-	4	1997/07 swap to DEM with floating rate	-30.0	-240.6	
870	5.75	1998/05	500.0	4,010.3	
-	5.75	1998/05 swap to DEM with floating rate	-500.0	-4,010.3	
887	3.875	1999/02	150.0	1,203.1	
-	3.875	1999/02 swap to EUR with fixed rate	-100.0	-802.1	
-	3.875	1999/02 swap to EUR with fixed rate	-50.0	-401.0	
895	6.065	1999/06 swap from EUR with floating rate (Swap concerning buy-back (USD 20 million) of loan no. 772)	20.0	160.4	
909	6.375	1999/03	250.0	2,005.1	
-	6.375	1999/03 swap to EUR with floating rate	-250.0	-2,005.1	
913	6.625	1999/05	530.0	4,250.9	
-	6.625	1999/05 swap to EUR with floating rate	-500.0	-4,010.3	
-	6.625	2000/05 swap to EUR with floating rate	-30.0	-240.6	
917	6.375	1999/02	500.0	4,010.3	
-	6.375	1999/02 swap to EUR with floating rate	-400.0	-3,208.2	
-	6.375	2000/02 swap to EUR with floating rate	-100.0	-802.1	
920	7	2000/03	300.0	2,406.2	
-	7	2000/03 swap to EUR with floating rate	-300.0	-2,406.2	
924	0	2000/03 USD(redemption)/JPY(interest)	94.6	758.4	
-	0	2000/03 swap to EUR with floating rate	-94.6	-758.4	
925	0	2000/01	33.0	264.7	
-	0	2000/01 swap to EUR with floating rate	-33.0	-264.7	
928	6.77	2000/01	70.0	561.4	
-	6.77	2000/01 swap to EUR with floating rate	-70.0	-561.4	
929	0	2000/01	50.0	401.0	
-	0	2000/01 swap to EUR with floating rate	-50.0	-401.0	
930	0	2000/02	125.5	1,006.6	
-	0	2000/02 swap to EUR with floating rate	-125.5	-1,006.6	
931	0	2000/01	25.0	200.5	
-	0	2000/01 swap to EUR with floating rate	-25.0	-200.5	
937	0	2000/01	54.1	433.5	
-	0	2000/01 swap to EUR with floating rate	-54.1	-433.5	

CENTRAL-GOVERNMENT FOREIGN DEBT AS OF 31 DECEMBER 2000[1] Table 6

Loan no.	Rate of interest, per cent p.a.	Title	Outstanding amount, million of currency	Outstanding amount, DKK million (1)	Note
USD loans – continued					
939	7	2000/03	250.0	2,005.1	
-	7	2000/03 swap to EUR with floating rate	-250.0	-2,005.1	
942	6.8	2000/01	50.0	401.0	
-	6.8	2000/01 swap to EUR with floating rate	-50.0	-401.0	
945	6.875	2000/02	300.0	2,406.2	
-	6.875	2000/02 swap to EUR with floating rate	-300.0	-2,406.2	
Total USD			0.0	0.0	
ZAR loans					
944	11.375	2000/03	50.0	53.0	
-	11.375	2000/03 swap to EUR with floating rate	-50.0	-53.0	
Total ZAR			0.0	0.0	
Central-government foreign debt, total				85,208.8	

(1) The outstanding amount as of 31 December 2000 is calculated on the basis of the following exchange rates as of 29 December 2000, expressed as the exchange rate per 100 units: AUD = 445.03, BEF = 18.501, CAD = 534.41, CHF = 489.96, CZK = 21.295, DEM = 381.58, EUR = 746.31, FRF = 113.77, GBP = 1,195.82, GRD = 2.19, JPY = 6.9801, LUF = 18.501, NLG = 338.66, NOK = 90.64, SEK = 84.51, USD = 802.05, ZAR = 106.02.

(2) Swap (in BEF) of LUF loan.

(3) Multi-currency loan. The creditor can choose which currency to make payments in, however at a fixed rate of exchange. At present DKK is the most advantageous currency for the creditor. Redeemable by the Kingdom of Denmark at 3 months' notice.

(4) Including XEU loans issued before 1 January 1999.

(5) Redeemable according to the principle of annuities. Semi-annual or annual payments, beginning after a grace period of at least one year.

SERVICE ON CENTRAL-GOVERNMENT DOMESTIC DEBT[1], END-2000 Table 7

DKK billion	Interest	Redemptions	Total
2001	38.4	76.6	115.4
2002	33.6	75.4	109.1
2003	29.8	77.5	107.3
2004	23.9	75.4	99.3
2005	18.6	51.9	70.5
2006	16.0	70.0	86.0
2007	10.4	52.6	63.0
2008	6.7	0.0	6.7
2009	6.6	66.8	73.3
2010	2.4	0.1	2.5
2011	2.7	15.7	18.4
2012	1.8	0.0	1.8
2013	1.8	0.0	1.8
2014	1.8	0.0	1.8
2015	1.8	0.0	1.8
2016	1.8	0.0	1.8
2017	1.8	0.0	1.8
2018	1.8	0.0	1.8
2019	1.8	0.0	1.8
2020	1.8	0.0	1.8
2021	1.8	0.0	1.8
2022	1.8	0.0	1.8
2023	1.8	0.0	1.8
2024	1.8	25.0	26.8
Total	211.8	587.1	798.9

[1] Excluding Treasury bills. Including net interest payments on domestic interest-rate swaps.

SERVICE ON CENTRAL-GOVERNMENT FOREIGN DEBT[1], END-2000 Table 8

DKK billion	Interest	Redemptions	Total
2001	4.2	18.0	22.2
2002	3.3	22.6	26.0
2003	2.1	17.9	20.0
2004	1.3	12.1	13.3
2005	0.7	8.0	8.7
2006	0.4	0.9	1.2
2007	0.3	2.0	2.3
2008	0.2	3.5	3.7
Total	12.5	85.2	97.7

[1] Including net interest payments on swaps.

KINGDOM OF DENMARK'S RATING IN DOMESTIC CURRENCY — Table 9a

	Moody's	Standard & Poor's
1981, Mar		AAA
1986, Jul	Aa	
1986, Aug	Aa1	
1986, Nov	Aaa	
Current rating	Aaa	AAA

Note: Moody's Investors Service and Standard & Poor's use the following ratings:
Moody's: Aaa, Aa, A, Baa, Ba, B, Caa, Ca and C.
For the categories Aa to Caa are used 1, 2 or 3 to indicate a status slightly better or worse within the category.
Standard & Poor's: AAA, AA, A, BBB, BB, B, CCC, CC, C and D.
For the categories AA to CCC are used + or - to indicate a status slightly better or worse within the category.

KINGDOM OF DENMARK'S RATING IN FOREIGN CURRENCY — Table 9b

	Moody's	Standard & Poor's
1981, Mar		AAA
1983, Jan		AA+
1985, Apr	Aa	
1986, Aug	Aa1	
1987, Mar		AA
1991, Oct		AA+
1999, Aug	Aaa	
2001, Feb		AAA
Current rating	Aaa	AAA

Note: See the note in Table 9a for ranking of the rating categories.

RATING OF SELECTED COUNTRIES' CENTRAL-GOVERNMENT DEBT Table 10

	Moody's		Standard & Poor's	
	Domestic	Foreign	Domestic	Foreign
Australia	Aaa	Aa2	AAA	AA+
Belgium	Aa1	Aa1	AA+	AA+
Denmark	Aaa	Aaa	AAA	AAA
Finland	Aaa	Aaa	AA+	AA+
France	Aaa	Aaa	AAA	AAA
Greece	A2	A2	A-	A-
Netherlands	Aaa	Aaa	AAA	AAA
Ireland	Aaa	Aaa	AA+	AA+
Italy	Aa3	Aa3	AA	AA
Japan	Aa2	Aa1	AA+	AA+
New Zealand	Aaa	Aa2	AAA	AA+
Norway	Aaa	Aaa	AAA	AAA
Portugal	Aa2	Aa2	AA	AA
Spain	Aa2	Aa2	AA+	AA+
UK	Aaa	Aaa	AAA	AAA
Sweden	Aaa	Aa1	AAA	AA+
South Africa	Baa1	Baa3	A-	BBB-
Czech Republic	A1	Baa1	AA-	A-
Germany	Aaa	Aaa	AAA	AAA
USA	Aaa	Aaa	AAA	AAA
Austria	Aaa	Aaa	AAA	AAA

Note: As published in February 2001. Se the note in Table 9a for ranking of the rating categories.
Source: Moody's Investors Service and Standard & Poor's.

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