Danmarks Nationalbank

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2002

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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 10 February 2003.

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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* summarises the key conclusions regarding government debt policy in 2002, and activities and trends within government debt management. *Central-Government Debt Management Strategy, 2003* describes the borrowing requirement and borrowing strategy for 2003, as well as the on-the-run and buy-back issues. This section reproduces an announcement of government debt policy in 2003 that was issued in December 2002.

Chapter 1 gives a general presentation of the *key principles* for the government debt policy.

Chapters 2-7 constitute the *report section.* They present the considerations and factors governing borrowing and debt management during the preceding year, together with an account of the strategy for 2003. Chapter 2 describes domestic borrowing, and Chapter 3 foreign borrowing. Chapter 4 presents the use of interest-rate and currency swaps, while Chapter 5 gives an account of market risks and how they are limited. Chapter 6 describes the management of the assets of the Social Pension Fund. Finally, the development in the government debt and the debt of a number of government-guaranteed entities is reviewed in Chapter 7.

The Special-topic section comprises Chapters 8-10. Chapter 8 focuses on liquidity in the Danish market for government securities and presents estimates of the size of the liquidity premium for government securities.

Chapter 9 takes stock of the efforts to implement electronic market-making in the wholesale market for Danish government bonds.

Chapter 10 presents the analytical approach to the compilation of costs and risk, and how risk management is implemented in government debt management. The focus is on risk management in Denmark.

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. Finally, a glossary presents explanations of a number of key financial terms used in the area of government debt.

Key Elements of the Government Debt Policy

A HISTORICALLY LOW LEVEL OF INTEREST RATES CONTRIBUTED TO LOWER INTEREST COSTS FOR THE CENTRAL GOVERNMENT

Bond yields were falling throughout most of 2002 and early 2003, reaching a historically low level. The lower market interest rates made it possible for the central government to refinance debt at lower interest rates. This has reduced the average interest rate on the central-government debt, and thereby also reduced interest costs, which fell by DKK 5 billion from 2001.

The ratio of the central-government debt to GDP has fallen gradually from 57 per cent in 1995 to 38 per cent in 2002. In absolute terms, however, the central-government debt increased by DKK 6.5 billion in 2002, due to increased re-lending to government-guaranteed entities.

In 2002, A/S Storebælt, A/S Øresund and Ørestadsselskabet gained greater access to re-lending. In re-lending transactions, the entities borrow from the central government that finances the re-lending via issues of on-the-run government securities. Re-lending is attractive to the government-guaranteed entities since the central government can borrow at lower interest rates in view of the liquidity premium.

BORROWING STRATEGY WITH FOCUS ON LIQUIDITY, CONTINUITY AND SIMPLICITY

Both domestic and foreign borrowing are based on long-term strategies that match the objective to cover the central-government financing requirement at the lowest possible long-term borrowing costs, subject to a prudent degree of risk.

It is emphasised that the overall borrowing strategies must be consistent over time, and known to market participants. The instruments used must be simple, standardised and well-known in the market. This supports the transparency and credibility of government debt management and reduces operational risks.

The overall strategy for domestic borrowing is to build and maintain an attractive range of liquid on-the-run issues. The focus is therefore on the key 2-, 5- and 10-year maturity segments, in which series are built up

to appropriate volumes. This generates liquidity premiums, helping to ensure low borrowing costs for the central government. Internationally, the key maturity segments are 2, 5 and 10 years. Issues in these segments help to make the bond series attractive to both domestic and foreign investors. At the same time, the activity is spread across several points of the yield curve in order to e.g. achieve a broad investor base, thereby reducing the risk of falling demand from one type of investor leading to an increase in the cost of borrowing to the central government. In addition to the issue policy, interest-rate swaps, buy-backs and securities lending are supplementary instruments that also support liquidity in on-the-run issues.

The domestic borrowing requirement in 2003 is DKK 73.9 billion. The borrowing requirement increases in step with buy-backs during 2003 in government securities maturing in subsequent years, and any currency swaps from kroner to euro. As in previous years, the objective is to spread the borrowing requirement by issuing approximately 40 per cent in the 2-year segment, 20 per cent in the 5-year segment and 40 per cent in the 10-year segment. A further objective is to continue to conduct an active buy-back policy in 2003.

FIRST CENTRAL-GOVERNMENT EURO LOAN WELL-RECEIVED IN THE MARKET

The central government's foreign borrowing strategy is to build up a range of euro loans of EUR 1-2 billion in the medium-term maturity segment. The central government's first euro loan, 4.875 per cent bullet loans 2007, was issued in April 2002. The loan was issued via a syndicate of international banks, and was favourably priced compared to equivalent issues from other highly-rated EU member states.

In 2003 the central government's foreign borrowing requirement is DKK 17.1 billion. The objective is to cover the requirement primarily by direct borrowing in euro. A new euro loan is expected to be issued in spring 2003. The remainder is financed by transacting currency swaps from kroner to euro, combined with domestic issues.

LIQUIDITY IN ON-THE-RUN ISSUES REDUCES THE CENTRAL GOVERNMENT'S BORROWING COSTS

Investors are normally willing to pay a premium for liquid issues. By building up large liquid series the central government can achieve a liquidity premium and cover its borrowing requirement at a lower interest rate.

A review of various liquidity indicators shows that Danish government securities are the largest and most traded bonds on the Copenhagen Stock Exchange and that they are traded in a relatively narrow spread between bid and ask prices. Liquidity is typically greatest in on-the-run and benchmark securities. There is also a tendency for liquidity to be concentrated in the 10-year segment, which has the largest issue volumes. The price effect of liquidity, the liquidity premium, is difficult to measure directly, although comparison of interest rates for the most liquid government securities vis-à-vis less liquid securities confirms the existence of a positive, but relatively limited, premium. Moreover, a Danish Treasury note is traded on average at an interest rate approximately 20-30 basis points lower than an equivalent issue from a government-owned/government-guaranteed entity. This interest-rate differential is mainly attributable to liquidity.

FOCUS ON RISK MANAGEMENT OF CENTRAL-GOVERNMENT DEBT

In recent years there has been greater international focus on risk management in government debt management. For a number of years the Danish government debt management has also focused on risk management, and a risk-management structure has been established that matches the risk profile of the Danish government debt. A key achievement is that risk is now managed for the overall government debt, and not for sub-portfolios.

The predominant risk on the central-government debt is the interest-rate risk on refinancing the debt at unknown future interest rates. A low interest-rate risk typically entails higher costs, however. It is therefore necessary to weigh expected costs against risks. Government debt management has prepared a quantitative model to identify expected costs and risks for this weighing (Cost-at-Risk, CaR). The chosen trade-off between costs and risk is hereafter subject to ongoing management by applying strategic benchmarks/focal points for the distribution of borrowing on various maturities, the duration of the government debt, and the size of the annual redemptions.

At the end of 2002 the duration of the overall government debt was 3.36 years. Duration is managed within a band of 3.5 +/- 0.5 years.

THE CENTRAL GOVERNMENT APPLIES SWAPS TO MANAGE THE INTEREST-RATE RISK ON THE CENTRAL-GOVERNMENT DEBT

The duration of the central-government debt can be changed by using *interest-rate swaps* to restructure between fixed and floating interest

rates. Interest-rate swaps make it possible to separate issuance in liquid bond series from the management of the interest-rate risk on the central-government debt. In 2002 the central government transacted interest-rate swaps for a total of DKK 47 billion, of which the majority in euro.

Currency swaps are used to restructure debt between currencies and thereby manage the currency risk on the central-government debt independently of issue currency. Since the start of 2001 the foreign debt has been exposed exclusively to euro. In 2002, currency swaps from kroner to euro totalled DKK 11 billion.

ELECTRONIC TRADING PLATFORM FOR DANISH GOVERNMENT BONDS

In most countries with mature financial markets trading and market-making in the wholesale market for government bonds take place electronically. Electronic trading and market-making can help to create efficient markets for government bonds. In Denmark, trading and market-making in the wholesale market predominantly take place by telephone.

Work is ongoing to establish electronic trading in the wholesale market for Danish government bonds using the electronic trading system MTS as the chosen platform. Today MTS is the predominant system for wholesale trading of benchmark European bonds. The implementation of electronic trading and market-making is a key element of developing the Danish market for government bonds and bringing its facilities in line with standards in other countries with mature financial markets.

Central-Government Debt Management Strategy, 2003

This is a reprint of an announcement published on 17 December 2002[1].

Central-government financing requirement, 2003

In Budget Review, December 2002, by the Ministry of Finance, the central government's gross financing requirement for 2003 is estimated at DKK 117.5 billion. Of this, the gross domestic financing requirement amounts to DKK 100.4 billion.

In 2003, a small part of the gross domestic financing requirement will be covered by a lowering of the balance of the central government's account with the central bank. This decrease has been made possible by rearranged government payments in connection with the establishment of one settlement account for the central government.

The remaining part, i.e. the central government's domestic borrowing requirement, has been estimated at DKK 86.5 billion. Since the statement of Budget Review, December 2002, the central government has bought back government securities with redemption in 2003. The corrected borrowing requirement amounts to DKK 78.6 billion as of December 17, 2002. The domestic borrowing requirement will be adjusted further in 2003 due to buy-backs in securities with redemption in subsequent years as well as due to foreign borrowing in the form of currency swaps from DKK to EUR combined with domestic issuance.

The gross foreign borrowing requirement in 2003, equal to redemptions on foreign debt, is DKK 17.1 billion.

CENTRAL GOVERNMENT DOMESTIC BORROWING REQUIREMENT, 2003 — Table 1

	DKK billion
Domestic borrowing requirement (Budget Review, December 2002)	86.5
Additional buy-backs of securities with original redemption in 2003 (until 17 Dec 2002)	7.9
Corrected domestic borrowing requirement[1]	78.6

[1] Currency swaps from DKK to EUR in 2003 and buy-backs of securities with redemption after 2003 will increase the domestic borrowing requirement for 2003.

[1] After this announcement was published on 17 December 2002, the borrowing requirement for 2003 was adjusted to DKK 73.9 billion, cf. Chapter 2, Table 2.3.2.

Central-government domestic borrowing, 2003

The domestic borrowing requirement is mainly financed through tap issuance of domestic government bonds and Treasury notes. Furthermore, Treasury bills are auctioned monthly.

The overall strategy for the government debt policy is to build up and maintain attractive on-the-run issues. This is done by issuing liquid series in the 2-, 5- and 10-year maturity segments to take advantage of liquidity premia, which helps to ensure low borrowing costs for the central-government. At the same time, the distribution of activity along the yield curve, among other things, contributes to the targeting of a broad investor base. As a supplement to the issuance policy, instruments such as interest-rate swaps, buy-backs and securities lending are also used in the management of central-government debt.

As in previous years, it is the intention to distribute the domestic borrowing requirement on issuance of approximately 40 per cent in the 2-year segment, 20 per cent in the 5-year segment, and 40 per cent in the 10-year segment.

The current on-the-run Treasury note will be replaced in January 2003, as it has a suitable outstanding amount and a remaining maturity below 2 years. Issuance in the existing 5- and 10-year on-the-run issues will continue.

On 21 January 2003 a new Treasury note will be opened. The interest payment date will be 15 November, redemption in 2005, and the coupon rate 4 per cent (ID Code DK000992100-9). The Treasury note will be repaid in full on 15 November 2005.

Sale of 4 per cent Treasury notes 2005 will commence at 11.00 a.m. on 21 January 2003 via the sub-market for government securities issues at the Copenhagen Stock Exchange. Further details of the amounts offered on the first day will be announced at 9.00 a.m. on 21 January 2003.

ISSUES ON-THE-RUN, JANUARY 2003 — Table 2

Series	Interest payment date
Government bonds	
5 per cent bullet loan 2013	15 November
4 per cent bullet loan 2008	15 August
Treasury notes	
4 per cent Treasury notes 2004 (discontinue on 20 January 2003)	15 November
4 pct. Treasury notes 2005 (open on 21 January 2003)	15 November
Treasury bills	
Treasury bill 2003 IV	1 November
Treasury bill 2003 III	1 August
Treasury bill 2003 II	1 May

Sale of 4 per cent Treasury notes 2004 will be discontinued on 20 January 2003.

A description of the terms of borrowing for 4 per cent Treasury notes 2005 has been prepared in Danish and English. This description can be ordered on telephone +45 3363 6105 or viewed on Danmarks Nationalbank's web site: www.nationalbanken.dk/uk under Government Debt/Terms of Borrowing.

The introduction of the new 12-month-Treasury bills has now been completed. In 2003 the Treasury bill scheme will continue unchanged. New 12-months Treasury bills will be opened at auctions with the settlement dates of 1 February, 1 May, 1 August and 1 November. The bills are auctioned monthly until a remaining maturity of 3 months.

Buy-backs

It is the intention to use buy-backs actively in 2003. Buy-backs are used to smooth out the gross borrowing requirement between the years and to support a range of liquid market-conform on-the-run issues. Buy-backs are only used when this is considered advantageous on the basis of an overall evaluation of government debt policy.

A wide range of securities is subject to possible buy-backs. Generally, the list of issues subject to buy-backs consists of securities with redemption within the year or the following year. In addition, securities that are no longer market-conform with respect to coupon or type of loan may apply for buy-backs. Furthermore, to smooth out the redemption profile securities maturing in a year with large redemptions are included. On-the-run issues and issues with benchmark status are not included on the list.

As of 1 January 2003 the list of issues subject to buy-backs is as follows:

All issues maturing in 2003
All issues maturing in 2004
5 per cent bullet loans 2005
8 per cent bullet loans 2006
7 per cent bullet loans 2007
6 per cent bullet loans 2009
6 per cent bullet loans 2011
5 per cent serial loans S 2007
4 per cent serial loans S 2017
3.5 per cent 1886 perpetual
3 per cent 1894 perpetual
3.5 per cent 1901 perpetual
3.5 per cent 1909 perpetual

4 percent Treasury notes 2004 is included in the list. However, buy-backs of this issue may only take place when the security has no longer benchmark status.

The central government's and the Social Pension Fund's securities lending facilities

The central government's securities lending facility comprises as a general rule on-the-run securities. Under certain circumstances, the facility can continue for securities that are no longer on-the-run. In 2003, the following securities are subject to securities lending:

Treasury bills
4 per cent Treasury notes 2004
4 per cent Treasury notes 2005 (after opening)
4 per cent bullet loans 2008
5 per cent bullet loans 2013

The current on-the-run Treasury notes, 4 per cent Treasury notes 2004, will be kept in the central government's lending facility until there is a shift in 2-year benchmark.

As of 2 January 2003, the fee for lending of government bonds and Treasury notes will be lowered with a view to improve liquidity of on-the-run issues in the early stage of building up the issues. The fee will be lowered to 25 basis points for lending of on-the-run government bonds and Treasury notes with an outstanding amount below DKK 20 billion. The fee is unchanged at 50 basis points for lending of securities with an outstanding amount above DKK 20 billion and for lending of Treasury bills.

All government securities of the type bullet loans in the Social Pension Fund's bond portfolio are subject to securities lending.

For more specific information on the securities lending facilities see Danmarks Nationalbank's web site: www.nationalbanken.dk/uk under Government debt/Current information.

Central-government foreign borrowing in 2003

The central government's gross foreign borrowing requirement for 2003 is DKK 17.1 billion, cf. Budget Review, December 2002 by the Ministry of Finance.

The central government's foreign borrowing requirement is covered primarily by raising larger euro loans. It is the intention over time to build a range of euro loans of about EUR 1-2 billion each year depending on the borrowing requirement and demand. The preferred maturity of the issues is 5-7 years.

As a supplement to raising larger loans, currency swaps from DKK to euro combined with domestic issuance are used. This type of foreign borrowing is generally attractive with respect to borrowing costs and contributes to liquidity in the domestic on-the-run issues.

In 2003, it is the intention to launch a new syndicated euro issue in the 5-year segment. The specific issuance amount will depend on demand. The syndication is expected to take place in first half of 2003.

Duration of the central-government debt

At end 2002, duration of the central-government debt will be approximately 3.35 years. The duration band of 3.5 years +/- 0.5 year for the central-government debt continues to apply in 2003.

Further information

Information on government debt management can be obtained at Danmarks Nationalbank's web site: www.nationalbanken.dk/uk under Government Debt.

The publication *Danish Government Borrowing and Debt 2002*, which sets out the central government's borrowing in 2002 and the strategy for the next years, will be published at the end of February 2003 (Danish edition with English summary).

For further information concerning the aforementioned, please contact Danmarks Nationalbank, Financial Markets, Head of Government Debt Management, Ove Sten Jensen, telephone +45 3363 6102 or by e-mail to governmentdebt@nationalbanken.dk.

Main Principles

CHAPTER 1

Main Principles of Government Borrowing

SUMMARY 1.1

The overall objective of the government debt policy is to cover the central government's financing requirement at the lowest possible long-term borrowing costs, subject to a prudent degree of risk.

Government Debt Management operates within a well-defined framework based on the principles of transparency, continuity and accountability.

The Minister of Finance holds the overall, and political, responsibility for government borrowing and debt, including relations to the Folketing (Parliament). The overall strategy for government borrowing is agreed at quarterly meetings between the Ministry of Finance and Government Debt Management. In practice, the implementation of this strategy is undertaken by Government Debt Management at Danmarks Nationalbank. Government Debt Management is divided into front, middle and back offices, each responsible for separate functions.

An agreement between the central government and Danmarks Nationalbank sets out the framework for the scope and distribution of the central government's domestic and foreign borrowing. Domestic and foreign borrowing norms have been determined. Together, they support the separation of fiscal and monetary policy.

Both domestic and foreign government borrowing are based on long-term strategies matching the overall objective, including to observe a prudent degree of risk. It is emphasised that the overall borrowing strategies should be consistent over time, and known by market participants. The strategy for domestic borrowing is to build up and maintain an attractive range of on-the-run issues in the 2-, 5- and 10-year maturity segments, while the strategy for foreign borrowing is based on building up a range of syndicated euro loans of EUR 1-2 billion.

In the management of government debt the emphasis is on transparency towards the general public and the financial markets. A variety of information concerning government borrowing and debt is published on an ongoing basis.

THE MANAGEMENT OF GOVERNMENT DEBT 1.2

The management of government debt entails the preparation and implementation of strategies so as to achieve the required financing within fixed objectives for risk and cost. The central-government debt is compiled as liabilities comprising the domestic and foreign central-government debt, as well as the assets of the Social Pension Fund (SPF) and the balance of the central government's account with Danmarks Nationalbank.

The central government offers re-lending and guarantees the borrowing of a number of companies primarily engaged in major infrastructure projects. Government Debt Management prepares and maintains a list of acceptable loan types for these companies.

The overall objective of the government debt policy is to cover the central-government financing requirement at the lowest possible long-term borrowing costs, subject to a prudent degree of risk.

Furthermore, it is sought to support a well-functioning domestic financial market, and to facilitate the central government's access to the financial markets in the longer term. The objectives of the Danish central-government debt policy correspond to international best practice.

Government Debt Management operates within a well-defined framework based on the principles of transparency, continuity and accountability. In the following, the framework for the government debt management is described. This framework ensures that the decisions and actions of the individual units are mutually consistent, that professional expertise is utilised in the best possible way, and that market participants know and understand the borrowing strategy.

Legislative basis for central-government borrowing

Under the Danish Constitution, no loans may be raised by the central government that are not sanctioned by law. The statutory basis for the central-government borrowing is set out in the Act on the authority to raise loans on behalf the central government of 1993[1]. This Act authorises the Minister of Finance to raise loans on behalf of the central government for a maximum amount of DKK 950 billion, which is the upper limit for the total domestic and foreign debt. In connection with borrowing and ongoing debt management, the Minister of Finance is moreover authorised to enter into swap agreements and other financial transactions.

[1] Act No. 1079 of 22/12 1993.

Since the Danish Constitution states that all expenditure must be authorised under the Finance Act or other appropriation act, the costs of borrowing, e.g. interest costs and capital losses on issue (the difference between the market and nominal values of the loans) must be appropriated under the annual finance acts.

Division of responsibility between the Ministry of Finance and Danmarks Nationalbank

The Minister of Finance holds the overall, and political, responsibility for central-government borrowing and debt, including relations to the Folketing (Parliament). Since 1991, Danmarks Nationalbank has undertaken the management of the central-government debt. This division of work is set out in an agreement between the Ministry of Finance and Danmarks Nationalbank.

The overall strategy for government borrowing is agreed at quarterly meetings between the Ministry of Finance and Government Debt Management at Danmarks Nationalbank on the basis of written proposals from Government Debt Management. The Ministry of Finance authorises Government Debt Management to execute the adopted strategy. At the meeting in December, the overall strategy for the following year is determined, including the duration band, on-the-run issues, and the expected distribution of sales on on-the-run issues. Furthermore, the strategy includes securities eligible for buy-back, re-lending, and the securities lending facilities.

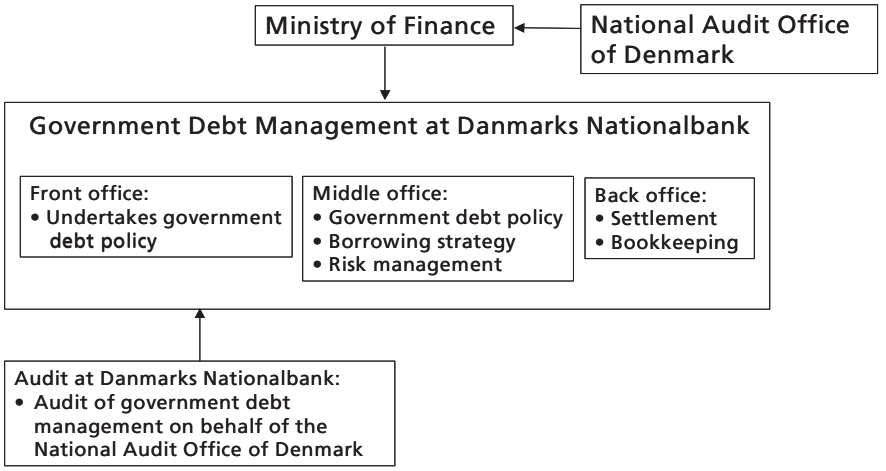
At the subsequent quarterly meetings, any adjustments and further specifications of the overall strategy for the following quarter are adopted.

Organisation of Government Debt Management at Danmarks Nationalbank

At Danmarks Nationalbank, the tasks related to the management of the government debt are undertaken by Government Debt Management within Financial Markets, Market Operations, Accounting, Government Debt Accounting and Audit. Government Debt Management is divided into front, middle and back offices, each responsible for separate functions. A well-defined division of responsibilities ensures that the various categories of professional expertise are utilised optimally, and that tasks related to the management of government debt are undertaken independently of other activities at Danmarks Nationalbank. Clear procedures also facilitate internal control, thereby reducing the operational risks.

Government Debt Management within Financial Markets is responsible for middle office functions, and therefore formulates the general

STRUCTURE OF GOVERNMENT DEBT MANAGEMENT Chart 1.2.1



principles concerning government debt policy, prepares proposals for borrowing strategies and undertakes risk management and ongoing analyses. It also sets out the guidelines for Market Operations with regard to sale of domestic government securities, buy-backs and swap transactions.

Market Operations is responsible for front-office functions such as sales and buy-backs of government securities, as well as swap transactions. Back-office functions such as settlement and bookkeeping are undertaken by Accounting and Government Debt Accounting.

The management of central-government debt is audited by Audit on behalf of the National Audit Office of Denmark. The National Audit Office of Denmark is empowered to audit the central government's accounts, and to investigate whether government funds are managed as determined by the Folketing (Parliament). The National Audit Office of Denmark publishes the results of its investigations on an ongoing basis, e.g. at www.rigsrevisionen.dk.

Chart 1.2.1 summarises the organisational structure of Government Debt Management.

Like all staff at Danmarks Nationalbank, the staff engaged in government debt management are bound to observe insider rules based on the guidelines for speculative transactions of the Danish Financial Supervisory Authority, as well as legislation on insider trading.

THE NORM FOR DOMESTIC AND FOREIGN BORROWING 1.3

The central-government borrowing norm sets out the framework for the distribution and scope of the central government's domestic and foreign borrowing. The norm is set out in an agreement between the government and Danmarks Nationalbank. There are norms for both domestic and foreign borrowing, and together they support the separation of fiscal and monetary policy.

The domestic norm states that domestic krone-denominated borrowing in principle covers 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 implies that redemptions on the foreign debt are refinanced by new foreign loans. Box 1.1 presents the definitions of the domestic and foreign gross financing requirements.

In accordance with the EU Treaty's prohibition of monetary financing the central government's account with Danmarks Nationalbank may not show a deficit. Central-government borrowing is therefore planned to ensure an appropriate balance on the central government's account which can absorb the considerable fluctuations in central-government receipts and payments. Uncertainty concerning the balance of the central government's account around the turn of the year may entail that the central government's financing in one calendar year exceeds the borrowing requirement, in order to allow the loan proceeds to serve as an extra buffer on the account.

In the light of e.g. market conditions the central government may also continue to issue government securities, even though the borrowing requirement for the year has been financed. In that case, these issues will cover part of the borrowing requirement for the following year.

The purpose of the central government's foreign borrowing is to maintain an adequate foreign-exchange reserve. Deviations from the norm for foreign borrowing may therefore occur in situations where the foreign-exchange reserve either decreases or increases more than is found appropriate. If the foreign-exchange reserve decreases more than is considered necessary, the central government will raise loans abroad. If the foreign-exchange reserve increases more than is considered necessary, the norm for foreign borrowing can be reduced if the balance of the central government's account makes this expedient. Moreover, the foreign borrowing requirement may be redistributed between different years in order to ensure appropriate planning of borrowing, e.g. when building up euro loans.

KEY CONCEPTS IN THE COMPILATION OF GOVERNMENT BORROWING AND DEBT — Box 1.1

Compilation of the central-government debt

The central-government debt is compiled as the central government's total domestic and foreign debt less the assets of the Social Pension Fund (SPF) and the balance of the central government's account with Danmarks Nationalbank, cf. the Table below.

COMPILATION OF THE CENTRAL-GOVERNMENT DEBT, NOMINAL VALUE

DKK billion	End-2001	End-2002
Domestic debt	611	625
Foreign debt	84	84
The Social Pension Fund	-141	-141
The central government's account with Danmarks Nationalbank	-40	-47
Total central-government debt	514	521
Total central-government debt as a percentage of GDP	38.8	38.2

Gross domestic financing requirement and borrowing requirement

The domestic borrowing requirement is defined as:

+Expenditure by the central government (including interest expenditure and disbursement of re-lending)
- Receipts to the central government (including interest income and repayments of re-lending)
=*Net financing requirement*
+Redemptions on the domestic debt
+Net bond purchases by the Social Pension Fund
=*Gross domestic borrowing requirement*
- Reduction of the balance of the central government's account with Danmarks Nationalbank
=*Domestic financing requirement*

The *gross domestic financing requirement* is increased by transacting currency swaps from kroner to euro and via buy-backs of domestic securities expiring in the subsequent year. The effect from currency swaps is due to the fact that the krone leg of the central government's currency swaps from kroner to euro is calculated as redemptions of the domestic debt when the swap is transacted, and as borrowing when the swap expires. Domestic issues combined with currency swaps to euro are used to finance parts of the foreign borrowing requirement. The effect of buy-backs is due to the fact that buy-backs in domestic government securities are calculated as redemptions of the domestic debt at the time of buy-back. The gross domestic financing requirement is covered by sales 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 *domestic borrowing requirement* is the part of the gross domestic financing requirement which is planned to be financed by issuing domestic government securities. Sales of government securities are planned on the basis of the

CONTINUED Box 1.1

estimates of the domestic borrowing requirement published in the Budget Review of the Ministry of Finance. The latest compilation of the domestic borrowing requirement, including the effects of new buy-backs in securities expiring in the subsequent year and new currency swaps from kroner to euro, is presented on Danmarks Nationalbank's website at www.nationalbanken.dk.

The gross foreign financing requirement

The gross foreign financing requirement is compiled as:

+ Redemptions of the foreign debt
= *Gross foreign financing requirement*

The foreign borrowing requirement corresponds to the gross foreign financing requirement, provided that there is no deviation from the foreign borrowing norm.

The foreign borrowing requirement is covered primarily by raising loans in euro, as well as domestic issues combined with currency swaps from kroner to euro.

STRATEGY AND INSTRUMENTS FOR CENTRAL-GOVERNMENT BORROWING 1.4

Both domestic and foreign central-government borrowing are based on long-term strategies matching the objective to cover the central-government financing requirement at the lowest possible long-term borrowing costs with due consideration of the requirement of a prudent degree of risk.

It is emphasised that the overall borrowing strategies must be consistent over time and known to market participants. The choice of instruments is based on the principles that they must be standardised and well-known in the market, and it must be possible to compile key figures such as duration and market value. This supports transparency and credibility regarding the government debt management.

The day-to-day management of the central-government debt is planned with due consideration of the central government's dominant role in the domestic market. Therefore the transactions are aimed to be distributed smoothly throughout the year, and there is no intention of outperforming the market. Furthermore, short-term positions on the basis of the expected market development are not taken. In order to support effective management of the central-government debt that meets the overall objective at all times the chosen strategy and the execution of borrowing are subject to ongoing evaluation. Government Debt Management is currently establishing a more standardised set-up for ongoing evaluation.

Domestic borrowing strategy and instruments

The overall strategy for domestic borrowing is centred on building up and maintaining an attractive range of on-the-run issues. This is achieved by building up liquid series of fixed-rate bullet loans in the 2-, 5- and 10-year segments. This utilises liquidity premiums, helping to ensure low borrowing costs for the central government[1]. At the same time, the activity is spread across several points of the yield curve in order to e.g. achieve a broad distribution of investors. A broad distribution of investors reduces the risk of failing demand from one type of investor leading to an increase in the borrowing costs to the central government.

Internationally, the 2-, 5- and 10-year segments are also the key maturity segments. Issues in these segments help to make the bond series attractive to domestic and foreign investors. International demand for domestic government securities supports liquidity in these securities and thereby contributes to lower interest costs on the government debt.

On-the-run issues also include Treasury bills, which are short-term zero-coupon government securities. In the Treasury bill programme liquid series at the short end of the yield curve are built up, and the programme supports the spread of the central government's activities across the yield curve. Treasury bills are issued at monthly auctions. A new 12-month Treasury bill series is opened every third month. Issue takes place in the series for as long as the remaining maturity exceeds 3 months. In principle, the objective is for the issues of Treasury bills to correspond to the redemptions overall during the year.

Besides the issuing strategy, buy-backs and securities lending are used to support liquidity in government securities. Buy-backs of securities maturing in subsequent years thus move the redemption date forward to the buy-back year, thereby increasing the domestic borrowing requirement and hereby issuance in on-the-run securities.

The central government and the Social Pension Fund (SPF) have established securities lending facilities that together cover most domestic government securities.

The domestic debt has been given the highest rating by Moody's (Aaa) and Standard & Poor's (AAA).

Foreign borrowing strategy and instruments

The foreign debt of the central government is exposed exclusively to euro. Loans are raised with exposure in euro – either directly or by using currency swaps to euro.

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[1] Liquidity in Danish government securities, including the liquidity premium, is described in further detail in Chapter 8.

Most of the central government's foreign borrowing requirement is covered via syndicated euro loans. By raising loans directly in euro, a simple loan structure is ensured, while the credit risk on transacting currency swaps to euro is avoided. Over time, the objective is to build up a range of 5-7-year euro loans of EUR 1-2 billion, depending on the borrowing requirement and demand.

To supplement euro loans, domestic issues combined with currency swaps from kroner to euro are used. This type of foreign borrowing can be attractive in price terms and support the build-up of domestic on-the-run issues.

In order to ensure an adequate balance on the central government's account, or if there is a need to quickly augment the foreign-exchange reserve, the central government can also issue Commercial Paper (CP).

The foreign debt has been given the highest rating by Moody's (Aaa) and Standard & Poor's (AAA).

Targets and instruments for risk management of the central-government debt

The objective for the management of the central-government debt entails that the risks incurred by the central government in connection with its borrowing are kept at a prudent level. The preparation of borrowing strategies and the day-to-day administration of the central-government debt therefore take due account of the risks involved.

Interest-rate risks are managed on the basis of a target for duration and by smoothing the redemption profile. The duration of the central-government debt can be managed by using interest-rate swaps to restructure loans between fixed and floating interest rates. Interest-rate swaps make it possible to separate issues in liquid bond series from the management of the interest-rate risk on the government debt.

A smooth redemption profile is achieved by spreading the individual loans evenly across the years and within the year. Buy-backs of government securities also contribute to smoothing the redemption profile.

Government Debt Management has developed a model (the Cost-at-Risk model) that is used to quantify the interest-rate risk. This makes it possible to weigh costs and risk against each other. The Cost-at-Risk model is thus a key instrument in the preparation of borrowing strategies.

In view of Denmark's fixed-exchange-rate policy vis-à-vis the euro, limiting the currency exposure on the foreign central-government debt to euro ensures a low *exchange-rate risk*. The purpose of the central government's foreign borrowing is to ensure an adequate foreign-exchange reserve. The foreign-exchange reserve is predominantly placed in euro.

In order to limit the *credit risk*, the central government only transacts swaps with counterparties with a relatively high rating that have signed a collateral agreement.

It is sought to minimise *operational risks* by separating the various government debt management functions, and via well-defined procedures, cf. the above. Furthermore, only standardised, well-known instruments are used.

Finally, standardised contracts are used in order to minimise *legal risks*.

MARKET STRUCTURE AND BORROWING IN PRACTICE 1.5

Government bonds and Treasury notes are issued by tap sale in the Saxess trading system of the Copenhagen Stock Exchange. Securities are solely issued to licensed dealers in the bond market of the Copenhagen Stock Exchange.

Treasury bills are issued at monthly auctions. Dealers licensed to trade in the bond market of the Copenhagen Stock Exchange and Danmarks Nationalbank's monetary-policy counterparties may participate in the Treasury bill auctions.

All domestic government securities are listed on the Copenhagen Stock Exchange. Sales of government bonds, Treasury notes and Treasury bills are described in more detail in Boxes 1.2 and 1.3.

There are market-maker schemes for government securities under the auspices of respectively the Copenhagen Stock Exchange and the Danish Securities Dealers' Association. In these schemes participants commit to setting current bid and ask prices for a specified volume of the relevant bonds. The market-maker schemes help to support liquidity in government securities. In the Copenhagen Stock Exchange scheme prices are only set in the 10-year benchmark, while the Securities Dealers' Association's scheme also includes other liquid government securities. More information on the Copenhagen Stock Exchange is available at www.xcse.dk.

Currently a system is being implemented for electronic market-making in the wholesale market for Danish government bonds. In this connection the establishment of a primary-dealer scheme for Danish government securities is being discussed. This work is described in Chapter 9.

On raising syndicated euro loans, a group of well-reputed banks is contacted to act as intermediaries for these loans.

Government bonds, Treasury notes and Treasury bills are registered at VP Securities Service (VP). Danish government securities can also be held in Euroclear and Clearstream. Euroclear is connected to VP via a direct link, so that securities can be transferred between VP and Euroclear

TRADING AND ISSUE OF GOVERNMENT SECURITIES ON THE COPENHAGEN STOCK EXCHANGE Box 1.2

Danmarks Nationalbank issues government bonds and Treasury notes on behalf of the central government via the Copenhagen Stock Exchange. All licensed dealers in the bond market of the Copenhagen Stock Exchange may purchase government securities directly from Danmarks Nationalbank via the Stock Exchange trading system. The market for government securities of the Copenhagen Stock Exchange is divided into four sub-markets – the market for new issues, the ordinary market, the electrobroker market and the interest market.

New series of government securities are opened in the sub-market for government securities issues on the Copenhagen Stock Exchange. 1-2 weeks before new government bond series and Treasury note series open the Copenhagen Stock Exchange announces details of the new loan's coupon rate, maturity and opening day. On the opening day an announcement is issued concerning the maximum sale on the opening day. The opening price is fixed on the basis of the current market conditions and experience from previous new issues of government securities. The announced maximum amount for sale gives market participants greater certainty of the course of the sale on the opening day. The stated maximum amount is not a target for the sale on the opening day, but indicates the upper limit for sale.

Government bonds and Treasury notes are primarily issued by tap sale in the ordinary sub-market. Tap sale entails that sales are distributed smoothly throughout the year, and that favourable market conditions can be utilised on an ongoing basis. Daily announcements are made on sale and buy-back of government securities on the preceding day.

The electrobroker market is reserved for trade between market-makers in the scheme of the Danish Securities Dealers' Association.

The interest market is a trade supporting system that serves as an electronic bulletin board where all members of the Copenhagen Stock Exchange have access to mark their trading interests.

There is no requirement for bond trading in Denmark to take place via the electronic Stock Exchange trading system. A large proportion of trading thus takes place via the telephone market, with subsequent reporting of trades to the Copenhagen Stock Exchange. All members of the bond market of the Copenhagen Stock Exchange are obliged to report bond trading outside the Stock Exchange within a short period of time.

without any loss of trading days. When government securities are traded, settlement is normally in VP, but can also take place in Euroclear and Clearstream. Further information can be found at www.vp.dk.

INFORMATION POLICY 1.6

A key aspect of the government debt policy is that market participants and the public in general may familiarise themselves with the central government's borrowing strategies. On a continuous basis a wide range

ISSUE OF TREASURY BILLS Box 1.3

Treasury bills are issued at monthly auctions. The short term to maturity of the Treasury bills gives a short build-up period, and therefore the auction method is considered the most appropriate method of sale.

Bids can be submitted by traders licensed to deal in the bond market of the Copenhagen Stock Exchange and by Danmarks Nationalbank's monetary-policy counterparties that fulfil the requirements set in the electronic auction system. Bids are based on interest rates. All bids at or below the fixed cut-off interest rate are accommodated at the cut-off interest rate (uniform pricing). Bids at the cut-off interest rate may be subject to proportional allocation. From the deadline for submission of bids until the results of the auction are announced there is a time lag of half an hour.

of information on government borrowing and debt is published. The primary media for the issue of announcements are the Copenhagen Stock Exchange and DN News[1]. The announcements are also published at www.nationalbanken.dk.

In December and June of each year the central government issues an announcement with a description of the government borrowing strategy for the forthcoming year and half-year respectively.

Prior to the opening of a new government bond or Treasury note series an announcement is issued stating details of the new loan, including coupon, maturity and opening day. Furthermore, announcements to participate in Treasury bill auctions are issued, and subsequently the results of these auctions are published. Information on government borrowing and redemptions on the domestic and foreign debt during the past month are published on the second banking day of each month.

Furthermore, on a daily basis statistics for the central government's sale and buy-back of government securities are published, as well as monthly statements of the central-government transactions of currency swaps from kroner to euro.

Finally, *Danish Government Borrowing and Debt* is published annually. It presents the developments during the preceding year, detailed statements of debt and transactions, as well as reports on conditions relevant to debt management.

An overview of the information currently published on government borrowing and debt is presented in the Appendices.

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

Report Section

CHAPTER 2

Domestic Borrowing

SUMMARY 2.1

In 2002 sales of domestic government securities totalled DKK 121.9 billion, and the gross domestic financing requirement was DKK 115.5 billion. The excess sales in 2002 reduce the domestic borrowing requirement in 2003.

All on-the-run Treasury notes and government bonds were replaced at the beginning of 2002, in view of the short remaining maturity of the securities, and the fact that the issues had reached an appropriate outstanding volume. Domestic government issues were hereafter: 4 per cent Treasury notes 2004, 4 per cent bullet loans 2008, 5 per cent bullet loans 2013, and Treasury bills. At the beginning of 2003 a new 2-year Treasury note was opened, 4 per cent Treasury notes 2005, replacing 4 per cent Treasury notes 2004 as an on-the-run issue.

The phasing-in of the new 12-month Treasury bill was concluded in 2002. The Treasury bill programme made a positive contribution to net financing of DKK 12 billion.

In 2003 the sale of Treasury notes and government bonds will continue in the 2-, 5- and 10-year maturity segments. The objective is to issue 40 per cent in the 2-year segment, 20 per cent in the 5-year segment and 40 per cent in the 10-year segment. Buy-backs and interest-rate swaps are important instruments of the government debt policy.

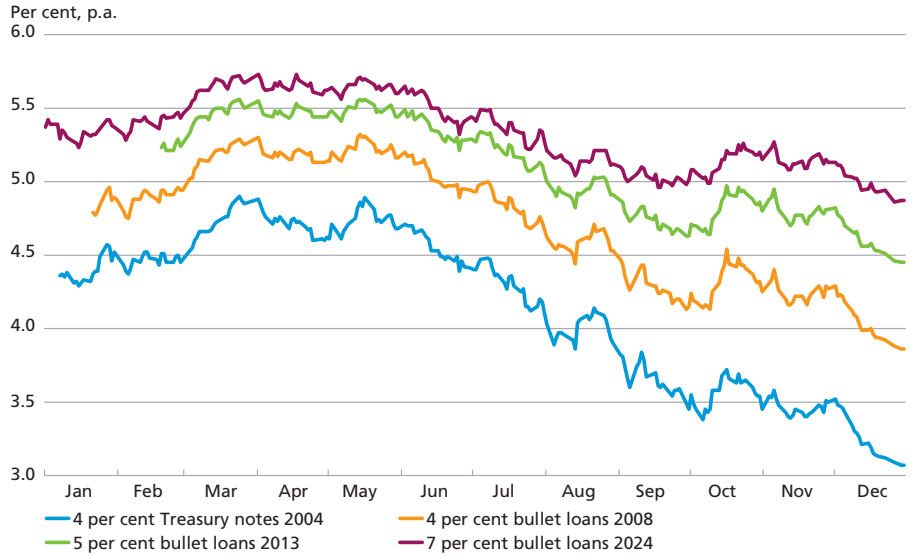
The domestic borrowing requirement for 2003 is DKK 73.9 billion.

DEVELOPMENT IN INTEREST RATES 2.2

From the spring of 2002, yields on government securities have declined, closing the year at a historically low level, cf. Chart 2.2.1. The decline in Danish interest rates followed international developments. In 2002, the interest rates in the medium-term maturity segment fell in particular, cf. Chart 2.2.2.

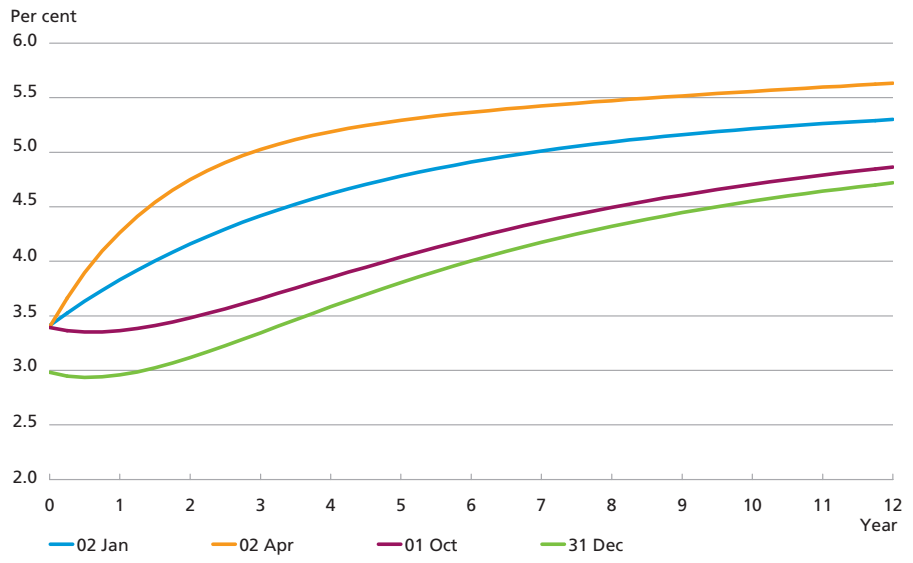
Denmark's 10-year yield differential to Germany closed the year at approximately 25 basis points, cf. Chart 2.2.3. The temporary widening of

YIELD TO MATURITY ON SELECTED DANISH GOVERNMENT SECURITIES IN 2002 — Chart 2.2.1

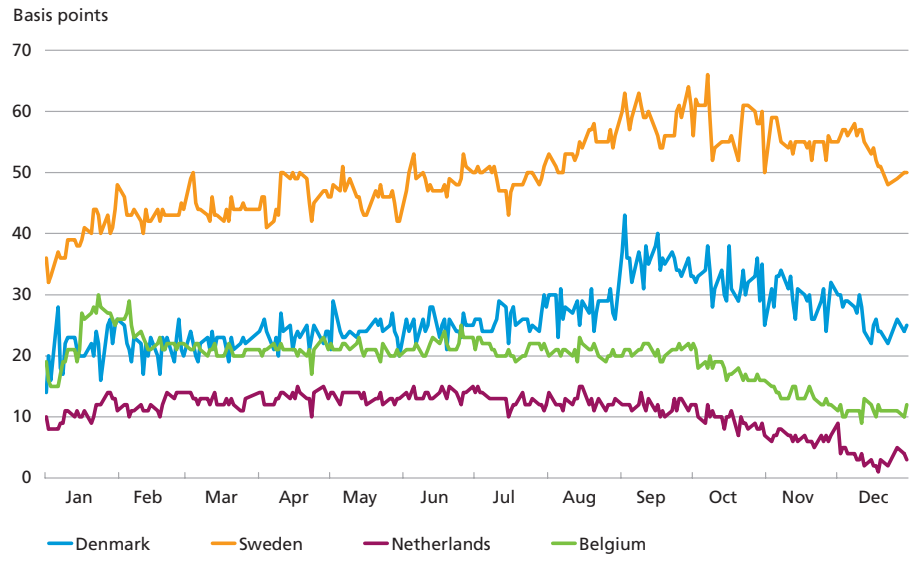


the spread in September 2002 is of a technical nature and is due to the change of benchmark from 6 per cent bullet loans 2011 to 5 per cent bullet loans 2013.

SELECTED ZERO-COUPON-YIELD CURVES FROM 2002 — Chart 2.2.2



10-YEAR YIELD DIFFERENTIALS TO GERMANY, 2002 Chart 2.2.3



Note: In September 2002, the 10-year benchmark, 6 per cent bullet loans 2011, was replaced by 5 per cent bullet loans 2013. The widening of Denmark's 10-year yield differential to Germany in September is therefore of technical nature, and is due to the longer duration of the new benchmark paper than the previous paper.

GOVERNMENT SECURITIES SALES AND FINANCING REQUIREMENT 2.3

In 2002 sales of Danish government securities totalled DKK 121.9 billion. The gross domestic financing requirement was DKK 115.5 billion, cf. Table 2.3.1. The excess sale of DKK 6.4 billion was reflected in an increase in the balance of the central government's account with Danmarks Nationalbank. The excess sale in 2002 reduces the domestic borrowing requirement in 2003, cf. Table 2.3.2.

The gross domestic financing requirement for 2003 is DKK 100.4 billion, cf. Table 2.3.2. In addition to the drawing on the central government's account as a consequence of the excess sale of DKK 6.4 billion in 2002, an extraordinary drawing on the central government's account of DKK 10 billion is expected in 2003. This is possible due to the restructuring of government payments, cf. Box 2.1. The domestic borrowing requirement in 2003, which is covered by issuing domestic government securities, is DKK 73.9 billion. The domestic borrowing requirement will increase in 2003 by buy-back of domestic securities maturing after 2003 or by new currency swaps from kroner to euro.

THE CENTRAL GOVERNMENT'S CURRENT, INVESTMENT AND LENDING BUDGET, NET CASH BALANCE AND GROSS DEFICIT — Table 2.3.1

DKK billion	1999	2000	2001	2002
Current, investment and lending budget	9.1	30.7	24.0	12.7
Re-lending of government loans	-1.6	-2.8	-2.4	-8.0
Distributed capital losses on issue and due interest[1]	3.2	1.4	0.4	-0.1
Other capital items[2]	0.2	-2.3	0.9	-16.2
Net cash balance	10.9	27.0	22.9	-11.6
Redemptions on domestic government debt	75.9	91.3	101.2	114.0
Redemptions on foreign government debt	20.0	15.7	17.8	22.5
Gross deficit	-85.0	-80.0	-96.2	-148.1
Gross domestic financing requirement[3]	67.9	62.3	81.1	115.5
Sale of government securities, market value	68.8	65.7	87.7	121.9

Source: 1999-2001 are figures from the central-government accounts. Provisional figures for 2002 are based on the forecast in *Budget Review 4*, December 2002, Danmarks Nationalbank's press release and the provisional central-government accounts.

[1] Including capital losses on buy-back.

[2] Includes e.g. movements in the central government's holdings, cf. *Budget Review 4*, December 2002.

[3] Based on Danmarks Nationalbank's statistics at year-end. The figures may therefore deviate from the accounting figures and *Budget Review 4*, 2002.

ISSUES ON-THE-RUN AND ISSUING STRATEGY 2.4

In line with the strategy of previous years, the objective in 2003 is to maintain an attractive range of liquid on-the-run issues. The government's domestic borrowing is conducted by issuing government bonds, Treasury notes and Treasury bills. The issues in government bonds and Treasury notes are concentrated in three maturity segments. Government bonds are issued in the 5- and 10-year maturity segments, while Treasury notes are issued in the 2-year maturity segment. The Treasury bills are the shortest on-the-run issues with maturity of up to 12 months.

DOMESTIC GOVERNMENT BORROWING REQUIREMENT IN 2003 — Table 2.3.2

	DKK billion
Gross domestic financing requirement, cf. *Budget Review 4*, 2002	100.4
Extraordinary drawing on the account	-10.2
Drawing on the account as a consequence of excess sales in 2002	-6.4
Buy-backs in 2003 securities after *Budget Review 4*	-9.9
Domestic borrowing requirement	73.9

Government bonds and Treasury notes

Government bonds and Treasury notes are fixed-rate bullet loans. This is the type of loan predominantly used internationally by government issuers. The government securities are issued to members of the Copenhagen Stock Exchange's bond market[1]. The issues are bought by a relatively small number of market participants. In 2002, 6 market participants took up just over 90 per cent of total government issues.

In January 2002, 4 per cent Treasury notes 2004 and 4 per cent bullet loans 2008 opened for sale. On the opening day, the securities were sold for nominal amounts of respectively DKK 4.3 and 6 billion. In February 2002, the new 10-year government bonds, 5 per cent bullet loans 2013, opened, replacing 6 per cent bullet loans 2011 as an on-the-run issue. On the opening day, sales totalled DKK 6 billion in nominal terms.

On 21 January 2003 the new Treasury note, 4 per cent Treasury notes 2005, opened with a nominal sale of DKK 4.6 billion on the opening day. At the same time, issuance in 4 per cent Treasury notes 2004 was closed.

In January 2003 the EU member states reached political agreement on a directive on taxation of interest income to determine the member states' obligations to e.g. exchange information on cross-border interest payments. In the light of this agreement a final directive is expected to be drawn up and adopted in near future. The current proposal, to be revised in the light of the political agreement from January 2003, includes a clause whereby government securities are not subject to the directive for a transition period of 7 years, provided that the series was opened before 1 March 2001, and there have been no issues in the series after 1 March 2002. To ensure that Danish government bonds and Treasury notes are subject to the same guidelines as and when the new directive is adopted, in May 2002 extraordinary issues took place for DKK 1 million in a number of government bonds and Treasury notes that are off-the-run issues. The securities were issued to the Social Pension Fund (SPF). Further information on the extraordinary issue is published in the announcement "Extraordinary issue of government securities in view of the proposed EU directive on taxation of interest income". This announcement can be found in the Appendices.

Table 2.4.1 presents the sales distribution of the individual government securities in 2002. In 2003 the objective is to issue 40 per cent in the 2-year maturity segment, 20 per cent in the 5-year maturity segment and 40 per cent in the 10-year maturity segment. This strategy takes account of liquidity in on-the-run issues and thereby contributes to reducing the interest costs on the government debt. It is also part of the

[1] Sales of government securities take place via the trading system of the Copenhagen Stock Exchange, Saxess.

DOMESTIC GOVERNMENT BORROWING IN 2002 Table 2.4.1

DKK million	Issue			Nominal outstanding end-2002
	Nominal	Market value	Capital loss	
5 per cent bullet loans 2013	45,845	45,327	518	45,845
6 per cent bullet loans 2011	1,973	2,118	-145	60,501
4 per cent bullet loans 2008	20,954	20,081	873	20,954
Government bonds, total	68,779	67,533	1,246	
4 per cent Treasury notes 2004	42,682	42,384	298	42,682
Treasury notes, total	42,683	42,385	298	
Government bonds and Treasury notes, total	111,462	109,918	1,544	
Treasury bills 2003 IV	12,490	12,096	394	12,490
Treasury bills 2003 III	14,003	13,581	422	14,003
Treasury bills 2003 II	17,070	16,592	478	17,070
Treasury bills 2003 I	19,841	19,275	566	19,841
Treasury bills 2002 IV	8,932	8,741	191	
Treasury bills 2002 III	7,490	7,388	102	
Treasury bills 2002 II	3,392	3,360	32	
Redemptions	69,038	69,038		
Treasury bills, net	14,180	11,997	2,183	
Sales of government securities, total	125,642	121,915	3,727	

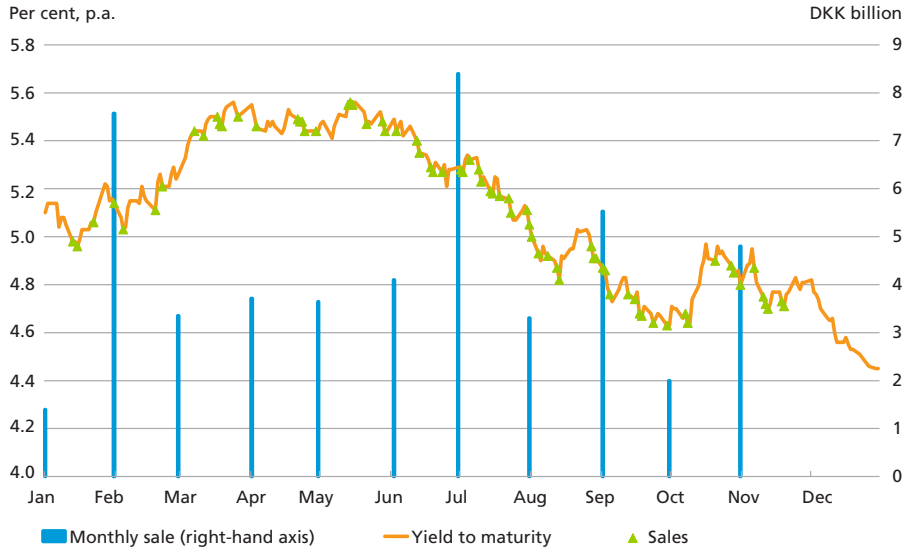
Note: In view of the EU's proposed new directive on taxation of interest income in 2002 extraordinary issues were made for DKK 1 million in each of the following domestic government securities: 5 per cent Treasury notes 2003, 8 per cent bullet loans 2003, 7 per cent bullet loans 2004, 5 per cent bullet loans 2005, 8 per cent bullet loans 2006, 7 per cent bullet loans 2007, 6 per cent bullet loans 2009, 6 per cent bullet loans 2011, and 7 per cent bullet loans 2024.

strategy to spread the issues across various points of the yield curve in order to e.g. achieve a broad investor base.

In Denmark, government bonds and Treasury notes are issued via tap sale, whereby securities are issued on a continuous basis to members of the Copenhagen Stock Exchange's bond market. This method of issuance offers the opportunity to smooth the sale of securities throughout the year. Continuous issuance during the year reduces the risk of having to cover a larger proportion of the annual financing requirement at a time when market conditions are unfavourable. Chart 2.4.1 presents sales in the 10-year government securities in 2002. Securities were typically sold on days when interest rates were falling.

Non-resident ownership of the 10-year benchmark bond increased during 2002, cf. Chart 2.4.2, but has not regained the level of previous years. At the end of 2002, foreign investors held approximately 40 per cent of Danish government bonds and Treasury notes with maturities below 5 years. Adjusted for SPF's holding of the individual securities the

SALES OF 10-YEAR ON-THE-RUN ISSUES IN 2002 Chart 2.4.1



Note: Up to and including 18 February 2002 6 per cent bullet loans 2011 is the 10-year on-the-run issue, and thereafter 5 per cent bullet loans 2013.

non-resident ownership share is approximately 52 per cent. The ownership share of government securities with longer maturities is somewhat below this level, cf. Table 2.4.2.

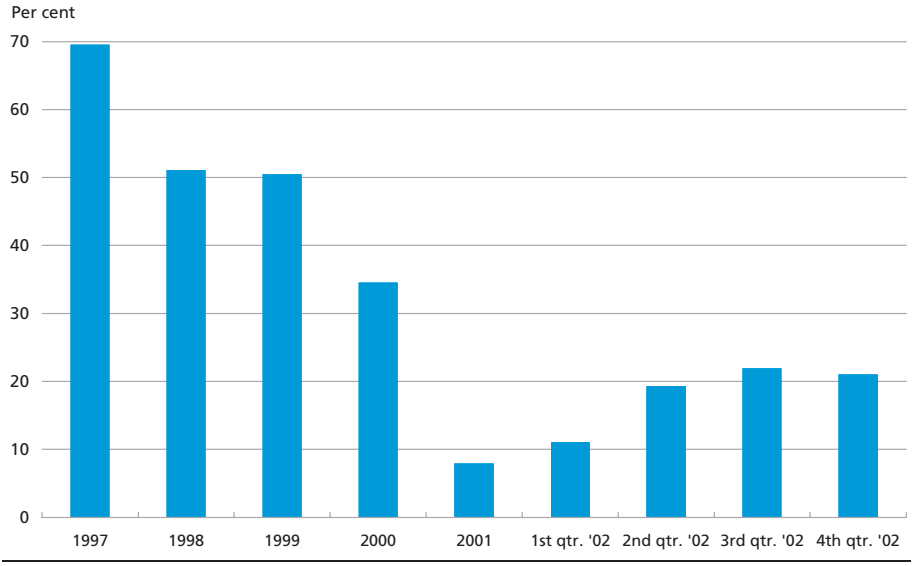
NON-RESIDENT OWNERSHIP OF SELECTED DOMESTIC GOVERNMENT SECURITIES, END-2002 Table 2.4.2

Per cent	Non-resident ownership share	Non-resident ownership share adjusted for SPF's holdings
5 per cent Treasury notes 2003	40.0	40.0
8 per cent bullet loans 2003	35.3	40.4
4 per cent Treasury notes 2004	68.3	68.3
7 per cent bullet loans 2004	38.1	52.2
5 per cent bullet loans 2005	52.7	55.6
8 per cent bullet loans 2006	31.4	57.4
7 per cent bullet loans 2007	21.8	46.4
4 per cent bullet loans 2008	16.9	16.9
6 per cent bullet loans 2009	22.2	35.1
6 per cent bullet loans 2011	20.9	23.9
5 per cent bullet loans 2013	20.3	20.3
7 per cent bullet loans 2024	12.9	12.9

Note: Adjustment is made for repurchase agreements between Danish banks and non-residents. Furthermore, estimated adjustment is made for residents' holdings in custody accounts abroad. Adjusted for the Social Pension Fund's holdings of government securities by deducting this holding from the circulating volume in each paper.

Source: Statistics Denmark.

NON-RESIDENT OWNERSHIP SHARE OF 10-YEAR BENCHMARK BOND, MARKET VALUE, YEAR-END — Chart 2.4.2



Note: Adjustment is made for repurchase agreements between Danish banks and non-residents. Furthermore, estimated adjustment is made for residents' holdings in custody accounts abroad.
Source: Statistics Denmark.

Treasury bills

Treasury bills are zero-coupon bonds, i.e. the investor does not receive ongoing interest payments on the Treasury bills. The yield is the difference between issue below par and redemption at par. Treasury bills are

THE CENTRAL GOVERNMENT'S ACCOUNT WITH DANMARKS NATIONALBANK — Box 2.1

The central government has an account with Danmarks Nationalbank which accrues interest at the official discount rate. The central government's ongoing receipts and disbursements are made via this account.

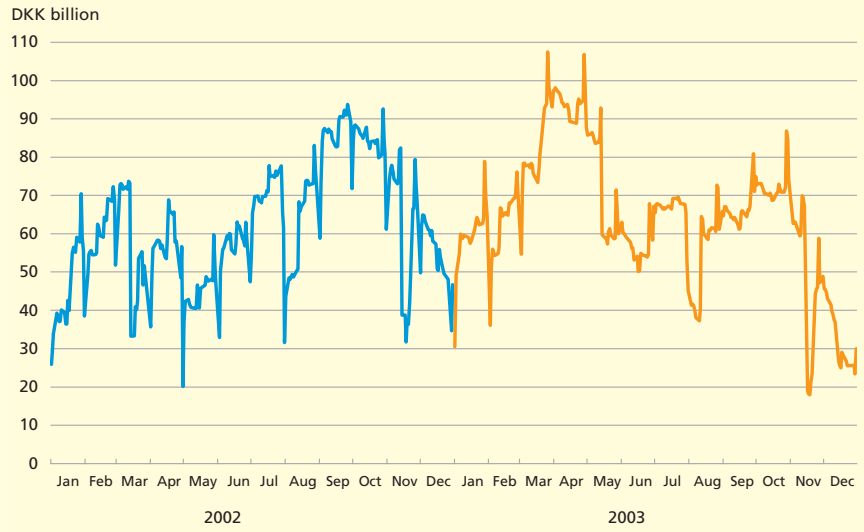
The EU Treaty prohibits monetary financing. This entails that the central government's account with Danmarks Nationalbank may not be in deficit. The government's buy-backs and borrowing are therefore planned to ensure an adequate balance on the central government's account in order to capture fluctuations in government receipts and disbursements, cf. the Chart below. Since the forecast of the development in the balance of the account is subject to uncertainty, it is necessary to maintain a buffer to counter unforeseen fluctuations in the account. This insecurity relates to the central government's ongoing receipts and disbursements and to market uncertainty in connection with the financing of the central government's debt. Shifts in tax payments make it difficult to forecast the central government's receipts and disbursements. Market-related uncertainty is e.g. due to the adverse conditions for sales of government securities in periods when market conditions are less favourable.

CONTINUED Box 2.1

The central government can actively smooth the balance of the account via its buy-back policy. Buy-backs of government securities falling due in the current year move government payments forward to the buy-back date.

Government receipts and disbursements are currently being restructured to ensure that payments are distributed more evenly throughout the year. This equalisation of payments makes it possible to reduce the average balance of the central government's account, provided that there is still a suitable buffer. At the end of 2002, it was decided to reduce the average balance of the central government's account by DKK 10 billion. This reduces the domestic borrowing requirement extraordinarily by DKK 10 billion in 2003.

BALANCE OF THE CENTRAL-GOVERNMENT ACCOUNT 2002-03

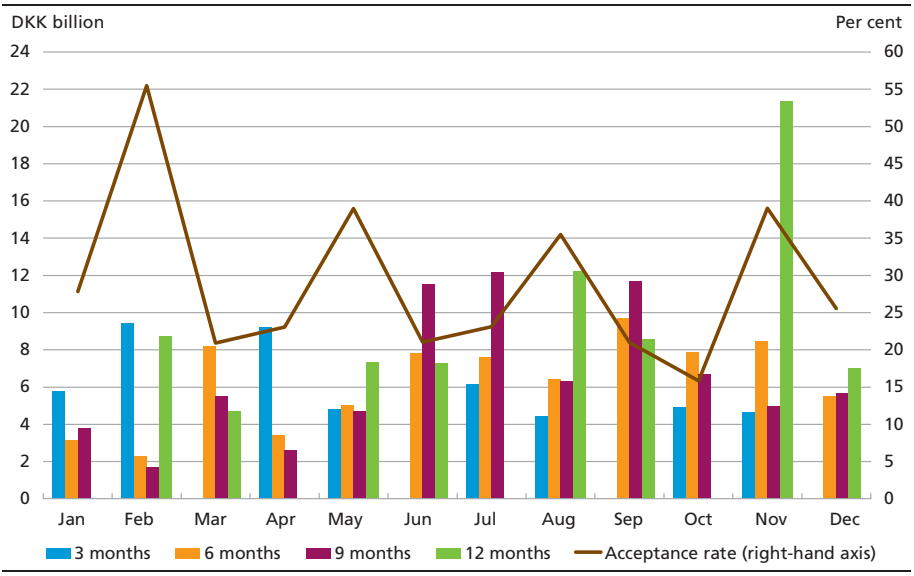


Note: The blue curve denotes actual figures, while the yellow curve is based on Budget Review 4, December 2002. In the forecast for 2003 no account is taken of buy-back of government securities during the year. Buy-backs are e.g. used to smooth the average balance of the central government's account.

sold at monthly auctions. The issuance method is used in order to quickly build up liquidity in the series. Most of the Treasury bills are purchased by a small number of auction participants. In 2002, the three largest auction participants acquired approximately 80 per cent of the bills issued.

The bid volume and acceptance rates at the Treasury bill auctions are shown in Chart 2.4.3. Both the total given and accepted bids rose in 2002 compared to 2001. The acceptance rate in 2002 was approximately 30 per cent, and thereby unchanged from 2001.

BID VOLUMES AND ACCEPTANCE RATES AT TREASURY BILL AUCTIONS IN 2002 Chart 2.4.3



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. 9 months include securities with remaining maturities of 8, 9 and 10 months, and 12 months include securities with remaining maturities of 11 and 12 months.

In 2002, the phasing-in of the new 12-month Treasury bill was concluded. At the same time, the total outstanding volume in the Treasury bill programme, now consisting of four bills, increased. Overall, the Treasury bill programme made a positive contribution to net financing of DKK 12 billion.

At the end of 2002, the total outstanding volume in Treasury bills was DKK 63.4 billion. The outstanding volume in the Treasury bill programme is expected to be unchanged in 2003.

BUY-BACKS AND SWITCH OPERATIONS 2.5

Via buy-backs the central government repurchases outstanding government securities from the secondary market. Government securities are only bought back if this is deemed to be advantageous in view of the overall government debt policy. Usually bonds that are bought back are cancelled immediately thereafter. In addition to buy-backs by the central government, the Social Pension Fund purchases government securities for its own portfolio, cf. Chapter 6.

The central government undertakes buy-backs both in government securities maturing within the current year and securities maturing in subsequent years.

BUY-BACK OF DOMESTIC GOVERNMENT SECURITIES IN 2002[1] Table 2.5.1

DKK million	Buy-backs		Nominal outstanding, end-2002
	Nominal	Market value	
Buy-backs maturing in 2002:			
Of which:			
6 per cent bullet loan 2002	11,300	11,399	
Buy-backs maturing after 2002	26,000	27,494	
Of which:			
8 per cent bullet loans 2006	9,225	10,330	56,676
8 per cent bullet loans 2003	16,775	17,165	43,586

[1] Including buy-backs in connection with switch auctions.

Buy-backs of government securities maturing in the current year smooth the central government's domestic borrowing requirement during the year, and are primarily used to manage the balance of the central government's account. In 2002, buy-backs at market value of 6 per cent bullet loans 2002 totalled DKK 11.4 billion, cf. Table 2.5.1.

Buy-backs of domestic government securities maturing in subsequent years are used to smooth the redemption profile of the debt, and to support liquidity in on-the-run issues.

In 2002, buy-back at market value of securities maturing after 2002 totalled DKK 27.5 billion. Most of the buy-backs were in 8 per cent bullet loans 2003. Buy-backs in this issue led to the transfer of a proportion of the domestic borrowing requirement from 2003 to 2002. The central government also conducted buy-backs in 8 per cent bullet loans 2006. Buy-backs in this issue were financed primarily by issues in the recently opened 5-year on-the-run issue, 4 per cent bullet loans 2008. These buy-backs helped to support the build-up of the new 5-year on-the-run issue. In recent years, the central government has pursued a more active buy-back policy, cf. Table 2.5.2. Besides reducing the risk on the government debt, buy-backs can be used to build up liquidity in on-the-run issues. This is especially important in periods with budget surpluses, and

BUY-BACK BY THE CENTRAL GOVERNMENT, 1998-2002, MARKET VALUE Table 2.5.2

DKK billion	1998	1999	2000	2001	2002
Redemption dates within the same year	21.3	23.2	31.5	19.5	11.4
Redemption dates in subsequent years	4.6	5.5	17.8	20.1	27.5
Total buy-backs	25.9	28.7	49.3	39.7	38.9

thereby a lower financing requirement, cf. Chapter 7 of *Danish Government Borrowing and Debt 2001*.

If outstanding government securities are exchanged for on-the-run government securities, this operation is called a switch. The central government held two switch auctions in 2002.

The switch auctions were held at the request of the Danish market participants and gave them the opportunity to switch off-the-run government securities to on-the-run government securities at market prices.

On 8 February 2002 market participants had the opportunity to switch from 8 per cent bullet loans 2006 to 4 per cent bullet loans 2008. On 4 March 2002 switches could be made from respectively 8 per cent bullet loans 2006 and 7 per cent bullet loans 2007 to 4 per cent bullet loans 2008. At both switch auctions the securities could be switched in a fixed risk-weighted ratio.

Only a moderate amount was switched at the first auction, while there were no switches at the auction in March. One reason for the small switch volume was that after the announcement of the switch auctions the price of the relevant securities developed unfavourably for the central government. Moreover, market participants' interest in both switch auctions was limited. Several other countries had similar experience with switch auctions.

No switch auctions are planned for 2003. This should also be viewed in the light of the favourable experience with the buy-back instrument.

In 2003, the central government can conduct buy-backs in virtually all off-the-run government securities. The buy-back issues as of January 2003 are stated in the announcement from December 2002 concerning government debt policy in 2003. The announcement is included in this publication.

SECURITIES LENDING FACILITY 2.6

The government issuer's securities lending facility was established in 1998 to support liquidity in newly opened government securities. The securities lending facility comprises on-the-run government issues. A benchmark issue can be retained in the facility for a certain period after it becomes an off-the-run issue. Securities dealers licensed to trade in the bond market of the Copenhagen Stock Exchange may utilise the securities lending facility. Lending in other government securities is via the Social Pension Fund's securities lending facility, cf. Chapter 6.

Effective from 2 January 2003, the fee policy for the government issuer's securities lending facility was adjusted. The fee for borrowing against on-the-run government bonds and Treasury notes with an out-

standing volume of less than DKK 20 billion was reduced to 25 basis points in order to support the build-up of newly opened on-the-run securities. The fee is unchanged at 50 basis points for lending in government bonds and Treasury notes with an outstanding volume exceeding DKK 20 billion, and for Treasury bills. The terms for the government issuer's securities lending facility are presented in the Appendices to this publication. The fees for SPF's securities lending facility are unchanged.

Lending in 2002 was primarily in 4 per cent Treasury notes 2004 and 5 per cent bullet loans 2013. Most lending took place at the beginning of 2002, when the on-the-run government bond and Treasury note issues were replaced.

CHAPTER 3

Foreign Borrowing

SUMMARY 3.1

The strategy for foreign borrowing is to build up a range of euro loans. The intention is to issue euro loans for EUR 1-2 billion annually, depending on the borrowing requirement and market demand. The first syndicated euro loan for EUR 1½ billion was issued in April 2002. The next syndicated euro loan is planned to be issued in spring 2003.

Besides euro loans, domestic issues combined with currency swaps from kroner to euro are used. This type of foreign borrowing can be attractive in price terms, and moreover supports liquidity in domestic on-the-run securities.

In 2002, the central government raised medium and long-term foreign loans for DKK 22.5 billion, corresponding to the redemptions on the foreign debt. The central government's syndicated euro loan accounted for approximately half, while the remainder comprises domestic issues combined with currency swaps to euro. In 2003 the foreign borrowing requirement is DKK 17.1 billion.

FOREIGN BORROWING STRATEGY 3.2

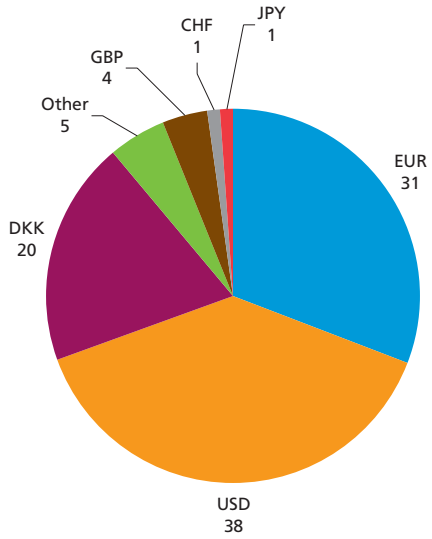
In recent years, the central government has exclusively applied simple loan structures that are well-known in the market. The currency exposure on the foreign debt is in euro. Limiting the currency exposure to euro gives a low exchange-rate risk, in view of Denmark's fixed-exchange-rate policy vis-à-vis the euro.

The distribution of the foreign debt on issue currencies prior to currency swaps is presented in Chart 3.2.1. As the previous loans are replaced by euro loans and domestic issues combined with swaps to euro, the currency distribution is increasingly dominated by kroner and euro.

Raising syndicated euro loans

In April 2002, the central government issued the first syndicated euro loan. The next syndicated euro loan is planned to be issued in spring 2003. It is the objective over time to build up a range of bullet loans in euro. The currency exposure of the foreign debt is exclusively in euro. By

DENOMINATION OF THE CENTRAL-GOVERNMENT FOREIGN ISSUES, END-2002, PER CENT — Chart 3.2.1



Note: The large proportion of krone-denominated issues relates to the fact that part of the foreign borrowing comprises domestic on-the-run issues combined with currency swaps to euro.

raising bullet loans directly in euro a simple loan structure is achieved. Loans raised in other currencies would have to be combined with currency swaps to euro.

The preferred maturity segment of the central government's euro loans is the medium-term segment. The intention is to issue loans for EUR 1-2 billion each year, depending on the borrowing requirement and market demand.

The euro loans are issued by syndication. This method is described in Box 3.1. Since it ensures a broad international distribution of the loans syndication has a number of advantages that are especially relevant for small issuers.

On syndication, the participating banks can use their investor contacts to generate interest in a new issue, and thereby create the basis for a broad distribution of investors. Syndication also gives a large initial outstanding volume, and lead managers quote bid and ask prices in the loans. This supports the tradability and liquidity.

The euro loans are targeted at a broad range of international investors, including institutional investors. A broad investor base can help to facilitate the central government's future sales in the financial market.

On the supply side, the market for government bonds in euro is dominated by issues from the euro area member states. Euro loans issued by the Kingdom of Denmark constitute a very small proportion of the over-

all supply of government bonds in euro. This helps to support demand from investors who require a diversified portfolio of highly-rated government bonds in euro.

The central government will normally issue euro loans in the first half of a year. On choosing the final timing of the issue it is sought not to coincide with euro issues from other government borrowers. An issue early in the year implies that the remainder of the year's foreign borrowing via currency swaps from kroner to euro is known at an early stage, and can thus be spread over a longer period, depending on the market conditions. Planning an early issue also makes it possible to revert to the market later in the year, should market conditions not be sufficiently attractive in the first instance.

When the central government issues euro loans, the borrowing costs are compared with, among others, equivalent German issues and issues by a peer group of other highly-rated government issuers, e.g. Finland, the Netherlands, Spain and Austria. The borrowing costs are also compared with alternative loan types, e.g. domestic issues combined with currency swaps to euro, or issues in other currencies linked to swaps to euro. Issue in another currency than euro (e.g. dollars) may occur if the market conditions for such an issue combined with swaps to euro are significantly more attractive than for issues directly in euro.

Currency swaps from kroner to euro

Besides syndicated euro loans, the central government uses domestic issues combined with currency swaps from kroner to euro to cover the foreign borrowing requirement remaining after issuance of euro loans. This type of foreign borrowing can be attractive in price terms, while at the same time supporting liquidity in the domestic on-the-run issues. Currency swaps can be distributed over varying maturities, and can therefore be used to smooth the redemption profile of the foreign debt. The central government's use of currency swaps is described in further detail in Chapter 4.

Commercial Paper

Commercial Paper (CP) are short-term securities with maturities of up to one year. This type of borrowing is typically used in the event of a need to quickly increase the foreign-exchange reserve, or to ensure an adequate balance on the central government's account. Via a number of banks the central government has established two CP borrowing programmes. The programme on the domestic US market can solely be used for issues in dollars, while the euro-market programme can be used for issues in several currencies. The currency exposure of the foreign gov-

SYNDICATION OF BOND LOANS Box 3.1

By syndicating bond loans, loans are intermediated to investors via a syndicate of banks which arrange the practical execution of the sale, in return for payment. On the issue of the Danish euro loan in April 2002 the syndicate comprised two lead managers and six co-lead managers.

Syndicating bond loans

The issuer puts together a syndicate of banks and decides which are to be lead managers. The central government's choice of banks is based on criteria that the banks should be well-reputed, active in the euro government bond market, and have experience from syndicated euro issues. Moreover, the overall group of banks must be able to ensure access to a broad distribution of investors, both geographically and institutionally.

During the days preceding the issue, the issuer discusses price, volume and time of issue with the lead managers. During this period, the banks are in continuous contact with investors in order to generate interest in the forthcoming issue and gain an idea of the demand.

Up to the time of issue a pool of bids is built up by the banks. This process lasted around 24 hours on the issue of the central government's euro loan. Each bid consists of a price, e.g. stated as a spread to the equivalent German benchmark bond, and a volume. The issuer continuously monitors the banks' collection of bids. Once all bids have been collected, the issuer determines the final price of the loan.

Hereafter, each bank contacts its investors in order to effect the sale.

Cooperation structure of a syndicate

The issuer determines the syndicate's cooperation structure. This can take various forms. Overall, a distinction is made between the pot and retention methods.

In the *pot method*, the banks in the syndicate cooperate on finding investors for the issue. The investor bids are added in an ongoing pool. This is called bookbuilding. In the pool, the issuer can see each investor bid as well as the bank that has received the bid. This gives the issuer information on overall demand at varying price levels. On this basis the issuer sets a market-conform price which corresponds to the required size of the issue. Price fixing by the pot method thus resembles an auction. In addition, the issuer can use the pool to see which banks have gathered most good investor bids.

ernment debt is exclusively in euro. CPs in currencies other than euro are combined with forward contracts in foreign exchange, so that the final exposure is in euro.

For each of the programmes the maximum outstanding amount is USD 6 billion.

Foreign borrowing in 2003

In 2003 the central government's foreign borrowing requirement, equivalent to the redemptions on the foreign debt, is DKK 17.1 billion.

CONTINUED Box 3.1

By the *retention method* each bank in the syndicate is given a proportion of the issue which the bank is responsible for selling. The issuer sells directly to the banks at an agreed price. The banks then sell on to the investors. The issuer cannot determine the price at which the banks resell, just as the issuer does not know which investors the banks are in contact with. In its pure form, the retention method entails that the issuer receives the agreed price from the banks, irrespective of the actual investor demand. The issuer hereby avoids the risk of issuing in market conditions that are less favourable than expected. Instead, this risk is assumed by the syndicate's banks.

The banks' cooperation during the issue of the euro loan in April 2002 was based on the pot method. The lead managers had a shared pool of 80 per cent of the issue, while the co-lead managers had a pool comprising the remaining 20 per cent. Each co-lead manager was ensured access to at least EUR 20 million.

The borrowing requirement is covered primarily by issuing a euro loan. The syndicated euro loan is planned to be issued in spring 2003. The remainder is covered by domestic issues combined with currency swaps from kroner to euro.

As part of the overall management of the duration of its debt the central government can transact euro interest-rate swaps that are not connected to specific loans (portfolio interest-rate swaps). This is described in further detail in Chapter 4.

FOREIGN BORROWING IN 2002 3.3

In 2002, the central government raised medium-and long-term foreign loans for DKK 22.5 billion, cf. Table 3.3.1.

The central government bought back DKK 51 million in a JPY/USD dual-currency loan maturing in 2003 at Euribor, for settlement in September. The loan is combined with a liability swap which converts the payments on the loan to euro. In connection with the buy-back the central government therefore transacted an off-setting asset swap equivalent to the buy-back.

The central government has transacted euro interest swaps for DKK 37 billion in 2002, cf. Chapter 4.

MEDIUM AND LONG-TERM FOREIGN BORROWING, 2002 Table 3.3.1

DKK billion	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Total
Euro loans	0.0	11.1	0.0	0.0	11.1
Currency swaps from kroner to euro	4.2	1.0	2.5	3.7	11.4
Medium and long-term foreign loans, total	4.2	12.1	2.5	3.7	22.5

EURO LOAN, 4.875 PER CENT 2007 Box 3.2

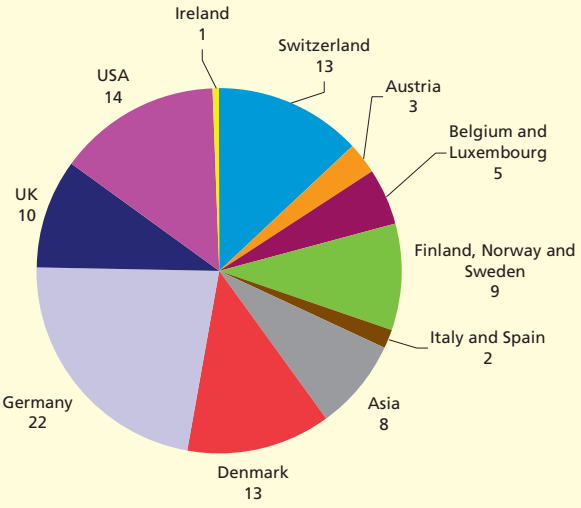
Characteristics of Kingdom of Denmark, euro loan, 4.875 per cent 2007:

- Size: EUR 1.5 billion
- Maturity date: 18 April 2007
- Yield differential to Germany on launch: OBL 139 + 14 basis points
- Rating: AAA/Aaa
- Fee: 0.10 per cent
- Legal venue and jurisdiction: Danish
- Listed on: the Copenhagen Stock Exchange
- Registration: VP Securities Services
- Lead managers: Deutsche Bank and Morgan Stanley
- Co-lead managers: ABN Amro, CSFB, Danske Bank, Goldman Sachs, Nomura and Nordea

The issue had a broad geographical distribution. Interest from banks and fund managers was especially large. The geographical distribution of the bids received during book building is shown in the Chart below. It illustrates the geographical distribution of demand in the issue, but does not express the final investor distribution.

The investor bids for the euro loan had a somewhat larger proportion of European investors than was the case for the central government's syndicated dollar loan from September 2001. The dollar loan was thus characterised by a large proportion of Asian investors (46 per cent).

GEOGRAPHICAL DISTRIBUTION OF INVESTOR BIDS RECEIVED WITHIN THE ALLOCATION PRICE, PER CENT



Note: The Chart solely comprises bids received within the price level at launch, i.e. the yield on the German government bond OBL 139 + 14 basis points.

Issuance of syndicated euro loans

The central government raised the first of a number of syndicated euro loans in April 2002. The loan for EUR 1½ billion was issued with Deutsche Bank and Morgan Stanley as lead managers. The characteristics and investor breakdown of the loan are described in further detail in Box 3.2.

Prior to the issue, the central government considered a peer group comprising issues from Austria, Finland and the Netherlands as the basis for price fixing of the loan. Moreover, the loan was compared with the German 5-year benchmark (OBL139).

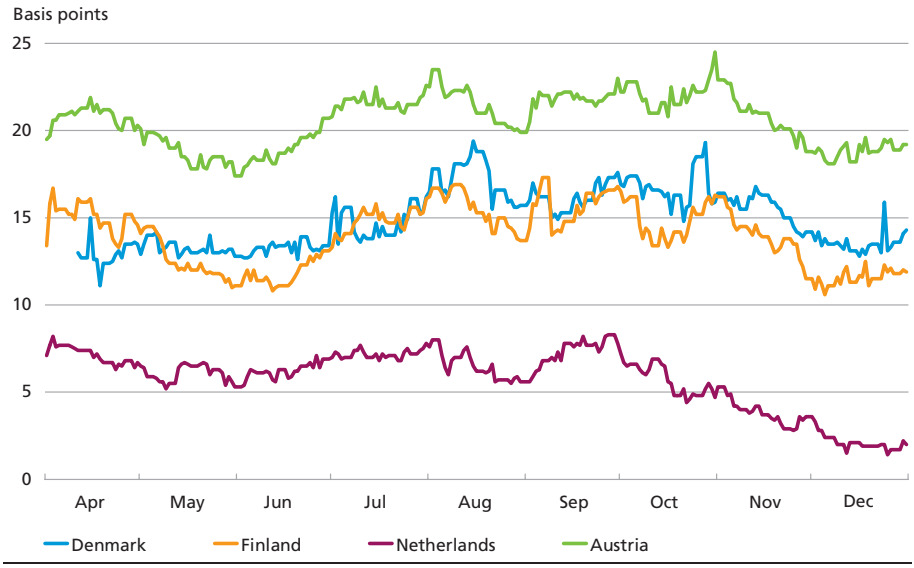
In concrete terms, the issue was priced 14 basis points above the German benchmark, which was a satisfactory price within the peer group. This was especially important on this first issue. The price could form the basis for the pricing of forthcoming euro issues. In view of the solid demand, it was also decided to increase the issue from the initially reported amount of EUR 1 billion to EUR 1½ billion.

The issue was received well by the market and achieved a broad geographical distribution of investors. It has subsequently maintained a stable price in the market, cf. Chart 3.3.1.

Currency swaps from kroner to euro

In 2002, the central government transacted currency swaps from kroner to euro for DKK 11.4 billion. Foreign borrowing via currency

YIELD DIFFERENTIALS TO GERMANY FOR THE EURO LOAN AND EQUIVALENT ISSUES FROM FINLAND, THE NETHERLANDS AND AUSTRIA — Chart 3.3.1



Note: The German issue is 6 per cent 1/4/2007, the Finnish issue is 5 per cent 7/2007, the Austrian issue is 5 per cent 10/2007 and the Dutch issue is 5.75 per cent 2/2007.
Source: Bloomberg.

swaps has maintained good price levels throughout 2002. The market development for swaps is described further in Chapter 4, while information on the individual currency swaps is found in Table 4c to the Appendix of Tables.

CHAPTER 4

Interest-Rate and Currency Swaps

SUMMARY 4.1

The central government uses swaps to restructure the currency and interest-rate terms of the central-government debt. In 2002, the central government transacted interest-rate swaps for a total of DKK 47 billion, of which DKK 10 billion in kroner and DKK 37 billion in euro. Moreover, the central government transacted currency swaps from kroner to euro for a total of DKK 11 billion.

The spread between the swap rate and the yield on government securities (the swap spread) is an indicator used to evaluate the terms of transacting interest-rate swaps and financing a part of the foreign borrowing requirement by currency swaps from kroner to euro. Swap spreads in the krone market have been falling in 2002. In the euro market, the swap spreads have been generally stable for most of the year, but were falling towards the end of the year.

The use of swaps entails a counterparty credit risk for the central government. The credit exposure of the swap portfolio fell by DKK 1.7 billion to DKK 8.2 billion in 2002. The reduced credit exposure reflects a significant decline in the market value of currency swaps, which is only partly offset by an increase in the market value of interest-rate swaps. In addition, collateral pledged by counterparties increased by DKK 0.4 billion to DKK 4.4 billion, which contributed to reducing the credit exposure.

The central government only enters into new swaps if the counterparty is willing to provide collateral for part of the swap value. In 2002, three new collateral agreements were entered into. There are now 22 collateral agreements and more than 90 per cent of the swap portfolio measured in terms of principal is subject to a collateral agreement.

A number of the central government's swap counterparties have been downgraded to the rating A+. Only domestic interest-rate swaps and currency swaps from kroner to euro are transacted with these counterparties.

USE OF INTEREST-RATE AND CURRENCY SWAPS 4.2

A swap is an agreement between two parties to exchange payments over a specific period. The swap consists of two "legs". One leg is the cash flow to the counterparty (e.g. a floating interest rate), and the other leg is the cash flow from the counterparty (e.g. a fixed interest rate). Normally, the swap is priced so that the present values of the cash flows in the two legs are the same at the time of the transaction.

Since 1983 the central government has used swaps to reduce the borrowing costs and to manage the interest-rate and currency risks. The use of swaps was originally introduced in the management of the foreign debt, and in 1998 interest-rate swaps in kroner were introduced as an instrument for the management of the domestic debt. Foreign borrowing via domestic issues combined with currency swaps from kroner to euro commenced in 2001. The various categories of swaps in the central government's swap portfolio are described in Box 4.1.

The use of swaps reduces central-government borrowing costs due to comparative advantages in maturity or currency terms. Hence, for a given duration or currency exposure, the central government can typically obtain more favourable terms by using swaps than by direct borrowing.

TYPES OF SWAPS IN THE CENTRAL GOVERNMENT'S SWAP PORTFOLIO Box 4.1

Since 1983 the central government has used swaps to reduce borrowing costs and to manage interest-rate and currency risks. The swap portfolio comprises krone-denominated interest-rate swaps, interest-rate swaps in other currencies, currency swaps (including swaps from kroner to euro) and structured swaps. Swaps are transacted as liability swaps, asset swaps and portfolio swaps.

In a *liability swap* the central government receives payments from the counterparty that are identical with the payments on a specific loan. Earlier on, the central government has used this type of swap to manage the foreign debt. In connection with buy-backs in a loan connected to a liability swap an *asset swap* is transacted in order to equalise the payments in the original liability swap. In a *portfolio swap* the payments are not connected to an existing loan.

The central government's swap portfolio mainly comprises standardised swaps. In order to restructure structured loans to ordinary interest and repayment terms, in a few cases the central government has entered into structured swaps that are not standardised.

New swaps are transacted exclusively as standardised swaps in the form of portfolio swaps. Portfolio swaps make it possible to spread interest payments and interest-fixing dates, thereby reducing the central government's exposure to the interest-rate fixing (Cibor or Euribor) on individual days. Moreover, market participants quote current prices in this type of swaps and the market is therefore generally, more liquid than for other categories of swaps.

The central government uses *interest-rate swaps* to restructure the debt between fixed and floating interest rates in the management of the duration of the central-government debt. Interest-rate swaps thus make it possible to separate issuance in liquid bond series from the management of the interest-rate risk on the debt.

The central government transacts interest-rate swaps in the krone and euro markets, depending on the current market conditions.

Currency swaps are used to restructure debt between payment currencies, i.e. payments in one currency are swapped to payments in another currency. Previously, the central government applied currency swaps between several different currencies in order to achieve a given currency distribution for the foreign central-government debt.

Since the beginning of 2001, the foreign debt has been exposed exclusively to euro. This entails a low exchange-rate risk due to Denmark's fixed-exchange-rate policy vis-à-vis the euro. Foreign loans are raised via syndicated euro loans, or via domestic issues combined with currency swaps from kroner to euro. Today the central government therefore normally only uses krone-euro currency swaps.

Procedure for transacting swaps

Swap transactions are in principle distributed smoothly throughout the year. New swaps are transacted exclusively as standardised portfolio swaps.

The use of swaps by central governments and business enterprises is becoming more and more common. The swap markets have developed from a very limited depth to relatively liquid markets with current price quotes for a number of standardised swap products. The liquidity of the swap markets varies between currencies and types. For example, the euro market is more liquid than the krone market. The central government's swap transactions are undertaken with due consideration for the fact that liquidity in the krone market is still being built up.

When a swap is to be transacted by the central government, 2-4 potential counterparties are contacted and asked to quote a price for the swap. The counterparty that makes the best bid wins the deal. The other participants are not informed of the winner of the transaction. If the bids are not considered to be sufficiently attractive, the deal is not closed.

Current information on swaps

Detailed information on the central government's swap transactions is published annually in Government Borrowing and Debt, cf. Table 4 of the Appendix of Tables. Current information on the volume of new

currency swaps is published on a monthly basis as part of the compilation of the domestic borrowing requirement, cf. Information on Government Borrowing and Debt in the Appendices.

CENTRAL GOVERNMENT'S USE OF INTEREST-RATE SWAPS IN 2002 4.3

In 2002, the central government transacted interest-rate swaps for a total of DKK 47 billion, of which DKK 10 billion in the krone market, while the remainder were transacted in the euro market. The market for euro interest-rate swaps is more liquid than the market for krone interest-rate swaps.

In the Danish market, mainly 5-year interest-rate swaps have been transacted. This is because, all other things being equal, 5-year interest-rate swaps have been more attractive in price terms than the 10-year interest-rate swaps in the Danish market throughout most of 2002, cf. Chart 4.3.1.

Table 4.3.1 presents an overview of the central government's interest-rate swaps in 2002. Tables 4a, 4b and 4d to the Appendix of Tables present further information on the individual swaps.

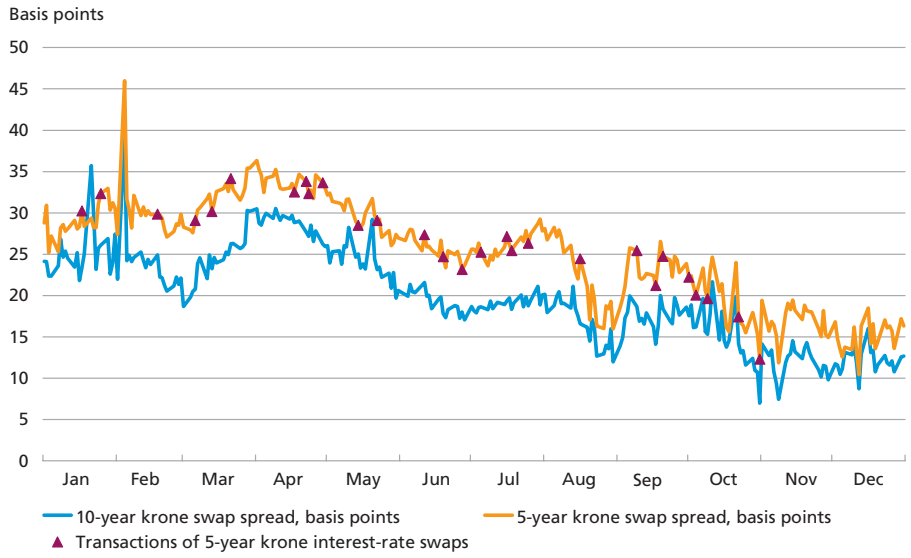
The spread between the swap rate and the yield on government securities is called the swap spread. The swap spread is used to evaluate the central government's terms of transacting interest-rate swaps and financing a part of the foreign borrowing requirement by using currency swaps from kroner to euro, cf. Box 4.2.

CENTRAL-GOVERNMENT INTEREST-RATE SWAP TRANSACTIONS, 2002 Table 4.3.1

DKK million	5-year	7-year	10-year	Total
1st quarter	1,800	200		2,000
2nd quarter	3,800			3,800
3rd quarter	2,500			2,500
4th quarter	1,600			1,600
DKK interest-rate swaps, total	9,700	200		9,900
1st quarter			3,230	3,230
2nd quarter	5,197		9,652	14,849
3rd quarter			14,477	14,477
4th quarter			4,083	4,083
EUR interest-rate swaps, total	5,197		31,442	36,639
Interest-rate swaps, total	14,897	200	31,442	46,539

Note: For euro interest-rate swaps the notional value of the principals is converted to Danish kroner at the euro rate of 7.4243, equivalent to the euro rate at the end of 2002.

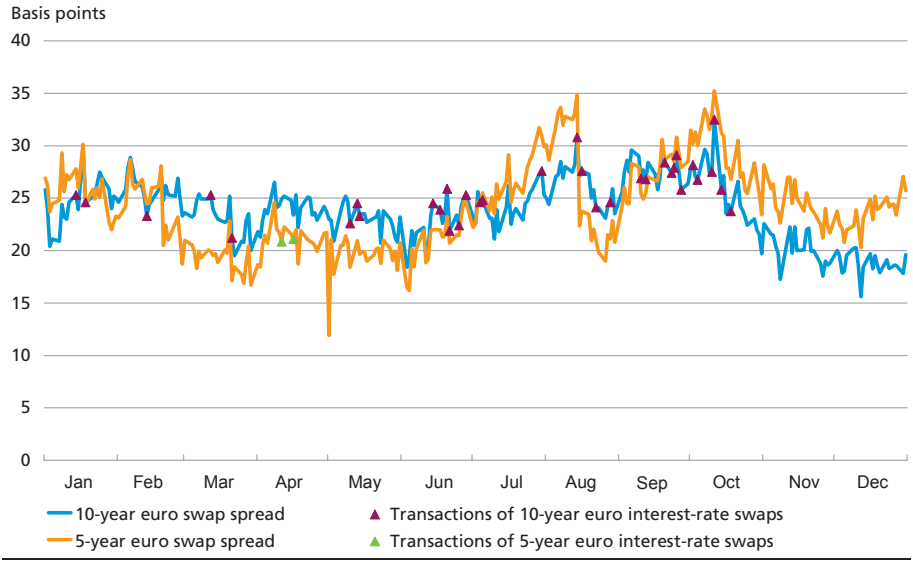
SWAP SPREAD ON KRONE INTEREST-RATE SWAPS, 2002 Chart 4.3.1



Note: The swap spread is the difference between the swap rate and the yield on government securities. The swap spread indicates how advantageous it is to transact interest-rate swaps. The greater the swap spread, the more advantageous the interest-rate swap will be. In the Chart, the yield is for respectively 7 per cent bullet loans 2007 and 6 per cent bullet loans 2011, while the swap rates are interpolated between respectively a 5-year and a 6-year rate, and a 9-year and 10-year rate.

Source: Bloomberg.

SWAP SPREAD ON EURO INTEREST-RATE SWAPS, 2002 Chart 4.3.2



Note: The swap spread is the difference between the swap rate and the yield to maturity on government securities. The swap spread expresses how advantageous it is to transact interest-rate swaps. The greater the swap spread, the more advantageous the interest-rate swap will be.

Source: Bloomberg.

COMPILATION OF NET BORROWING COSTS USING SWAPS Box 4.2A

A swap comprises two "legs" – of which one is the cash flows to the counterparty (e.g. a floating interest rate) and the other is the cash flows from the counterparty (e.g. a fixed interest rate). Normally, the swap price is fixed so that the present values of the cash flows in the two legs are the same at the time that the swap is transacted.

Interest-rate swaps

The central government enters into interest-rate swaps in kroner or euro so as to restructure from fixed-rate debt to floating-rate debt in order to achieve a given duration level. The Table below presents an example of the compilation of the net borrowing costs to the central government from entering into interest-rate swaps. In technical terms, it is assumed that a government bond is sold simultaneously with the transaction of the interest-rate swap. In practice, the central government transacts portfolio interest-rate swaps, whereby the payment flows in the swap are not linked to an existing loan, just as the timing of the sale of government securities is not linked to swap transactions.

The difference between the swap rate and the yield on government securities is called the swap spread. All other things being equal, a high swap spread makes it more advantageous for the central government to transact interest-rate swaps from fixed to floating interest rates. When interest-rate swaps are transacted the net borrowing costs are compared with the costs of borrowing for direct short-term loans.

EXAMPLE OF THE CALCULATION OF NET BORROWING COSTS FOR 5-YEAR KRONE INTEREST-RATE SWAPS

Instrument		Interest payment
Sale of government bonds	+ Central government pays a 5-year DKK fixed rate	4.14 per cent
Interest-rate swap	- Central government receives a 5-year DKK fixed rate (swap rate)	4.49 per cent
	+ Central government pays a DKK floating rate	6-month Cibor
Cost of borrowing, net		6-month Cibor -35 bp.

Note: The 5-year fixed interest rate is interpolated between 8 per cent bullet loans 2006 and 7 per cent bullet loans 2007. The example is based on interest-rate swap no. 454, cf. Table 4a of the Appendices.

Charts 4.3.1 and 4.3.2 show the development in swap spreads and the central government's transactions of interest-rate swaps in the krone and euro markets. The swap spreads in the krone market were falling in 2002. In the euro market, the swap spreads have been generally stable for most of the year, but were falling towards the end of the year.

Interest-rate swaps are distributed fairly smoothly throughout the year. The central government did not transact interest-rate swaps in the last two months of the year, in view of the low interest rates and increased sales of Treasury bills.

COMPILATION OF NET BORROWING COSTS USING SWAPS Box 4.2B

Currency swaps

The central government uses krone-euro currency swaps as part of its foreign borrowing. The Table below presents an example of the calculation of net borrowing costs for domestic issues combined with currency swaps from kroner to euro. The net borrowing cost is calculated for a "package" of interest payments on domestic issues, interest-rate swaps and currency swaps. The composition of the "package" affects the calculated net borrowing costs.

In the example, it is assumed for technical purposes that the interest-rate swap and the currency swap, as well as the issue of the government bond, take place simultaneously. In practice, swaps are transacted as portfolio swaps, whereby the swap payments are not linked to an existing loan or other swaps, just as the sale of government securities is not linked in timing terms to the transaction of new swaps. Moreover, the central government transacts interest-rate swaps in both the krone and euro markets.

The swap spread is the key factor affecting the development in net borrowing costs for domestic issues combined with swaps to euro. Therefore the swap spread can be taken as an indicator of whether this type of foreign borrowing is advantageous.

EXAMPLE OF CALCULATION OF NET BORROWING COST FOR DOMESTIC ISSUES COMBINED WITH SWAPS TO EURO

Instrument		Interest payment
Sale of government bonds	+ Central government pays a 5-year DKK fixed rate	4.14 per cent
Interest-rate swap	- Central government receives a 5-year DKK fixed rate (swap rate)	4.49 per cent
	+ Central government pays a DKK floating rate	6-month Cibor
Currency swap	+ Central government pays a DKK floating rate	6-month Cibor -5 bp.
	- Central government receives a DKK floating rate	6-month Euribor
Cost of borrowing, net		6-month Cibor -35 bp.

Note: The 5-year fixed interest rate is interpolated between 7 per cent bullet loans 2007 and 4 per cent bullet loans 2008. The example is based on currency swap no. 10033, cf. Table 4c of the Appendices.

THE CENTRAL GOVERNMENT'S USE OF CURRENCY SWAPS IN 2002 4.4

The central government transacts currency swaps from kroner to euro if this type of foreign borrowing is attractive compared to other types of foreign borrowing (e.g. syndicated euro loans). The costs of different types of foreign borrowing can be compared by compiling the borrowing costs in relation to the same benchmark, e.g. Euribor, cf. Box 4.2B. The net borrowing costs in relation to Euribor, when using dom-

estic issues combined with currency swaps to euro, were estimated at Euribor -11 basis points at end-2002.

In 2002, the central government transacted currency swaps from kroner to euro for a total amount of DKK 11.4 billion. Further information on the individual currency swaps is presented in Tables 3 and 4c to the Appendix of Tables, where the borrowing costs in relation to Euribor are also stated.

CREDIT RISK ON THE CENTRAL GOVERNMENT'S SWAP PORTFOLIO, END-2002 4.5

When a swap is transacted, the market value is typically zero. Over time, the development in interest and exchange rates will, however, imply that the market value can become both positive or negative for the central government. If the market value becomes positive in the central government's favour, the swap will be an asset and is thereby a credit risk to the central government. There will therefore be a risk of losing money if the counterparty defaults on its payment obligations.

In order to limit the credit risk on the central government's swap portfolio a number of credit management principles have been established. Key elements are:

- Counterparties must have a high credit rating
- The credit exposure for a counterparty must be kept within relatively narrow lines
- Swaps are only transacted with counterparties that have signed a collateral agreement
- Swaps can be terminated if the counterparty's rating falls below a certain level.

CENTRAL GOVERNMENT'S SWAP PORTFOLIO, END 2000-02 Table 4.5.1

	2000	2001	2002
Number of counterparties	34	33	31
Number of swaps	228	233	276
		DKK billion	
Interest-rate swaps, Danish kroner	21.0	27.4	37.0
Interest-rate swaps, other currencies	40.3	27.6	51.9
Currency swaps excluding DKK-EUR swaps	57.5	59.5	39.9
DKK-EUR swaps	-	4.8	16.2
Structured swaps	1.7	1.7	1.7
Principal, total	120.5	121.0	146.8

EXCHANGE-RATE AND INTEREST-RATE SENSITIVITY OF THE SWAP PORTFOLIO, END-2002 Table 4.5.2

DKK billion	Increase in market value on an appreciation by 1 per cent vis-á-vis DKK	Increase in market value on a decrease in interest rates by 1 percentage point
DKK	•	2.4
EUR	-0.6	2.4
USD	0.3	0.7
GBP	0.0	0.0
Other currencies (net)	0.0	0.1
All currencies (net)	-0.2	5.6

The principles for the central government's credit management are described in more detail in the Appendices.

In 2002 the central government entered into 88 new swaps, for a total principal of DKK 58 billion. During 2002, 45 swaps expired or were terminated prematurely. At end-2002, there were 276 swaps with a total principal of DKK 147 billion, cf. Table 4.5.1.

The market value of the central government's swap portfolio depends on the development in interest and exchange rates. Table 4.5.2 shows that an increase in the dollar rate by 1 per cent vis-à-vis the krone will increase the swap portfolio's market value by DKK 300 million. A decrease in the Danish interest-rate level by 1 percentage point will increase the market value by DKK 2.4 billion. This reflects that currency swaps are typically used to restructure from USD to EUR borrowing, while interest-rate swaps are typically used to restructure from long to short durations. Fluctuating market values do not reflect an actual gain or loss for the central government, but should be viewed in conjunction with equivalent losses and gains on the loan portfolio.

The dollar depreciated against the krone in 2002, and the level of interest rates declined. The development in exchange rates had greatest impact on the market value of the swap portfolio, which fell overall from DKK 9.6 billion to DKK 7.7 billion, cf. Table 4.5.3. The decline in

NET MARKET VALUE OF THE SWAP PORTFOLIO, YEAR-END 2000-02 Table 4.5.3

DKK billion	2000	2001	2002
Interest-rate swaps, Danish kroner	0.7	1.3	3.8
Interest-rate swaps, other currencies	0.3	0.1	2.5
Currency swaps, excluding DKK-EUR swaps	4.1	7.9	1.1
DKK-EUR swaps	-	0.0	0.0
Structured swaps	0.1	0.3	0.2
Total	5.2	9.6	7.7

CREDIT QUALITY OF THE SWAP PORTFOLIO, YEAR-END 2000-02 Table 4.5.4

Rating	2000		2001		2002	
	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	10	2.2	9	2.4	7	1.0
AA+	4	0.9	3	1.1	3	1.8
AA	3	1.6	5	2.1	2	0.7
AA-	12	3.0	12	3.6	9	2.3
A+	4	0.6	3	0.3	10	2.4
A	1	0.1	1	0.3	-	-
A-	-	-	-	-	-	-
Total	34	8.3	33	9.9	31	8.2
Of which:						
- Current market value		5.9		10.0		8.6
- Collateral pledged		-2.2		-4.0		-4.4
- Potential exposure		4.6		4.0		4.0

Note: The credit exposure comprises both the current actual credit exposure, equivalent to positive market values, and the potential credit exposure, which is an estimate of future positive market values. Pledged collateral is deducted from the calculation. A more detailed description of the technique applied to calculating the credit exposure is found in Appendix 11.B to *Danish Government Borrowing and Debt 2000*.

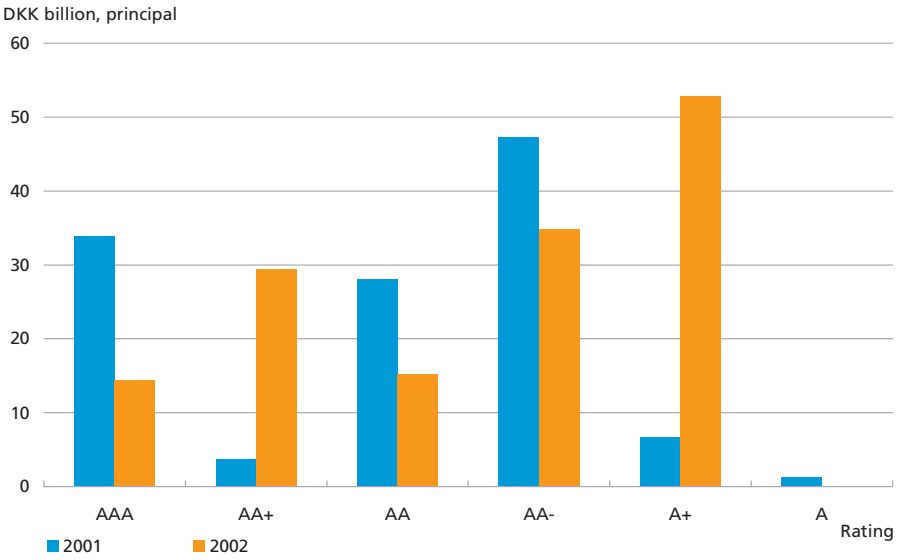
market value predominantly affected currency swaps from dollar to euro. Currency swaps from kroner to euro are sensitive to movements in exchange rates, but the risk is small in view of the fixed-krone-rate policy. Market values for interest-rate swaps rose as a consequence of falling interest rates.

A precondition for the transaction of new swaps is that the counterparty has signed a collateral agreement. At the end of the year the counterparties had pledged collateral for DKK 4.4 billion, which thereby contributed to reducing the credit exposure, cf. Table 4.5.4. The credit exposure on the swap portfolio fell by DKK 1.7 billion to DKK 8.2 billion in 2002.

SWAP PORTFOLIO'S COVERAGE BY COLLATERAL AGREEMENTS DISTRIBUTED BY RATING, END-2002 Table 4.5.5

Rating	Counter-parties	Principal, DKK billion	Per cent with collateral agreement	Credit exposure, DKK billion
AAA	7	14	58	1.0
AA+	3	29	89	1.8
AA	2	15	100	0.7
AA-	9	35	94	2.3
A+	10	53	99	2.4
Total	31	147	92	8.2

SWAP PORTFOLIO DISTRIBUTED ON COUNTERPARTY RATINGS, END OF PERIOD — Chart 4.5.1



By the close of the year the central government had entered into collateral agreements with 22 counterparties. In terms of loan principal the coverage ratio of the swap portfolio exceeded 90 per cent, cf. Table 4.5.5. The coverage ratio approaches 100 per cent for the lower rating classes of AA, AA- and A+. For the two highest rating classes, AAA and AA+, the coverage ratio is somewhat lower, but the need is also smaller due to the high credit rating of these counterparties. The proportion of the swap portfolio without collateral agreements decreases successively as old swaps with counterparties without collateral agreements expire.

Since the turn of the year, the number of outstanding swaps with counterparties with a rating of A+ has increased strongly, cf. Chart 4.5.1. The background is primarily the downgrading of a number of major counterparties. With these counterparties, only domestic interest-rate swaps and currency swaps from kroner to euro are transacted.

CHAPTER 5

Market Risk

SUMMARY 5.1

The market risk on the government debt is the risk of higher borrowing costs as a consequence of changes in interest and exchange rates.

The interest-rate risk is managed via a duration target, and by smoothing the redemption profile. Duration indicates the average fixed interest period for the debt. The duration band of the government debt for 2003 is unchanged at 3.5 +/- 0.5 years. The objective of a smooth redemption profile reduces the risk of the central government having to refinance a large proportion of the debt at a time when borrowing conditions are unfavourable.

The Cost-at-Risk model is a stochastic simulation model developed internally by Government Debt Management. The model is applied to quantify and weigh interest costs and risk. In the model, the cost and risk profile is calculated subject to various assumptions concerning the strategy for the government debt policy. The Cost-at-Risk model thereby supports the choice of strategy for the government debt policy.

In view of Denmark's fixed-exchange-rate policy vis-à-vis the euro the currency risk on the foreign government debt, which is exclusively exposed in euro, is limited. Moreover, Danmarks Nationalbank's foreign-exchange reserve is predominantly exposed in euro.

The approach to the management of the interest-rate risk on the government debt is described in Chapter 10. The management of the central government's credit risks is described in Chapter 4.

INTEREST-RATE RISK 5.2

Duration

Duration expresses the average fixed interest period for the government debt. Long duration reduces the sensitivity of the annual interest costs to changes in the level of interest rates, cf. Box 5.1. On the other hand, long duration can entail higher average costs. On an annual basis, a duration band for the total government debt is determined, based on a weighing of costs against risk. In 2003, as in recent years, the duration band has been fixed at 3.5 +/- 0.5 years.

DURATION Box 5.1

Each year an objective for the duration of the total government debt is set. Duration is a summary measure of the cost and risk profile of the debt. The duration of the government debt is a central strategic benchmark applied as a guide to the ongoing risk management of the portfolios. Below, some key aspects of the use of duration are described.

Macauley duration and option adjustment: The duration of the debt is calculated as a Macauley 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 can also be expressed by Σ_t (t-s) w_t, where w_t is the payment at time t as a proportion of the total present value of the payments. Duration is thus a weighted average of the length of the periods until each payment. As regards SPF's holding of callable mortgage-credit bonds it is necessary to apply an option-adjusted duration. Callable bonds are included with a lower duration than equivalent non-callable securities, due to the probability of premature redemption.

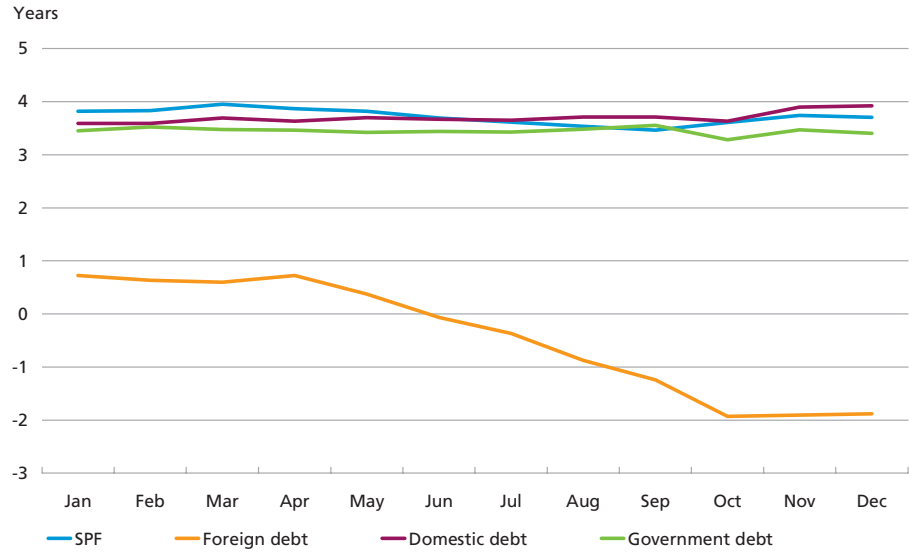
Average fixed interest period: In Danish government debt management duration is used to express the average fixed interest period. Long duration means that for a large proportion of the debt the interest rate is locked for a prolonged period. At the same time, long-term interest rates typically show less volatility. Long duration thus reduces the variation in the annual interest costs and is thereby related to low risk on the government debt.

Interest-rate swaps: The ongoing management of the duration of the government debt takes place by transacting interest-rate swaps in both kroner and euro. The duration of the government debt can be shortened by e.g. transacting a 10-year interest-rate swap in which a 10-year fixed rate (the fixed leg) is received against payment of a 6-month floating rate (the variable leg). The duration of the fixed leg is calculated according to the Macauley formula, while the duration of the variable leg equals the time to the next interest due date. The overall duration of the interest-rate swap is calculated as the duration of the variable leg less the duration of the fixed leg. Interest-rate swaps from fixed to floating interest rates thereby make a negative contribution to duration, since the fixed leg has a longer duration than the variable leg.

Weighing of sub-portfolios: The duration of the overall government debt is calculated by weighing the duration of the sub-portfolios of the debt with their respective shares of the total debt. The duration of the liabilities in the portfolio is calculated with sign positive, while the portfolio's assets are calculated with sign negative. The duration of the central government's account with Danmarks Nationalbank is 0.

By transacting interest-rate swaps, it is possible to manage the duration of the debt independently of the maturity of the issues. Interest-rate swaps thereby make it possible to separate the management of the interest-rate risk from the issuing policy.

DEVELOPMENT IN DURATION IN 2002, END OF MONTH Chart 5.2.1



The development in the duration of the government debt and its sub-portfolios is presented in Chart 5.2.1. The duration objective concerns the duration of the total government debt, which was 3.4 years at end-2002. In view of the low level of interest rates it was decided to extend the duration from the relatively low level in October.

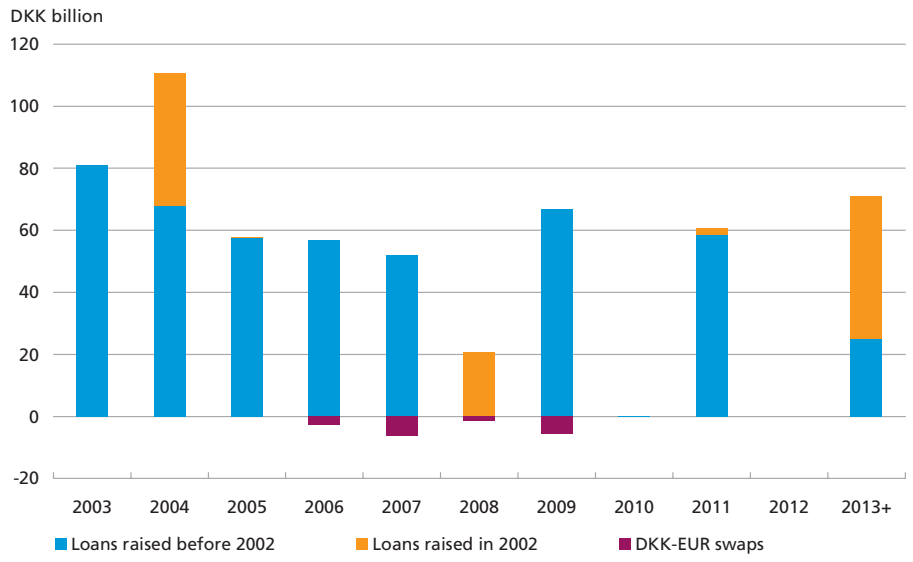
The duration of the total government debt is calculated by weighing the durations of the sub-portfolios together. The development in the duration of the foreign debt can be attributed especially to the transaction of interest-rate swaps in euro, whereby the government receives a 10-year fixed rate against payment of 6-month Euribor. The net effect of interest-rate swaps from fixed to floating interest rates is a negative contribution to duration, cf. Box 5.1.

The duration of the government debt has been reduced by a good 1 year since 1998, cf. Table 5.2.1. This development was in step with the reduction of the government debt as a consequence of current budget surpluses. The budgetary significance of the risk of rising interest costs on the government debt is thereby reduced. This has led to a strategic decision to change the weighing of costs vis-à-vis risk towards a shorter duration.

DEVELOPMENT IN THE DURATION OF THE GOVERNMENT DEBT, YEAR-END Table 5.2.1

Year	1996	1997	1998	1999	2000	2001	2002
Duration	3.9	4.1	4.4	3.8	3.5	3.4	3.4

REDEMPTION PROFILE – DOMESTIC CENTRAL-GOVERNMENT DEBT, END-2002 Chart 5.2.2



Redemption profile

Duration is an average measure of the fixed interest period for the debt, and does not shed light on the spread of the payments. In combination with the duration objective, it is therefore sought to smooth the redemptions of the debt from year-to-year. Stable annual debt repayments reduce the risk of the central government having to refinance a large proportion of the debt in a period when borrowing terms are unfavourable.

Chart 5.2.2 presents the redemption profile for the domestic government debt. The repayments are divided into redemptions on loans raised prior to 2002, and redemptions related to on-the-run issues in 2002. The overall outstanding volume of swaps from kroner to euro is also presented. In the years of maturity of the swaps the central government receives kroner in return for payment of euro, which reduces the domestic borrowing requirement.

The redemption profile of the domestic debt is managed actively via buy-backs. Buying back securities maturing in subsequent years at times when market conditions are favourable reduces the risk of subsequent refinancing when market conditions are unfavourable. Furthermore, buy-backs can contribute to supporting liquidity in on-the-run issues. The objective of a smooth redemption profile is also considered when deciding on the maturity term of new government securities and the length of the issue period.

REDEMPTION PROFILE – FOREIGN CENTRAL-GOVERNMENT DEBT, END-2002 Chart 5.2.3

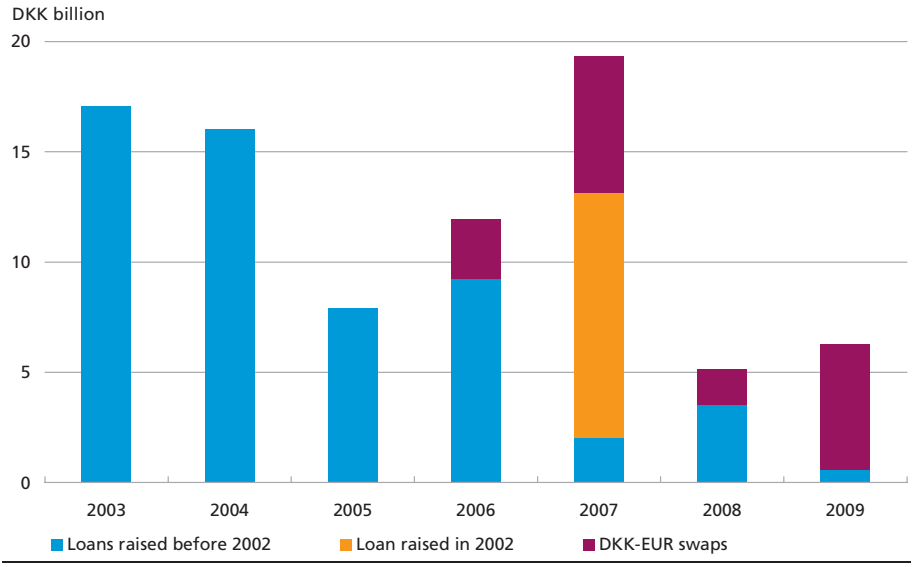


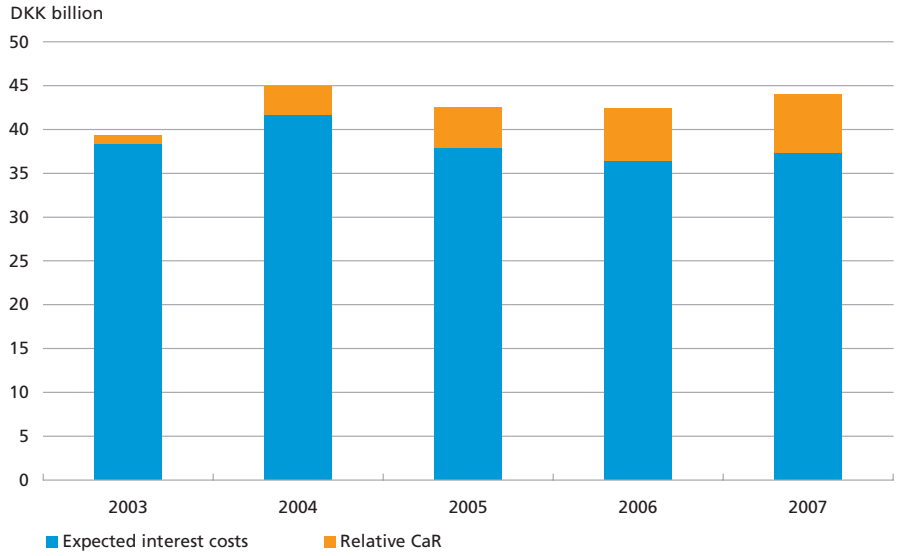
Chart 5.2.3 shows the redemption profile for the foreign government debt. The repayments are divided into redemptions on loans raised prior to 2002, the redemption related to the euro loan issued in April 2002, and redemptions related to the overall outstanding swaps from kroner to euro.

A smooth redemption profile for the foreign debt will be ensured by building up a range of euro loans. Distribution of currency swaps from kroner to euro on various maturities can also contribute to this objective. Buy-back of foreign loans is not applied actively, since a larger proportion of the debt consists of less liquid loans.

Cost-at-Risk (CaR)

The CaR model is used to quantify the interest-rate risk on the government debt. In the CaR model, 2,500 scenarios of the future development in interest rates are simulated. On this basis, the expected future interest costs on the debt and the related interest-rate risk can be calculated. The risk is calculated as the highest costs or the largest increase in costs that can be expected with a probability of 95 per cent. The calculations are made subject to various strategic assumptions concerning the government debt policy. For example, the cost and risk profile for various duration objectives is calculated. The choice of a particular duration objective thus reflects a weighing of costs against risk that is deemed appropriate by the central government.

COST-AT-RISK FOR THE DOMESTIC CENTRAL-GOVERNMENT DEBT Chart 5.2.4



So far, the CaR analysis has only been made for the domestic debt, which accounts for most of the government debt. In 2003, the other portfolios of the government debt will be implemented in the CaR model.

Chart 5.2.4 presents CaR figures for the interest costs on the domestic debt up to 2007. The CaR figures are defined in Box 5.2. The calculations are based on the assumption of an average annual budget surplus of approximately DKK 10 billion. The expected interest costs are by and large smooth during the period. The assumption of a government-budget surplus reduces the government debt, and thereby the expected interest costs. On the other hand, the CaR interest rates are increasing from the current low level. The starting point of the simulated CaR interest rates is based on the current level, but over time the simulated rates move towards an equilibrium based on an historical average. According to the CaR calculations, the expected interest costs on the domestic government debt are DKK 38.4 billion in 2003, compared to DKK 37.4 billion in 2007.

The uncertainty attached to the calculated estimates of interest costs increases with the time horizon, since a larger proportion of the existing debt will be refinanced at unknown future interest rates. Measured by relative CaR, the uncertainty regarding interest-rate costs is DKK 6.6 billion in 2007. With a probability of 95 per cent, the interest costs in 2007 will not exceed DKK 44.0 billion (absolute CaR). The CaR figures are based on an assumption that the central government transacts interest-rate swaps in order to achieve a duration of around 3.5 years, in accor-

CaR DEFINITIONS Box 5.2

In the CaR model, the expected costs are defined as the mean value of the calculated future costs. The interest-rate risk is summarised in two measures: absolute and relative CaR. 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 thus indicates the maximum increase in costs in relation 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.

dance with the mid-point of the duration band for 2003. Shortening duration reduces the expected costs while imposing greater risk. If duration is reduced by 0.5 years, the expected annual costs fall by an average of DKK 0.5 billion. On the other hand, relative CaR increases by DKK 1.8 billion on average. The lower costs are due to the normally positive slope of the yield curve. The increased interest-rate risk at a shorter duration is a result of the greater exposure to short-term interest rates.

EXCHANGE-RATE RISK 5.3

The exchange-rate risk on the foreign government debt is the risk that the value of the debt in kroner increases as a consequence of a change in interest rates. All foreign debt is exposed in euro. In view of Denmark's fixed-exchange-rate policy vis-à-vis the euro this ensures a low exchange-rate risk. Foreign government borrowing is undertaken in order to maintain an adequate foreign-exchange reserve, which moreover is predominantly placed in euro. The objective is not to raise loans in one currency and subsequently place the proceeds in another currency.

CHAPTER 6

The Social Pension Fund

SUMMARY 6.1

The Social Pension Fund (SPF) was established in 1970 by the Social Pension Fund Act, whereby a special national retirement pension contribution was introduced. The proceeds were allocated to SPF and 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. The management of SPF's capital is undertaken by Government Debt Management at Danmarks Nationalbank.

At the close of 2002 the nominal value of SPF's bond portfolio was DKK 141.4 billion of which government bonds accounted for 80 per cent. The remainder was mainly mortgage-credit bonds. At the close of 2002, the duration of SPF's portfolio was 3.7 years.

SPF's income from interest totalled DKK 9.6 billion in 2002. An amount of DKK 7.9 billion was transferred to the Ministry of Social Affairs to cover pension improvement measures, while SPF's pension-fund tax amounted to DKK 2.0 billion.

SPF's CAPITAL 6.2

Each year, the Danish Finance Act stipulates an amount to be transferred from SPF to the Ministry of Social Affairs to cover pension improvement measures. SPF's capital is placed in stock-exchange-listed bonds, primarily government bonds. SPF does not invest in on-the-run government issues. The principles for the management of SPF's capital are described in Box 6.1.

In 2002 SPF's income from interest was DKK 9.6 billion, cf. Table 6.2.1. An amount of DKK 7.9 billion was transferred to the Ministry of Social Affairs to cover pension improvement measures, while SPF's pension-fund tax amounted to DKK 2.0 billion. Bonds for a total of DKK 23.7 billion were drawn and sold.

In 2002, SPF bought 6 per cent bullet loans 2009 for a nominal value of DKK 12.7 billion, 6 per cent bullet loans 2011 for a nominal value of DKK 7.7 billion, and 5 per cent bullet loans 2005 for a nominal value of DKK

MANAGEMENT OF SPF — Box 6.1

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

SPF is part of the remit of the Ministry of Social Affairs and the Ministry of Finance. The management of SPF's capital is handled by a committee with representatives from the Ministry of Finance, the Ministry of Social Affairs and Danmarks Nationalbank. The management of the assets of SPF is handled by Government Debt Management at Danmarks Nationalbank.

The principles for the management of SPF's capital are set out in a regulation. The regulation states 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. Moreover, the regulation states that the capital is to be invested primarily in government bonds. It is the intention for SPF's purchases to take place without significantly affecting the formation of interest rates in the bond market.

The interest on SPF's bond portfolio after payment of pension-fund tax is used to finance pension improvement measures or is allocated to SPF. SPF's core capital can be used to finance pension improvements, should the cost 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.

3.0 billion. In May, the central government extraordinarily issued in 9 different government securities, each for a nominal value of DKK 1 million, in view of the proposed EU directive on taxation of interest income, cf. the Appendices. The securities were issued to SPF. Finally, SPF purchased index-linked bonds for DKK 0.2 billion at nominal indexed value.

SPF's REVENUE AND EXPENDITURE — Table 6.2.1

DKK billion	2001	2002
Revenue		
Interest, etc.	9.3	9.6
Expenditure		
Transfer to the Ministry of Social Affairs	7.9	7.9
Pension-fund tax	1.4	2.0
Net	-0.0	-0.3

Note: Figures for 2001 are taken from central-government accounts while figures for 2002 are provisional figures from the central-government accounts.

BOND PORTFOLIO OF SPF, YEAR-END — Table 6.2.2

DKK billion	1997	1998	1999	2000	2001	2002
Nominal value	146.8	143.6	141.6	139.6	141.1	141.4
Market value	157.4	159.8	150.7	149.1	150.5	155.0

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

At the close of the year SPF's bond portfolio totalled DKK 141.4 billion at nominal value and DKK 155.0 billion at market value, cf. Table 6.2.2. The portfolio's market value increased by DKK 4.5 billion during 2002. This increase is primarily related to the falling level of interest rates.

Government bonds account for 80 per cent of the total bond portfolio, cf. Table 6.2.3. SPF owns a relatively large proportion of the total outstanding volume in several government securities series. The remainder of the portfolio predominantly comprises mortgage-credit bonds and index-linked bonds.

SPF's portfolio distributed by year of maturity is presented in Chart 6.2.1. The ongoing management of SPF's capital is aimed at smoothing the placement requirement.

At the close of 2002 the duration of SPF's bond portfolio was 3.7 years, cf. Table 6.2.4. The duration of the portfolio of callable mortgage-credit bonds has decreased as a consequence of the falling level of interest rates, which increases the conversion risk.

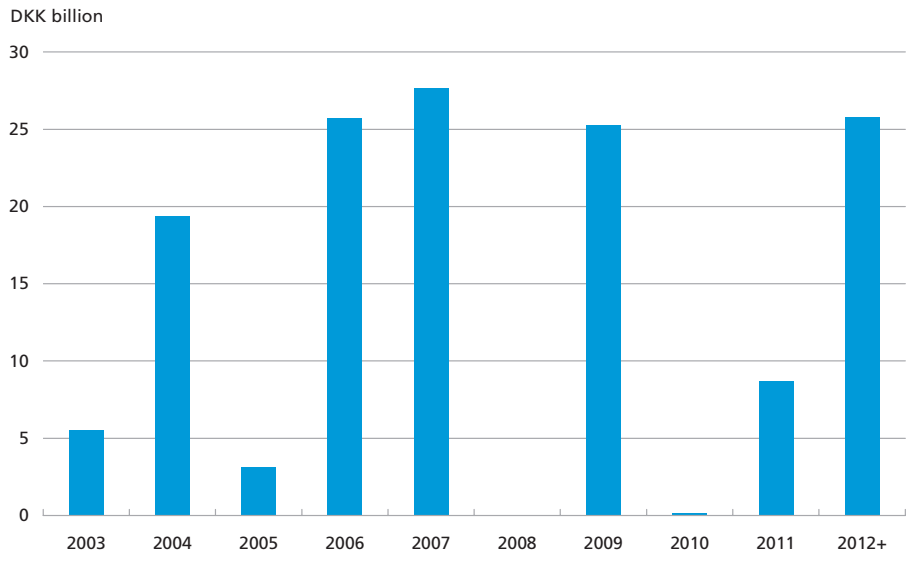
SPF's BOND PORTFOLIO DISTRIBUTED BY BOND TYPES, END-2002 — Table 6.2.3

Nominal value	DKK billion	Per cent
5 per cent Treasury notes 2003	0.0	
8 per cent bullet loans 2003	5.5	
7 per cent bullet loans 2004	18.2	
5 per cent bullet loans 2005	3.0	
8 per cent bullet loans 2006	25.7	
7 per cent bullet loans 2007	27.6	
6 per cent bullet loans 2009	24.4	
6 per cent bullet loans 2011	7.7	
7 per cent bullet loans 2024	0.0	
10 per cent serial loans 2004	1.1	
Government bonds, total	113.1	80.0
Mortgage-credit bonds, etc.[1]	20.5	14.5
Index-linked bonds[2]	7.8	5.5
Total	141.4	100.0

[1] Mortgage-credit bonds, etc. comprise mortgage-credit and in addition municipal, Fisheries Bank and Ship Credit Fund bonds that are not index-linked bonds.

[2] Indexed value.

SPF's BOND PORTFOLIO DISTRIBUTED BY YEAR OF MATURITY, END-2002, NOMINAL VALUE — Chart 6.2.1



SPF's SECURITIES LENDING FACILITY 6.3

SPF's securities lending facility comprises SPF's government securities that are bullet loans. In 2002, SPF's lending in 7 per cent bullet loans 2007 was DKK 17.0 billion, in 8 per cent bullet loans 2006 DKK 0.5 billion, and in 5 per cent bullet loans 2005 DKK 2.6 billion. The securities may be borrowed for a period from 1 to 5 trading days. Lending requires a fee to SPF and is collateralised by other government securities. The fee income from the facility totalled DKK 0.6 million in 2002. SPF's securities lending facility supports liquidity in off-the-run government issues. The terms for SPF's securities lending facility are presented in the Appendices.

DURATION OF SPF's BOND PORTFOLIO — Table 6.2.4

Year	End-2001	End-2002
Government bonds	3.7	3.8
Mortgage-credit bonds, etc.	2.8	0.7
Index-linked bonds	9.6	10.3
Total portfolio	3.8	3.7

Note: For callable mortgage-credit bonds an option-adjusted duration is used, and the duration of index-linked bonds is calculated using an inflation assumption of 2 per cent per year.

CHAPTER 7

Government Debt and Government-Guaranteed Entities

SUMMARY 7.1

At the end of 2002, the government debt was DKK 520.6 billion, which is an increase of DKK 6.5 billion from 2001. The reason is an increase in re-lending by DKK 6.7 billion. The gross general-government debt compiled in accordance with the EU Treaty is estimated at DKK 614 billion, or 44 per cent of GDP, at the close of 2002.

In 2002 the interest costs on the central-government debt amounted to DKK 30.7 billion, which is a decrease by DKK 5.0 billion from the previous year. The decrease in interest costs was due to a lower average interest rate on the debt.

There have been no major changes in the ownership distribution of domestic government securities. At the end of 2002 the non-resident ownership share of government securities was 32 per cent.

At the close of 2002 the government-guaranteed entities held a total debt of DKK 77.8 billion subject to government guarantees.

Re-lending totalled DKK 12.5 billion at the end of 2002.

GOVERNMENT DEBT AND INTEREST COSTS 7.2

In this chapter the assets and liabilities of the central government which are managed by Government Debt Management at Danmarks Nationalbank are described. In other contexts, e.g. for statistical purposes, other concepts of the central-government debt can be used. There are also broader definitions of government debt which include the debt of local government, etc. An example of an often-used broader concept of the debt is the gross debt of the general-government sector (EMU debt). This concept is presented in Section 7.3.

Government debt

The central-government debt is compiled as the total domestic and foreign debt of the central government less the assets of the Social Pension

NET BORROWING AND CHANGES IN THE GOVERNMENT DEBT, 1999-2003 Table 7.2.1

DKK billion	1999	2000	2001	2002	2003
Net borrowing					
Domestic borrowing	-7.1	-27.8	-14.0	8.6	-7.3
Foreign borrowing[1]	1.5	-5.2	-1.0	-0.1	-0.0
Drawing on the central government's account at Danmarks Nationalbank	-4.8	3.9	-8.3	-7.1	16.7
Net borrowing at market value	-10.3	-29.1	-23.3	1.4	9.3
Capital losses					
Domestic capital losses on issue[2]	-0.8	3.2	1.0	5.3	2.0
Foreign capital losses on issue[2]	0.0	-0.0	-0.1	0.0	0.0
Exchange-rate adjustments	0.2	0.4	-0.4	-0.0	0.0
Capital losses, total	-0.6	3.6	0.6	5.4	2.0
Net borrowing at nominal value	-11.0	-25.5	-22.7	6.8	11.3
Balance-sheet items, year-end, nominal value					
Domestic debt	648.6	624.0	611.0	624.9	619.6
Foreign debt	90.0	85.2	83.8	83.7	83.7
Central government's account at Danmarks Nationalbank [3]	-35.2	-31.3	-39.6	-46.7	-30.0
The Social Pensionfund[4]	-141.6	-139.6	-141.1	-141.4	-139.8
Government debt at nominal value	561.7	538.3	514.1	520.6	533.5
Outstanding re-lending[5]	1.4	3.5	5.8	12.5	25.3
Government debt adjusted for re-lending	560.4	534.9	508.3	508.1	508.2

Source: Central-government accounts 1999, 2000 and 2001. For 2002, provisional figures from the central-government accounts. The forecast figures for 2003 are based on the Finance Act for 2003.

[1] For 1999 including proceeds of DKK 0.5 billion as a consequence of the early redemption of 2 foreign interest-rate swaps. The amount is set off against 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 2002, 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.

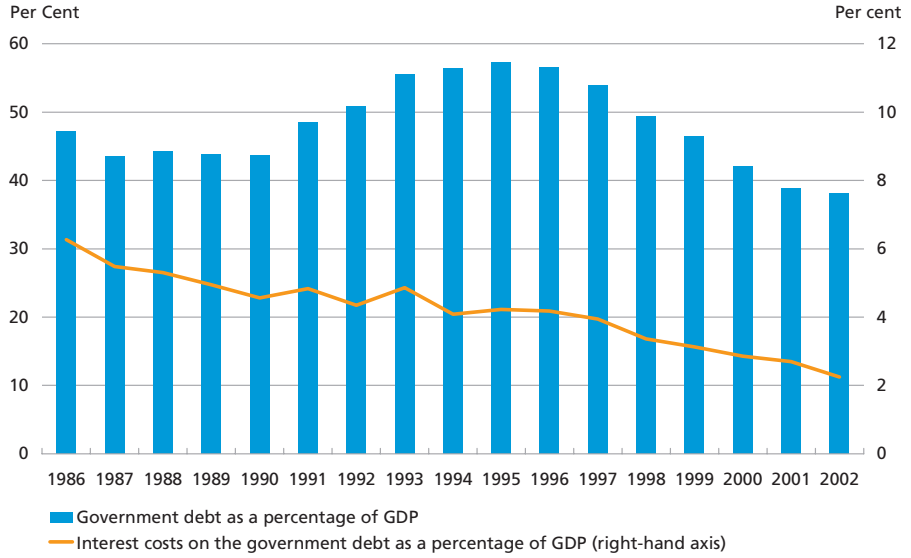
[5] Re-lending to Ørestadsselskabet, A/S Storebælt and A/S Øresund.

Fund (SPF) and the balance of the central government's account with Danmarks Nationalbank, cf. Box 7.1.

The central-government debt has been falling since 1997, but increased by DKK 6.5 billion against the previous year, closing 2002 at DKK 520.6 billion, cf. Table 7.2.1. The increase in the central-government debt was due to an increase in re-lending, cf. the following section. Central-government debt as a ratio of GDP decreased slightly in 2002 from the previous year, and since 1995 has been reduced from 57 to 38 per cent, cf. Chart 7.2.1.

Re-lending constitutes central-government loans to first and foremost Ørestadsselskabet, A/S Storebælt and A/S Øresund, which together ac-

DEVELOPMENT IN GOVERNMENT DEBT AND INTEREST COSTS Chart 7.2.1



count for by far the majority of total re-lending by the central government, cf. Box 7.2. The central government finances re-lending by issues in on-the-run securities, thereby increasing the gross financing requirement, and thereby the central government's liabilities. If central-government assets related to re-lending are included in the compilation of the central-government debt, the debt is more or less unchanged in 2002.

Interest costs

Interest costs on the central-government debt in 2002 totalled DKK 30.7 billion, equivalent to a decrease of DKK 5.0 billion from 2001, cf. Table 7.2.2. In 2003 a reduction of interest costs by DKK 2.9 billion against 2002 is expected.

The decline in the central government's interest costs in 2002 is attributable to the fact that lower market interest rates have enabled the central government to refinance debt at relatively high interest rates with debt at lower interest rates. Box 7.1 presents the compilation of the interest costs on the central-government debt.

THE GROSS DEBT OF THE GENERAL GOVERNMENT (EMU DEBT) 7.3

Besides the central-government debt, the general government's gross debt, as compiled in Table 7.3.1, also includes the local-government debt, etc. The central-government debt accounts for most of the gross debt of the general government.

INTEREST COSTS ON THE GOVERNMENT DEBT, 1999-2003 Table 7.2.2

DKK billion	1999	2000	2001	2002	2003
Domestic debt					
Interest	43.7	42.4	39.8	37.4	33.6
Distributed capital losses on issue	2.9	2.3	2.7	2.3	2.2
Interest costs, total	46.6	44.7	42.5	39.7	35.8
Foreign debt					
Interest	4.0	3.9	4.0	3.2	3.1
Realised exchange-rate losses on redemptions	-0.3	0.0	0.8	-0.7	0.1
Distributed capital losses on issue	0.1	0.0	0.0	0.0	-0.0
Interest costs, total	3.8	4.0	4.7	2.6	3.2
Interest concerning					
Central government's account at Danmarks Nationalbank	-1.8	-2.1	-2.2	-1.9	-1.8
The Social Pension Fund	-10.8	-10.0	-9.3	-9.6	-9.3
Total	37.8	36.6	35.8	30.7	27.8

Note: Income from interest from re-lending is not included in the compilation of interest costs.
Source: Central-government accounts 1999, 2000 and 2001. For 2002, provisional figures from the central-government accounts. For 2003, Finance Act.

The gross 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 (SPF) may be deducted from the debt, whereas this is not the case for SPF's portfolio of mortgage-credit bonds, etc. and the balance of the central government's account with Danmarks Nationalbank.

The European Commission and the Ecofin Council monitor the development in the budgetary situation of the member states in order to

BUDGET BALANCE AND DEBT OF THE GENERAL GOVERNMENT, 1999-2003 Table 7.3.1

	1999	2000	2001	2002	2003
General-government balance in DKK billion	38.8	31.7	36.6	21.4	24.6
General-government balance as a percentage of GDP	3.2	2.4	2.7	1.5	1.7
Gross debt in DKK billion	639.7	606.3	601.4	614.0	606.0
Gross debt as a percentage of GDP	52.7	46.8	44.7	44.3	42.0

Source: Economic Survey, December 2002.

COMPILATION OF CENTRAL-GOVERNMENT DEBT AND INTEREST COSTS Box 7.1

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 compilation of the central-government debt only includes liabilities related to re-lending, i.e. government issues to finance re-landing, whereas the central government's claims on entities that receive re-lending are not included. Re-lending thereby in isolated terms contributes to increasing the central-government debt. The central-government debt adjusted for re-lending is the central-government debt less outstanding re-lending to Ørestadsselskabet, A/S Øresund and A/S Storebælt.

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 is compiled as domestic and foreign borrowing and drawing on the central government's account with Danmarks Nationalbank. Net borrowing at nominal value comprises borrowing at market value with addition of value adjustments. In isolated terms, re-lending increases net borrowing by the central government because the central government finances re-lending by issuing government debt.

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

Interest costs related to the central-government debt comprise interest, distributed capital losses on issue, and realised exchange-rate losses. Interest on government issues to finance re-lending is thus included in interest costs. On the other hand, interest income to the central government in connection with re-lending is not included in the compilation of interest costs in Table 7.2.2. Both interest costs and interest income on re-lending are included in the compilation of the net cash balance.

Interest and capital losses on issue are accrued on the basis of an earnings principle. The interest costs are 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 value and market value on issue, and is distributed over the time to maturity of the loan.

assess whether budgetary discipline is maintained. This evaluation is based on the criteria which are set out in the EU Treaty and in the Stability and Growth Pact. According to the stability and growth pact all EU member states must aim at a general-government budget that in the medium term is close to balance, or shows a surplus. According to the EU Treaty, the general-government deficit as a general rule may not exceed 3 per cent of GDP, while the gross general-government debt as a general rule may not exceed 60 per cent of GDP.

At the close 2002 the gross general-government debt was estimated at DKK 614 billion, or 44 per cent of GDP.

RE-LENDING OF GOVERNMENT SECURITIES Box 7.2

A/S Storebælt, A/S Øresund and Ørestadsselskabet have access to a re-lending facility, whereby the companies borrow from the central government.

The central government grants re-lending to precisely mirror an existing government securities series. Coupon, due date and expiry date will thus be identical with those for an existing series. The companies must pay a price for the loan equivalent to the average price of the underlying government securities for "member trades" on the Copenhagen Stock Exchange three trading days before the loan is settled.

The list of government securities in which the central government can grant loans is called the re-lending list. The list is determined by Government Debt Management at Danmarks Nationalbank, and includes government bonds and Treasury notes that are on-the-run issues, as well as a number of other government bonds.

Re-lending by the central government to the companies increases the gross financing requirement in the year of re-lending, and is therefore financed by on-the-run government issues. Re-lending thus does not entail issues in government securities that are off-the-run.

The re-lending facility should be considered as an offer to the companies. As the government already guarantees the debt of the companies, direct lending by the central government does not entail any further credit risk.

OWNERSHIP DISTRIBUTION OF DOMESTIC GOVERNMENT SECURITIES 7.4

A broad investor base for government securities supports the build-up of a liquid government securities market. A broad investor base can help to facilitate sales of government securities.

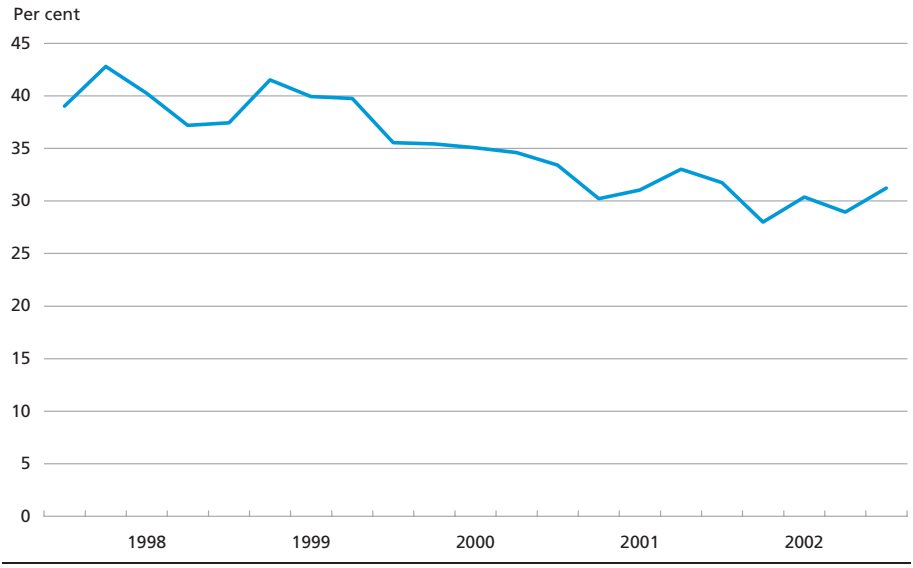
OWNERSHIP DISTRIBUTION OF DOMESTIC GOVERNMENT SECURITIES, END OF QUARTER Table 7.4.1

Per cent of nominal outstanding volume	4th qtr. 01	1st qtr. 02	2nd qtr. 02	3rd qtr. 02	4th qtr. 02
Non-financial companies	4	4	4	3	3
Financial institutions, including Danmarks Nationalbank	23	27	28	26	22
Insurance companies and pension funds	13	14	14	15	16
General-government sector	22	22	22	22	22
Private, non-dividend-paying institutions	1	1	1	1	1
Households	2	2	2	2	1
Non-residents	32	28	27	29	32
Not stated	3	3	3	3	3
Total	100	100	100	100	100
Total nominal outstanding value, DKK billion	621.8	619.1	632.9	666.7	642.7
Total market value, DKK billion	657.6	644.1	662.6	711.5	691.1

Note: The Table shows percentage of nominal outstanding value. Danmarks Nationalbank has adjusted the figures for repurchase agreements between Danish banks and non-residents. Moreover, adjustments are made on an estimated basis for the residents' holdings on safekeeping accounts abroad.
Source: Statistics Denmark based on data from VP Securities Services.

NON-RESIDENT OWNERSHIP SHARE OF DOMESTIC GOVERNMENT SECURITIES, END OF QUARTER

Chart 7.4.1



Note: Calculated on the basis of holdings at market value.

The ownership distribution of Danish krone-denominated government securities is presented in Table 7.4.1. The ownership distribution has been by and large unchanged throughout 2002. This includes the share owned by non-residents, amounting to 32 per cent at the end of 2002. Excluding the Social Pension Fund's holdings of government securities in the figures for krone-denominated government securities, the share owned by non-residents was 39 per cent at the end of 2002. Viewed over a longer period, the foreign ownership share has been declining, cf. Chart 7.4.1.

GOVERNMENT-GUARANTEED ENTITIES 7.5

The central government provides guarantees for the borrowing and related financial transactions of a number of companies. These are typically structured as government-owned limited-liability companies, and their tasks are defined in an act or legal document which gives access to government guarantees for loans within a certain limit. The board of directors and management of each government-guaranteed entity are responsible for the entity's financial transactions, risk management, etc. The guidelines for borrowing by government-guaranteed entities are described in Box 7.3.

GUIDELINES FOR BORROWING BY GOVERNMENT-GUARANTEED ENTITIES Box 7.3

The guidelines for borrowing by government-guaranteed entities are laid down 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 types. The list is drawn up and updated by Danmarks Nationalbank.

The list of acceptable loan types is based on the following criteria:

- Transactions must be customary, i.e. known and used in the market by reputed borrowers
- Transactions must be built up from simple elements that make them transparent. This applies to transactions before swaps, as well as to swaps and other derivatives
- It is emphasised that the management of the credit risk should take place on the basis of a rating-based limit system
- It is recommended to take steps to establish agreements on provision of collateral (CSA agreements) in order to minimise the credit risk at all times
- The currency exposure should as a general rule be limited to euro.

A government guarantee is attractive to the borrower since it reduces borrowing costs. When a loan is guaranteed by the central government, the lender's credit risk on the loan will be reduced, so that the lender will be willing to lend at a lower interest rate.

The government-guaranteed entities are A/S Storebælt, A/S Øresund, Øresundsbron (Øresund Bridge), Hypotekbanken (the Mortgage Bank of the Kingdom of Denmark), DSB (the Danish State Railways) and Danmarks Radio (the Danish Broadcasting Corporation).

Together with Sweden, the Danish central government guarantees the debt of Øresundsbron. The borrowing, etc. of Øresundsbron is subject to guidelines laid down by Sweden and Denmark. These guidelines correspond to those for the other entities.

Overall, the government-guaranteed debt for the entities at the close of 2002 totals DKK 77.8 billion, cf. Table 7.5.1.

GOVERNMENT-GUARANTEED DEBT Table 7.5.1

DKK billion	End-2002
Hypotekbanken	5.6
A/S Storebælt	37.1
A/S Øresund	6.4
Øresundsbron	21.5
DSB and DSB S-tog A/S	6.5
Danmarks Radio	0.8
Total	77.8

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

In addition to the above entities, Ørestadsselskabet is also subject to the guidelines for government-guaranteed entities. However, since the entity is a general partnership of which the central government is a co-owner no government guarantee is provided for the entity's borrowing.

Ørestadsselskabet has had access to re-lending for a number of years. The extent of re-lending to the entity was DKK 9.5 billion at the end of 2002. In 2002, A/S Storebælt and A/S Øresund gained access to borrow via re-lending. In 2002, the two government-guaranteed entities took up re-lending for a total of DKK 3.0 billion. Re-lending is described in further detail in Box 7.2.

At the end of 2002, the Ministry of Finance launched a project under the heading "consolidation of financial and risk management" in which Government Debt Management at Danmarks Nationalbank participates. Part of the project is to map out the area of government guarantees and to consider improvements to the management of government guarantees. In this connection the handling of government guarantees will be compared to best practice within this field.

Special-Topic Section

CHAPTER 8

Liquidity in the Danish Government Securities Market

SUMMARY 8.1

The government debt policy is based on the assumption that investors are willing to pay a premium for high liquidity. By building up large liquid series in certain maturity segments in the market for government bonds the central government can thus achieve a *liquidity premium* and cover the borrowing requirement at a lower interest rate.

There is no clear, objective measure of liquidity and the price significance of liquidity. To obtain an accurate picture of liquidity in a market, various dimensions of liquidity, and indicators thereof, must be considered.

This chapter reviews dimensions of liquidity, indicators of liquidity and various alternatives concerning the price effect of liquidity. The focus is on measurable liquidity indicators (bid-ask spread, turnover, rate of turnover, issue size, etc.) in the Danish government securities market, rather than more theoretical explanations of factors affecting liquidity. There are various proposed alternatives concerning the liquidity premium for Danish government securities compared to government-guaranteed issues and to less liquid government securities. Finally, techniques and results from the most recent studies of liquidity in other bond markets are discussed.

The review indicates that Danish government securities are highly liquid, and confirms the existence of a liquidity premium in the Danish government securities market. Securities with a large outstanding volume and benchmark status are typically the most liquid. Moreover, on-the-run securities quickly become more liquid in the expectation of benchmark status. The relative liquidity premium for benchmarks and on-the-run securities in relation to less liquid off-the-run government securities is assessed to be positive, but relatively modest.

LIQUIDITY IN BRIEF 8.2

It is characteristic of a liquid market that market participants can quickly and at any time undertake substantial transactions that have no signifi-

cant impact on prices. A liquid bond is furthermore characterised by a high turnover rate at low transaction costs.

The concept of liquidity is often divided into the dimensions of tightness, depth, immediacy and resiliency.

- Tightness indicates the costs of selling a bond immediately after purchase
- Depth is the size of the amounts that can be traded without affecting the price
- Immediacy shows how quickly an agent can effect a trading decision (find a counterparty)
- Resiliency indicates how quickly the market is "restored" after a trade.

A liquid market is thus characterised by great depth, a lack of tightness, high immediacy and high resiliency. However, it is difficult to compile the four dimensions individually, since they may be mutually dependent.

The aforementioned characteristics will typically have an impact on price, since high liquidity is attractive to investors who will therefore be willing to pay a liquidity premium for holding more liquid rather than less liquid bonds.

INDICATORS OF LIQUIDITY IN THE DANISH MARKET FOR GOVERNMENT SECURITIES 8.3

The liquidity indicators applied most frequently are issue size, bid-ask spread and turnover. These are reviewed below with regard to the Danish market for government securities. The relationship between indicators and dimensions of liquidity, and the various factors affecting liquidity, are also briefly discussed.

Box 8.1 describes the data applied to the different liquidity indicators.

Issue size

The *size* of a loan primarily affects the depth of the market. The larger an issue, the less the price is affected by trades of a given size. Issue size is also of great significance to institutional investors and many major foreign investors. They often have an internal investment policy, or are subject to legislative requirements, prescribing a minimum turnover, a minimum outstanding volume, or a maximum ownership interest in the securities in which investment takes place. The objective of this investment policy is for the investor to move out of a given position without affecting the price.

Issuers often focus on issue size to support liquidity, since to some degree the issuer can determine the size of an issue.

LIQUIDITY INDICATORS – DATA Box 8.1

In this chapter day-to-day data for prices, outstanding volumes and turnover in the Danish government securities market in the period 1996-2002 is used. Furthermore, measures of non-residents' ownership share and non-residents' purchases of government bonds in 2001/2002 are used:

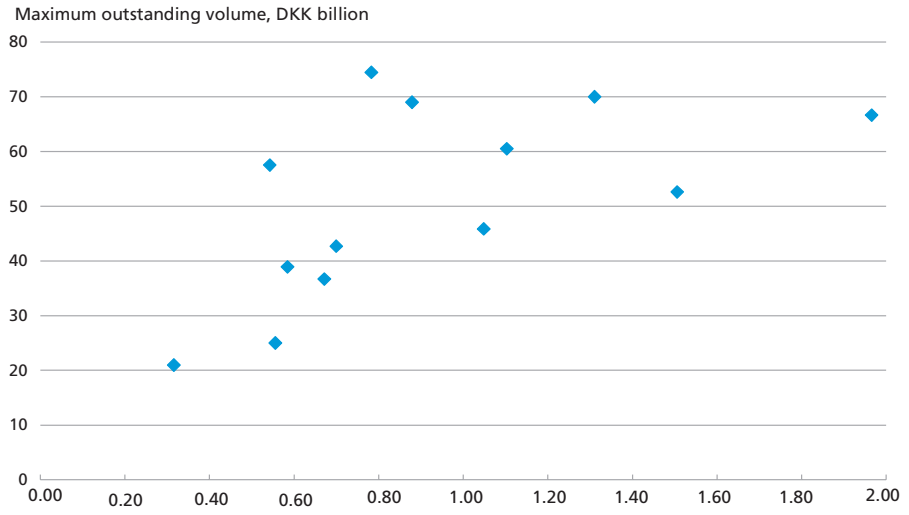
- *Issue size*: Nominal outstanding volume. It is most relevant to consider the maximum outstanding volume before buy-back commences, since this illustrates the size to which a series is built up[1]
- *Bid-ask spread*: The difference between bid and ask prices based on average bid and ask quotes on closing (5.00 p.m. in Bloomberg). These are thus not actually traded prices, but quoted indicative prices. This ensures continuity in the data series, even when there is no trading[2]
- *Turnover*: Nominal value and market value of total turnover (member trading as well as non-member trading) except repo-based trades on the Copenhagen Stock Exchange in the period from 5.00 p.m. to 5.00 p.m. Central-government bond issuance is part of the turnover figures[3]
- *Non-residents' ownership share and purchase of government securities*: Non-residents' holdings of government bonds as a percentage of nominal outstanding volume gives an indication of non-resident interest in Danish government bonds. The change in non-residents' holdings of government bonds in individual series shows which securities non-residents buy, and which series they sell.[4]

Sources: 1 Danmarks Nationalbank and the Copenhagen Stock Exchange.
2 Bloomberg.
3 Copenhagen Stock Exchange.
4 The figures are based on Statistics Denmark's sector distribution of the circulating securities based on data from VP Securities Services. Danmarks Nationalbank has adjusted for repurchase transactions between Danish banks and non-residents. Furthermore, estimated adjustments are made for residents' holdings in custody accounts abroad.

Danish government bonds are typically built up to an issue size of DKK 40-80 billion, making them the largest issues in the Danish bond market. In October 2002, there were 8 series in the Danish bond market with an outstanding volume exceeding DKK 50 billion, of which the seven largest were government bonds. The 10-year bonds typically have the largest outstanding volume. Due to their benchmark status in the Danish market, and in view of market-maker agreements, the strategy is for the 10-year bonds to be built up to a volume of at least DKK 60 billion. In a situation with a surplus on government finances, the central government has maintained a certain issue size, and thereby liquidity, in the on-the-run government securities by conducting an active buy-back policy, keeping on-the-run securities open for a longer period of time, and by issuing in fewer maturity segments.

A simple comparison of issue sizes and turnover shows that the largest issues are typically also the most traded, cf. Chart 8.3.1. However, it is difficult to draw more specific conclusions regarding liquidity in series

ISSUE SIZE AND TURNOVER Chart 8.3.1



Note: Maximum outstanding volume in the period 1996-2002 indicates the nominal issue size achieved prior to commencement of buy-backs. Average daily turnover is based on data in the period 1996-2002.
Source: Copenhagen Stock Exchange.

with an outstanding volume of DKK 80 billion compared to issues with an outstanding volume of e.g. DKK 50 billion.

Since both size and turnover contribute to market depth, the largest and most traded securities will usually also be the most liquid, although issue size alone does not ensure liquidity. A large outstanding volume can thus be termed a *necessary,* but not sufficient, condition for liquidity.

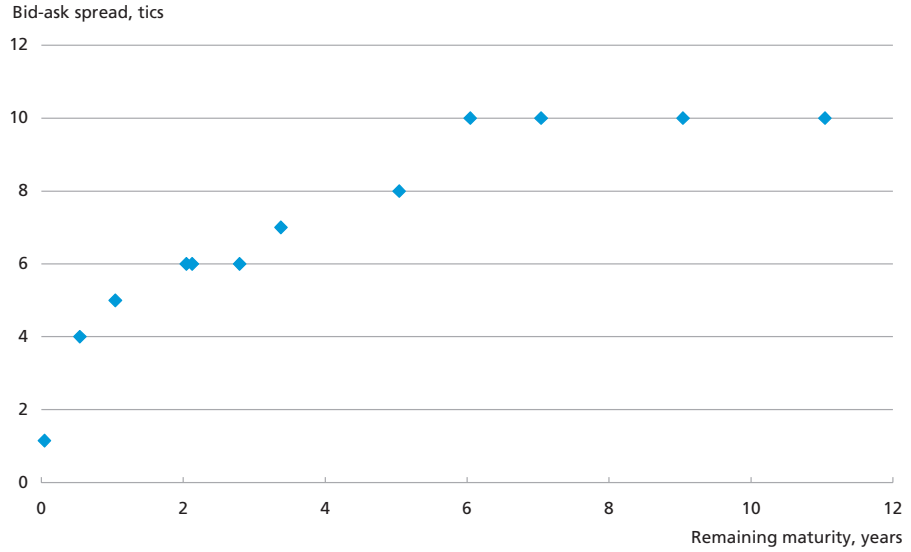
Bid-ask spread

Bid-ask spreads, i.e. the difference between bid and ask prices, are an indicator of market tightness. The narrower the bid-ask spread, the less expensive it is to quickly leave a position.

In Denmark, a market-maker agreement in the government bond market exists whereby market-makers are mutually obliged to quote two-way prices for a particular amount. An agreement of this type ensures a certain immediacy in the overall market, and limits tightness.

For a given maturity, bid-ask spreads will in theory be narrower for highly liquid securities than for less liquid securities. This is because a market-maker must hold a stock, or be certain that it can buy the securities quickly in order to honour the obligation to sell a given paper. For more liquid securities, the probability of being able to buy the paper for the purpose of further sale is greater, and the need to have a stock, and

BID-ASK SPREADS IN DANISH GOVERNMENT SECURITIES, OCTOBER 2002 Chart 8.3.2



Note: Bid-ask spreads are based on average bid and ask quotes at close of business. Average for October 2002.
Source: Bloomberg.

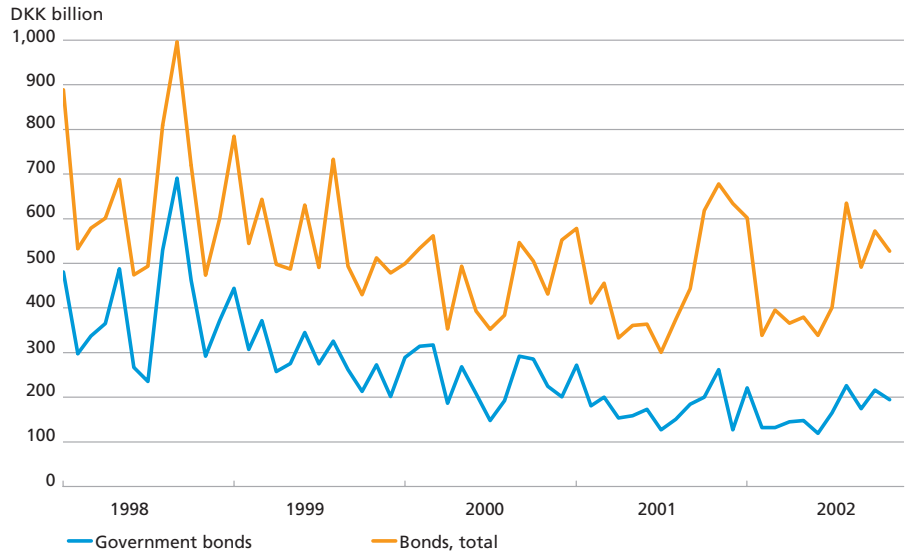
thereby stockpiling costs, is lower. The central government's securities lending facility e.g. contributes to reducing the stockpiling requirement and thereby supports liquidity. The spread ventured by a market-maker for a given maturity thus reflects an assessment of liquidity in the market.

Bid-ask spreads in the Danish market primarily reflect the outcome of market-maker agreements as well as a tendency for spreads to increase with higher remaining maturity, cf. Chart 8.3.2.

This relation between spread and remaining maturity stems from the risk of price changes assumed by market makers on quoting prices. This risk increases with price volatility in the securities in which prices are quoted. Volatility typically increases with remaining maturity. The greater risk for securities with longer maturities is reflected in wider bid-ask spreads.

The spread in the Danish market is around 10 tics (difference between bid and ask, 1 tic corresponding to 1/100 price unit) in the 10-year segment, 8 tics in the 5-year segment, and 6 tics in the 2-year segment, cf. Chart 8.3.2. These spreads are based on average quoted prices and are thus indicative, cf. Box 8.1. The actual spreads in the professional market are normally somewhat narrower. For comparison, Swedish 10-year government bonds are quoted in a spread of approximately 12 tics, while spreads in the euro area are narrower as a consequence of electronic market making in MTS, where best bid and ask prices are shown.

MONTHLY TURNOVER IN THE DANISH BOND MARKET, 1998-2002 Chart 8.3.3



Source: Copenhagen Stock Exchange.

Turnover

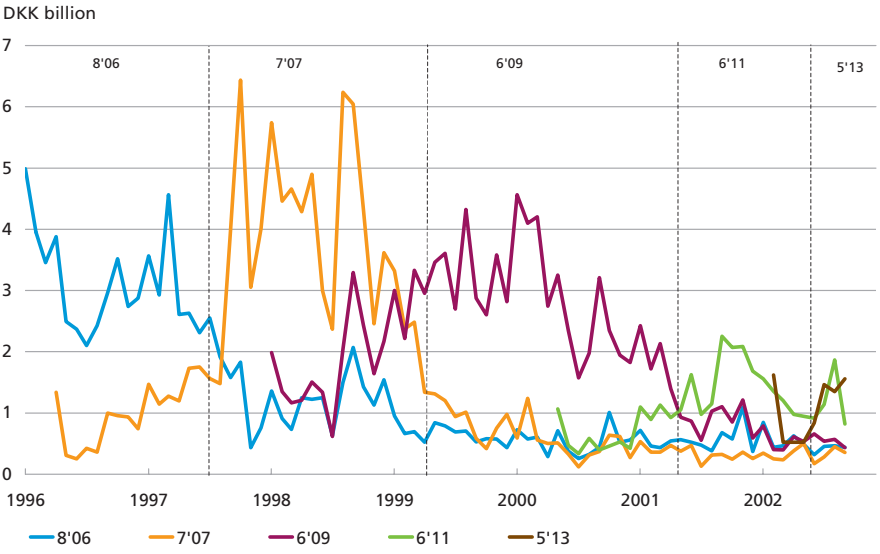
Turnover, i.e. how much a given bond is traded, is an indicator of both depth and immediacy in the market. High turnover shows that a bond is subject to current price quoting and trading, and thereby indicates the liquidity and tradability of a bond.

Turnover is a frequently used indicator of liquidity for which there is well-documented data in Denmark, since all trades are reported to the Copenhagen Stock Exchange. In liquidity terms, however, turnover figures must be interpreted with some caution, since they express only the scale of executed trades, but not potential trades. A bond can e.g. be liquid and tradable without necessarily being traded substantially, as long as the market is willing to execute a substantial number of trades.

The central government is a leading player in the Danish bond market, and the large government bond issues are the most traded in the Danish market. This in itself bears witness to high liquidity in the market for government bonds.

During the past 5 years, the absolute bond turnover in the Danish market has been declining, cf. Chart 8.3.3. The number of trades in the overall Danish bond market has also fallen from almost 1.6 million in 1997 to about 1 million in 2001, while the circulating volume of bonds and the number of securities codes traded on the stock exchange is by and large unchanged.

AVERAGE DAILY TURNOVER IN THE 10-YEAR SEGMENT, 1996-2002 Chart 8.3.4



Note: The dashed lines indicate change of benchmark. The current benchmark in each period is noted at the top of the Chart.
Source: Copenhagen Stock Exchange.

One explanation for the decline in turnover is consolidation in the financial sector, while another is market developments and stability vis-à-vis the euro area. The consolidation in the financial sector has e.g. meant that today there are fewer, but larger, active banks and securities dealers in the bond market. The individual transactions have become larger, and to an increasing degree the banks take bonds onto their own books and hedge risks via other instruments. The stability vis-à-vis the euro area has resulted in fewer trades into and out of krone-denominated bonds, conditioned by market expectations of the krone rate and interest-rate differential, and thereby lower turnover.

The distribution of turnover among the various government bonds reflects a tendency for concentration in the benchmark securities. The concentration is most significant in the 10-year segment, where the benchmark bond in each period is the most traded bond, cf. Chart 8.3.4. Moreover, on-the-run issues also quickly achieve good liquidity, in expectation of achieving benchmark status.

A factor that contributes to generating turnover and liquidity is non-residents' interest in and trading of government securities. Non-resident players are typically willing to trade more frequently than resident players, and for larger amounts.

LIQUIDITY INDICATORS, OCTOBER 2002 Table 8.3.1

Unit	Benchmark/ on-the-run status in 2002	Nominal issue size, DKK billion	Turnover ratio, per cent	Non-resident ownership share, per cent	Non-residents' purchases in the past year, DKK billion
4 per cent Treasury notes 2004 ..	on/benchmark	39.5	83.7	39	15.1
4 per cent bullet loans 2008	on/benchmark	20.0	48.4	23	4.1
5 pct. per cent bullet loans 2013	on/benchmark	40.6	115.5	22	9.0
5 per cent Treasury notes 2003 ..	off/benchmark	36.7	41.0	43	-3.8
8 per cent bullet loans 2006	off/benchmark	57.5	15.0	24	-3.0
6 per cent bullet loans 2011	off/benchmark	60.5	32.7	27	13.4
6 per cent bullet loans 2002	off-the-run	27.5	12.6	28	-7.3
8 per cent bullet loans 2003	off-the-run	56.7	7.22	36	-10.2
7 per cent bullet loans 2004	off-the-run	67.1	21.4	35	-3.1
5 per cent bullet loans 2005	off-the-run	57.5	32.0	55	0.6
7 per cent bullet loans 2007	off-the-run	52.1	23.2	19	-2.1
6 per cent bullet loans 2009	off-the-run	66.6	22.9	25	-0.7
7 per cent bullet loans 2024	off-the-run	25.0	19.0	12	0.6

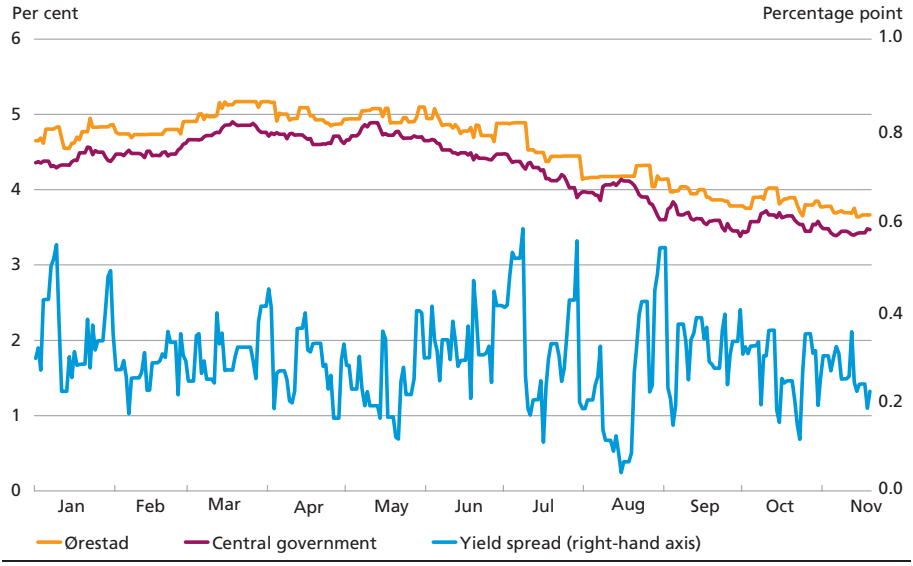
Note: Non-resident ownership share is compiled as of the end of the 3rd quarter of 2002, while non-residents' purchases are compiled as the difference between non-residents' holdings in the 3rd quarter of 2002 and in the 3rd quarter of 2001. The rate of turnover is calculated as turnover at market price/outstanding volume at market price*100.
Source: Copenhagen Stock Exchange and Danmarks Nationalbank.

Non-residents are key investors in the Danish government securities market. Non-residents own approximately one third of all Danish government securities, cf. Table 8.3.1. The Table also shows that during the past year (from the 3rd quarter of 2001 to the 3rd quarter of 2002) non-residents primarily sold old off-the-run securities and bought on-the-run securities. Non-residents' activity in the market thus supports the build-up of and liquidity in the government's on-the-run issues.

LIQUIDITY PREMIUM IN THE MARKET FOR GOVERNMENT SECURITIES 8.4

The above review indicates that Danish government securities are generally characterised by high liquidity. Securities with a large outstanding

YIELD AND YIELD SPREAD FOR ØRESTADEN'S 4 PER CENT 2004 AND THE CENTRAL GOVERNMENT'S 4 PER CENT TREASURY NOTES 2004 Chart 8.4.1



Source: Copenhagen Stock Exchange.

volume and benchmark status are typically the most liquid. On-the-run securities moreover quickly gain good liquidity, in anticipation of achieving benchmark status.

Liquidity in government securities implies that investors typically will be willing to pay a liquidity premium. An often used measure is the yield spread between less and more liquid issues. This implies a *relative measure* of the liquidity premium that varies according to how illiquid a bond the comparison is made with. The issues that are compared should have (by and large) the same coupon and remaining maturity. Otherwise, differing payment characteristics can drive the spread. Differing coupons can e.g. mean that the spread is affected by asymmetrical taxation of coupon payments and capital gains. This can disturb the interpretation of the yield spread. Methods to estimate liquidity premiums, as well as results from other countries, are described in Box 8.2.

A simple measure of the liquidity premium in government securities compared to a relatively illiquid bond is estimated by comparing a government bond with an alternative issue that otherwise has the same characteristics as the government bond. Chart 8.4.1 shows the yield on 4 per cent Treasury notes 2004 compared with the yield on the Ørestaden 4 per cent bullet loan, likewise maturing in 2004. Ørestaden is partly owned by the central government[1]. Therefore, there is no further credit

[1] Ørestaden is a partnership owned by the central government and the City of Copenhagen.

LIQUIDITY PREMIUM – METHODS AND RESULTS FROM OTHER COUNTRIES Box 8.2

There are typically two approaches to measuring the liquidity premium on government securities. The first approach estimates the yield spread between liquid (on-the-run/benchmark) issues and less liquid issues. The second approach applies the yield spread between government securities and government-guaranteed issues.

On-the-run versus off-the-run

To estimate the relative liquidity premium among government securities the spread between the yield to maturity on the on-the-run or benchmark issue and a theoretically determined yield to maturity on a paper with the same characteristics can be calculated. Based on a zero-coupon yield curve estimated on off-the-run issues, the theoretical interest rate is determined. This method is applied in several studies (e.g. in the working paper *Measuring Treasury Market Liquidity*, June 2001 by M.J. Fleming, Federal Reserve Bank of New York) and is also applied in this chapter. The theoretical price is sensitive to the choice of securities used to estimate the zero-coupon curve. Therefore it is a risk that individual securities in the estimation can drive the price. Especially, the estimate of the spread for the longest paper can be affected of the fact that there is no off-the-run paper with a longer remaining maturity in the immediate proximity of the on-the-run paper. Determining the liquidity premium between off-the-run and on-the-run issues for Danish government securities is subject to the same problems as described in the study for the American market. The extent of the problems is greater, however, since in Denmark there are fewer issues on which to estimate the zero-coupon-yield curve and because there is a wider gap between issues.

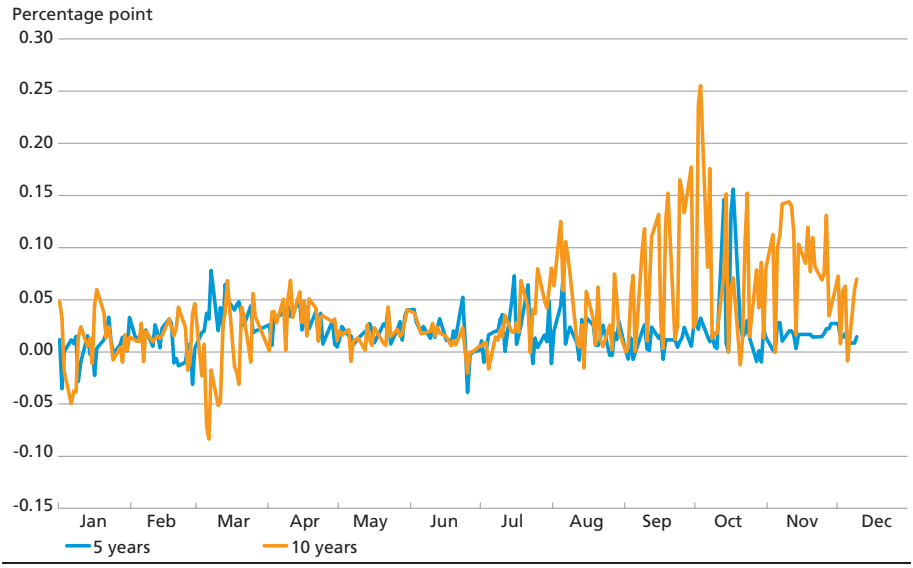
In a study from the Spanish central bank (F. Alonso et al., 2002, *Estimating liquidity premia in the Spanish government securities market*, Banco de España working paper no. 0017), the liquidity premium for benchmark bonds in the Spanish government securities market is estimated by including a liquidity parameter in the estimation of the zero-coupon-yield curve for government securities. The parameter is zero for benchmark bonds in the estimate of the zero-coupon-yield curve, and 1 for non-benchmark bonds. This makes the co-efficient for the liquidity parameter a measure for the displacement of the zero-coupon yield curve that non-benchmarks entail, and thereby a measure for the liquidity premium.

In Fleming's study of the spread between off-the-run and on-the-run issues in the American market the liquidity premium is estimated at between 4 and 10 basis points for 2-, 5- and 10-year issues. In the study for the Spanish government securities market the liquidity premium is determined at approximately 5 basis points.

Government securities versus other government-guaranteed issues

A more absolute measure of the liquidity premium can be found by comparing a government bond with a very illiquid bond that otherwise has the same characteristics as the government bond (credit, cash flow, coupon, etc.). Very illiquid government bonds with market-conforming characteristics like the liquid issues are not found. Therefore it is necessary to compare with another issue. In this approach it is vital that the liquidity premium is separated from any credit premium. The focus of the surveys is therefore on relevant issues with the same credit ranking as the central government. These might be government-guaranteed entities or entities with implicit government guarantees.

SPREAD BETWEEN LESS AND MORE LIQUID ZERO-COUPON YIELDS AT VARYING MATURITIES, 2002 Chart 8.4.2



Source: Prices from the Copenhagen Stock Exchange and own calculations.

risk related to the Ørestaden bond. The two bonds have the same coupon and around the same duration. The Ørestaden bond must be assumed to be relatively illiquid with a volume of only DKK 461 million and no daily price-quoting[1], while 4 per cent Treasury notes 2004 has an outstanding volume exceeding DKK 40 billion, and is traded on a daily basis.

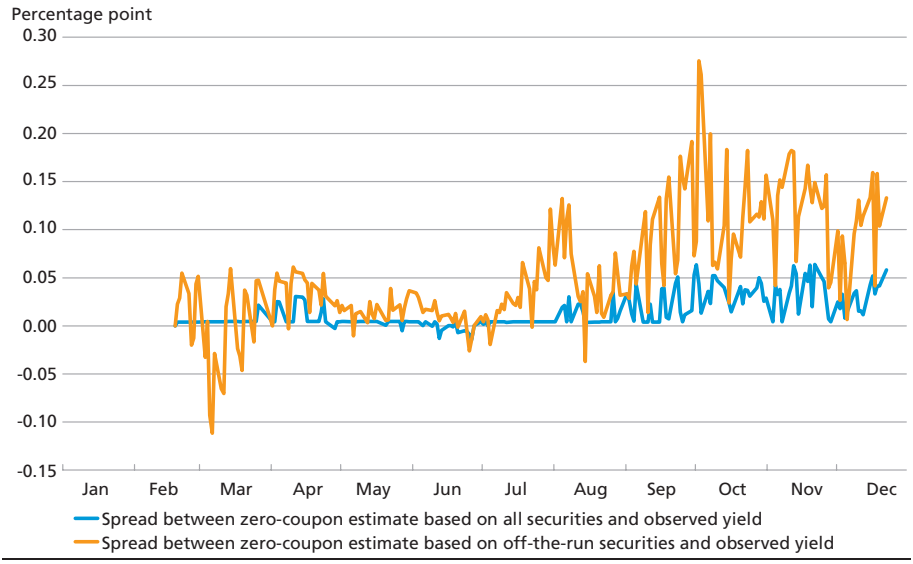
The difference between the two yields gives an estimate of the liquidity premium that varies between 5 and 50 basis points – approximately 30 basis points on average in 2002. In view of periods with no price quotes for the Ørestaden bond, the spread shows relatively substantial fluctuation. An aggregate consideration for the entire period is therefore a more appropriate indicator.

The liquidity premium can also be determined as a relative measure between the most liquid and less liquid government securities. The spread between a zero-coupon yield based on the most liquid issues and a zero-coupon yield based on less liquid issues will give this relative measure of the liquidity premium[2]. On-the-run issues and issues with benchmark status are considered to be the most liquid. The zero-coupon yield curves for the most liquid issues are therefore based on Treasury

[1] Daily prices are not quoted in the loan. In cases where there is no price in the market, the preceding observation is applied.

[2] This method is applied by M.J. Fleming, Federal Reserve Bank of New York in *Measuring Treasury Market Liquidity*, June 2001, and most recently by the Banco de España *Estimating liquidity premia in the Spanish Government Securities Market*, 2002.

SPREAD BETWEEN THEORETICAL AND OBSERVED YIELDS FOR 5 PER CENT BULLET LOANS 2013, 2002 Chart 8.4.3



Source: Prices from the Copenhagen Stock Exchange and own calculations.

bills, on-the-run securities and benchmark securities in 2002, while the curves for the less liquid issues are based on the other off-the-run securities that are bullet loans[1].

The method gives a relative liquidity premium of 0-15 basis points for on-the-run securities/benchmarks in relation to less liquid issues. Chart 8.4.2 shows the difference between the two curves at different maturities.

The same method can be applied to a specific bond where the observed yield to maturity in the market is compared with an estimated yield to maturity calculated on the basis of a zero-coupon yield curve based on less liquid issues.

This calculation is seen in Chart 8.4.3 where the yield to maturity on 5 per cent bullet loans 2013 is compared with a theoretically calculated interest rate for 5 per cent 2013 based on off-the-run securities. The theoretical interest rate based on off-the-run issues is generally higher than the observed interest rate, equivalent to a positive liquidity premium of approximately 0-20 basis points. 5 per cent 2013 achieved benchmark status at the beginning of September 2002, and hereafter the spread tends to be higher than before.

[1] Zero-coupon curves are estimated on the basis of an expanded Nelson Siegel's interest-rate model. The most liquid curve includes: Treasury bills, 5 per cent 2003, 4 per cent 2004, 4 per cent 2008, 6 per cent 2011, 5 per cent 2013 and 7 per cent. 2024. The less liquid curve includes: Treasury bills, 6 per cent 2002, 8 per cent 2003, 7 per cent 2004, 5 per cent 2005, 7 per cent 2007, 6 per cent 2009 and 7 per cent 2024. Treasury bills and 7 per cent bullet loans 2024 are thus part of both curves, in order to fix ends of the curves. It is therefore not relevant to measure the difference between the curves at the ends of the maturity spectrum.

Chart 8.4.3 also shows the spread between the market interest rate and a theoretical interest rate for 5 per cent bullet loans 2013, where all government securities are included in the estimate of the zero-coupon interest rate. This spread can be used to assess whether a paper is over- or underestimated in relation to the overall government securities market. A positive spread indicates that the paper is overestimated. This may partly be related to the fact that the paper entails a liquidity premium[1].

[1] The spread likewise depends on the method applied to calculate the zero-coupon-yield curve to determine the theoretical yield to maturity. By comparing yields to maturity based on respectively off-the-run securities and all government securities a rough indication of the liquidity premium excluding the effect of the estimation method is found.

CHAPTER 9

Electronic Trading and Market-Making in Danish Government Bonds

SUMMARY 9.1

In almost every EU member state, and other countries with mature financial markets, trading and market-making in the wholesale market for government bonds take place electronically. Electronic trading and market-making can contribute to creating efficient markets for government bonds. In Denmark, trading and market-making in the wholesale market predominantly take place by telephone. Implementing electronic market-making is therefore a key aspect of developing the Danish market for government bonds, and bringing its facilities in line with standards in other countries with mature financial markets. Electronic trading is furthermore a precondition for new securities dealers finding it attractive to become market-makers in Danish government bonds.

Work is ongoing to establish electronic trading in the wholesale market for Danish government bonds using the electronic trading system MTS as the platform. Today, MTS is the dominating system for wholesale trading of European benchmark bonds.

Closely related to the establishment of a Danish MTS solution, the design of a primary dealer system is also under preparation. Electronic trading and primary dealer systems can supplement each other in creating more efficient wholesale markets for government bonds.

Section 9.2 describes the advantages of electronic trading in government bonds. Hereafter Section 9.3 presents how electronic trading and primary dealer systems can supplement each other in creating a well-functioning wholesale market for government bonds. Section 9.4 describes the background to the ongoing work of establishing electronic market-making in the wholesale market for Danish government bonds. Finally, Section 9.5 presents the background to choosing MTS as the platform for a Danish electronic trading solution.

ADVANTAGES OF ELECTRONIC TRADING ON GOVERNMENT BOND MARKETS 9.2

Electronic trading and market-making in bonds entail a number of advantages compared to trading by telephone or "floor trading" (where dealers are physically present at the place of trading).

Despite the advantages of electronic bond trading, electronic trading systems have been introduced more slowly in the bond markets than in the currency and stock markets. In recent years, however, there has been a rapid development in electronic trading, also in bond markets. This applies especially to trading in government bonds. The development of IT technology has made it easier and less expensive to trade various types of securities electronically, and the trend internationally, including within Europe, has been for greater standardisation of government issues. Electronic trading systems are best suited for standardised products where both buyer and seller are familiar with the product, and therefore do not need to be in contact with each other.

In almost all countries with mature financial markets, trading in the wholesale market for government bonds today takes place electronically.

The various advantages of electronic trading are inter-related and mutually reinforcing. The key advantages are:

- Lower trading costs
- Economies of scale and scope
- Greater transparency in the market
- Better risk management
- More potential market participants.

Lower trading costs. When securities are traded electronically, part of the dealers' work can be taken over by so-called price machines, i.e. software that on a current basis matches offered bid and ask prices on the basis of the market information (pre-trade information), automatically received by the system. This means that one dealer can monitor several markets simultaneously, thereby saving resources. Once a deal has been closed, the relevant information is transmitted automatically to both buyer and seller, who can then each use the data as input to internal systems, i.e. risk-management systems, bookkeeping systems, etc. This reduces the resources devoted to registration in the dealers' own systems. Finally, today's sophisticated electronic trading systems have facilities to package details of all trades in the system, and send on this data for use in clearing and settlement. This saves the resources that each dealer would otherwise devote to receiving trading data and on that basis providing instructions on clearing and settlement.

DEFINITION OF ELECTRONIC TRADING Box 9.1

In various types of trading system larger or smaller parts of the overall transaction chain – from order broking to final execution – can take place electronically. A very broad definition might be:

"*An electronic trading system is a facility that provides some or all of the following services: electronic order routing (the delivery of orders from users to the execution system), automated trade execution (the transformation of orders into trades) and electronic dissemination of pre-trade (bid/offer quotes and depth) and post-trade information (transaction price and volume data)*"[1]

Various types of electronic trading systems can be used by various types of market participant. Electronic trading systems can be divided into the following categories, depending on which market participants they are directed at[2]:

- *Cross-matching systems* whereby dealers and institutional investors can place bid or ask orders, after which the system automatically matches orders to trades. Eurex Bonds GmbH is an example of cross-matching system
- *Inter-dealer systems* are cross-matching systems in which only dealers participate. EuroMTS, the various national MTS companies and BrokerTec Global are examples of inter-dealer systems
- *Single-dealer systems* whereby bid and ask orders are matched between one dealer and a number of investors connected to this dealer's system. Autobahn Electronic Trading is one example
- *Multiple-dealer systems* whereby investors can trade on the basis of bid and ask quotes from several different dealers. Examples are Bloomberg BondTrader and TradeWeb LLC.

[1] BIS Committee on the Global Financial System, *The implications of electronic trading in financial markets*, January 2001.

[2] The Bond Market Association, *eCommerce in the Fixed-Income Market. The 2002 Review of electronic transaction systems*, November 2002.

Market information can be collected quickly and cheaply in electronic trading systems. As described, the pre-trade information held in the system is available to dealers automatically, e.g. as input to price machines. Since all trading information is registered, trading statistics, i.e. post-trade information, are also available at no additional cost.

All other things being equal, lower trading and trading-related costs will contribute to increasing trading volume and thereby greater liquidity.

Economies of scale and scope. Electronic trading systems offer economies of scale. Once an electronic trading system has been introduced, the marginal costs of each individual transaction are minor. The marginal costs of involving additional market participants are also small. There are also economies of scope, since dealers that are active in different markets will prefer the same system to be used in all markets. In this way, the success of some electronic trading systems will be self-reinforcing.

Greater transparency. Electronic trading systems make it possible to achieve greater transparency in the market. One factor is that gathering market information becomes less expensive, but the main reason is that it is now possible to base investment decisions on pre-trade information concerning the prices and amounts that can be bought and sold in the market. How far and in what way the greater transparency potential is utilised, will be determined within each market.

Better risk management. Electronic trading provides for better risk management, first and foremost because straight-through processing ensures fast and secure registration of relevant trading data in the right systems. The operational risks in both front- and back-office functions are reduced.

More potential market participants. Electronic trading systems are global in the sense that market participants' opportunities to trade are not governed by their geographical location. This is also true for telephone-based trading, but not for floor trading. Moreover, electronic trading systems can accommodate a very large number of participants who can be in the "marketplace" simultaneously to offer bid and ask prices. Electronic trading therefore gathers a far greater number of dealers as potential market participants.

These advantages entail that electronic trading can create a more effective and liquid market for government bonds. An efficient, competitive market is to the benefit of both borrowers and investors. For sovereign issuers, a well-functioning market with tight bid-ask spreads makes it more certain that the government borrowing requirement can continue to be financed on attractive terms.

How the potential advantages of electronic trading are utilised also depends on the interaction between electronic trading and the other elements of the market structure, including e.g. primary dealer systems.

INTERACTION BETWEEN ELECTRONIC MARKET-MAKING AND A PRIMARY DEALER SYSTEM FOR GOVERNMENT BONDS 9.3

In most OECD countries, primary dealer systems support the objective to ensure well-functioning wholesale markets for government bonds. Primary dealers are financial institutions that on the basis of an agreement with the issuer are committed to participate in the marketing and sale of government bonds[1].

There is no international standard for the design of primary dealer systems. To varying degrees, the existing systems take specific national con-

[1] Further descriptions of the background to the use of primary dealers and existing primary dealer systems within the EU are presented in Chapter 8 of *Danish Government Borrowing and Debt 2001*.

ditions into account. In step with the internationalisation of bond trading, especially after the introduction of the euro and the joint financial market in the euro area, there has been a tendency for greater uniformity between primary dealer systems. This tendency is e.g. related to the fact that especially within the euro area, a number of large banks are primary dealers in most national government-bond markets.

At the heart of primary dealer systems is the combination of the rights and obligations allocated to primary dealers. Both the rights and the obligations are determined so as to give primary dealers an incentive to trade in the market in a way that utilises the potential advantages of electronic trading. Primary dealer and electronic trading systems in this way supplement each other in the wholesale markets for government bonds.

Sovereign issuers are parties to primary dealer systems and have a decisive influence on the concrete design of the systems. They hereby have favourable opportunities to create more efficient wholesale markets for government bonds, to the benefit of government borrowing in the future.

The key obligation to which primary dealers are subject is to offer current bid and ask prices within fixed spreads and for fixed amounts. Thus, it is a market-maker obligation towards the secondary wholesale market[1]. Market-making ensures continuous liquidity in the market. The transparency provided by an electronic system gives the participants in the system – and others with access to the market information – detailed pre-trade information on the prices and amounts that can be traded in a given paper. Market-making and electronic trading systems in this way supplement each other in creating a more efficient market.

In addition to the market-making obligations, the primary dealer systems usually entail a number of less specifically formulated obligations such as the requirement of active participation in issues and buy-backs of government bonds, and the requirement to keep the issuer updated on market developments, etc.

In return for these obligations, primary dealers are granted certain privileges, first and foremost related to a preferential right to purchase government bonds on issue. Primary dealers' rights also serve as incentives to promote liquidity and activity in the market. In this way too, primary dealer and electronic trading systems supplement each other in achieving a more efficient market.

[1] In Denmark, government bonds and Treasury notes are issued via tap sale, and the issues take place directly and continuously in the secondary market.

BACKGROUND TO ESTABLISHING ELECTRONIC MARKET-MAKING IN DANISH GOVERNMENT BONDS 9.4

In the mid-1980s, Denmark was the first country to introduce electronic trading and registration of securities. However, disregarding the transactions to which Danmarks Nationalbank is a party on behalf of the central government, trading of government bonds in the trading systems of the Copenhagen Stock Exchange is limited. Trading and market-making in the wholesale market for Danish government bonds take place predominantly via the telephone market.

In almost all EU member states and countries with mature financial markets, trading and market-making in the wholesale market for government bonds take place electronically. Implementing a competitive solution for electronic trading and market-making is an important part of developing the Danish market for government bonds and bringing the facilities in the Danish market in line with current standards in other government securities markets.

The objective of a Danish solution for electronic trading and market-making in government bonds is to achieve the advantages described in Sections 9.2 and 9.3. The focus of the ongoing work has been especially on the lower trading costs, greater market transparency, and easy access to the Danish market for government bonds for foreign market participants.

Transparency in the Danish government bond market is today primarily based on the post-trade information provided via dealers' reporting of transacted deals. Electronic trading and market-making will ensure that pre-trade information concerning the wholesale market is easily accessible.

There is an objective to attract new participants to the wholesale market for Danish government bonds. Government bonds are traded in a global market where government issuers more than ever before are confronted with international competition for investors.

There are now only few active participants in the Danish wholesale market for government bonds and their numbers are declining in step with the consolidation in the sector. New (foreign) market-makers will only be interested in joining the Danish market if the fixed costs of establishment and less variable costs are at the level of those in other wholesale government securities markets. New market-makers will only see a business advantage from participating in the Danish market for government securities if trading takes place electronically, and on a platform which the new participants already use in other bond markets. In other words, electronic trading and market-making are a necessary, but

ELECTRONIC MARKET-MAKING IN WHOLESALE MARKETS FOR GOVERNMENT BONDS IN EU MEMBER STATES Table 9.5.1

	Electronic market-making	MTS/EuroMTS[2]	Primary dealer system
Belgium	yes	yes	yes
Denmark	no	no	no
Finland	yes	yes	yes
France	yes	yes	yes
Greece	yes	yes	yes
Netherlands	yes	yes	yes
Ireland	yes	yes	yes
Italy	yes	yes	yes
Luxembourg[1]	no	no	no
Portugal	yes	yes	yes
Spain	yes	yes	yes
UK	yes	no	yes
Sweden	yes	no	yes
Germany	yes	yes	no
Austria	yes	yes	yes

Source: OECD Public Debt Markets, Trends and Recent Structural Changes, 2002; OECD, Debt Management and Government Securities Markets in the 21st Century, 2002; and websites of government debt offices.

[1] Luxembourg's market for government bonds is of a very limited size.

[2] Alone or as one of several systems.

not sufficient, precondition for attracting new foreign market-makers to the Danish bond market.

AN MTS SOLUTION FOR ELECTRONIC TRADING AND MARKET-MAKING ON THE WHOLESALE MARKET FOR DANISH GOVERNMENT BONDS 9.5

The Danish market-makers and Government Debt Management together hold ongoing discussions on the design of the wholesale market for Danish government bonds. During these deliberations, there has been agreement on the need to introduce electronic market-making. International banks have likewise expressed their support for this.

Market participants agree that a Danish electronic market-making solution could profitably be based on the MTS trading system[1]. The reasons are as follows:

- MTS is now the dominant system for wholesale trading in European benchmark bonds, cf. Table 9.5.1
- International banks operating in EU government securities markets already use MTS. Therefore, without additional costs to their systems, they will be able to become market-makers in a Danish MTS system
- MTS is a system developed for bond trading
- Experience in other countries indicates that only an MTS solution will make it possible to attract new foreign market-makers to the Danish

[1] Box 9.2 gives a brief description of MTS.

THE MTS SYSTEM Box 9.2

MTS S.p.A. is the company that administers the electronic trading platform Telematico. The company was founded in Italy in 1988, was privatised in 1997, and is today owned by around 60 major international financial institutions.

EuroMTS, the platform for trading in the largest European benchmark bonds (minimum outstanding volume EUR 5 billion), is today fully owned by MTS S.p.A.

There is also a large number of local/national MTS companies. When such companies are formed, MTS S.p.A. makes the electronic trading platform available free of charge. MTS S.p.A. gains an ownership interest of 20 per cent in the local companies, but has no voting rights with regard to market structure. The remaining 80 per cent is owned by the market-makers, and in some cases by the issuer and/or the local stock exchange. However, MTS S.p.A. has no predetermined rules for the structure of the owner group. The companies' revenues comprise fixed annual fees from the participants connected to the system, and variable charges that depend on the trading volume of the individual participants. The price structure is determined in the local companies.

In technical terms, all MTS sub-markets are available under the same application. This means that an institution that is a member of one market will also be able to join another MTS market at no additional cost for supplementary software or hardware. There is a "parallel quotation" functionality between the local MTS markets and EuroMTS. This is a link for the bond series that are large enough to also be traded in EuroMTS, so that liquidity in these securities is shared by the market participants connected to both local MTS and EuroMTS.

MTS and EuroMTS are inter-dealer systems, cf. Box 9.1.

Today, MTS is the dominating system for wholesale trading of European benchmark bonds. Only a few EU member states either do not have or are in the process of implementing MTS-based solutions. Several of the accession member states are also considering implementation of MTS-based solutions.

market for government bonds. The feedback received by Denmark's government debt management clearly points in the same direction.

An MTS solution can be established either as a separate MTS company or as a market segment under an existing MTS company. The choice between these two solutions is a question of the market participants' opportunities to influence the strategic decisions made in the respective MTS companies in the longer run. On the other hand, there is no difference between the two solutions in terms of freedom to determine the design of the market, including rules for market-making.

Originally, the MTS system was disseminated by the establishment of additional independent national MTS companies. However, recent developments have been towards establishing separate segments under existing MTS companies. In Finland, a market segment has been established under MTS Associated Markets (MTSAM). This is a Belgian MTS

company under which there is now both a Belgian and a Finnish market segment. In Ireland, a market segment in EuroMTS has been established. EuroMTS is the international MTS platform for trading large benchmark bonds.

Several market segments within the same MTS company presents certain advantages. Firstly, the segments can share the administrative costs of operating a separate company. Secondly, the segments can agree on "discount schemes" that make it more attractive for participants in one market segment to participate in other segments within the same company. As stated above, the internationalisation of the group of primary dealers has led to a number of international banks participating as primary dealers in several of the government securities markets within the EU.

CHAPTER 10

Interest-Rate Risk Management of Central-Government Debt

SUMMARY 10.1

In recent years international focus on risk management within government debt management has sharpened. Government debt management in Denmark has also worked extensively with risk management for a number of years.

Risk management is applied to the overall central-government debt. The predominant risk to which the Danish government debt is subject is the interest-rate risk on re-financing the debt at unknown future interest rates. A low interest-rate risk typically entails higher costs. It is therefore necessary to weigh expected costs against risks. Government Debt Management has developed a quantitative model for identification of expected costs and risks that can be applied to this weighing (Cost-at-Risk, CaR). The chosen trade-off between costs and risk is hereafter managed on a continuous basis by applying strategic benchmarks/focal points to the distribution of borrowing on various maturities, the duration of the central-government debt, and the size of the annual redemptions.

Internationally, in a more academic perspective, there has been increased focus on the potential derived effects of costs and on the interaction with the macroeconomy. Here, the interest-rate risk is related to the central government's budgetary position in order to achieve "budget smoothing".

INTEREST-RATE RISK IN BRIEF 10.2

In relation to government debt management, interest-rate risk can be defined as the risk of refinancing the debt at unknown future interest rates. A debt portfolio where redemptions are spread smoothly across a relatively long horizon will be associated with a low interest-rate risk. This is because the refinancing requirement will be smoothly distributed, while the interest payments on a larger proportion of the debt are fixed for a longer period. This limits the risk of a sudden increase in the inter-

est costs on the debt. A low interest-rate risk can, however, entail higher average costs, since long-term borrowing is typically relatively expensive. The interest-rate risk must therefore be weighed against the interest costs.

CHOICE OF RISK-MANAGEMENT FRAMEWORK 10.3

In the management of the central government's exposure to market developments it is appropriate as a general principle to consider the central government's financial portfolios on a consolidated basis. This makes it possible to compile the overall exposure of the central government in accordance with the principles for asset liability management, cf. Box 10.1. On defining the interest-rate risk, cf. Section 10.2, it can thus be relevant to set off any income and financial assets.

In Danish government debt management, the interest-rate risk on the overall central-government debt, comprising the domestic and foreign debt, less the assets of the Social Pension Fund and the balance of the central government's account with Danmarks Nationalbank, is managed. The central government's assets from re-lending are also included in the portfolio management by Government Debt Management. The net debt approach entails a more comprehensive assessment of the central government's exposure to fluctuations in interest rates in accordance with the ALM principles.

QUANTIFICATION OF TRADE-OFF BETWEEN COSTS AND RISK 10.4

The basis for determining an ongoing strategy for the government debt policy is an analysis of the trade-off between expected costs and risks for various strategies. This enables the central government to choose a strategy that entails an appropriate weighing of costs against risk.

Analyses of various profiles of costs and risk require scenarios to be set up for the expected development in interest rates. Based on the expected future financing requirement, the expected costs for a given strategy can hereby be calculated. The risk entailed by the strategy can be compiled as the potential increases in interest costs measured in relation to the interest costs in the expected or most probable scenario.

Within government debt management various approaches and models are applied to this analysis. Often, relatively simple models are used, based on a few deterministic scenarios. The central scenario can be based on a simple assumption of e.g. unchanged interest rates, or the starting point may be implicit forward interest rates. The central scenario can then be compared to ad-hoc adjustments or historical series.

ASSET LIABILITY MANAGEMENT Box 10.1

Asset Liability Management (ALM) is a risk-management principle that is often applied in private financial institutions. ALM states that, as far as possible, the entire balance sheet, i.e. both assets and liabilities, should be included in the risk analysis, in order to compile the overall exposure. This makes it possible to limit the risk by matching the financial characteristics of respectively assets and liabilities, so that one side of the balance sheet hedges the other.

This principle is applied to the exchange-rate risk on the foreign government debt and Danmarks Nationalbank's foreign-exchange reserve. The central-government's foreign debt, which is raised in order to finance the foreign-exchange reserve, is exclusively exposed in euro. At the same time, the currency exposure on Danmarks Nationalbank's foreign-exchange reserve is predominantly in euro. The objective is to avoid raising loans in one currency and thereafter placing the proceeds in another currency. This reduces the exchange-rate risk on the central-government debt, and on Danmarks Nationalbank's foreign-exchange reserve, taken as one.

The ALM approach also comprises matching of portfolios without explicit financial characteristics. Life assurance companies can e.g. reduce the risk by investing in financial assets with a payment profile that reflects the expected obligations as determined by actuarial tables of expected mortality.

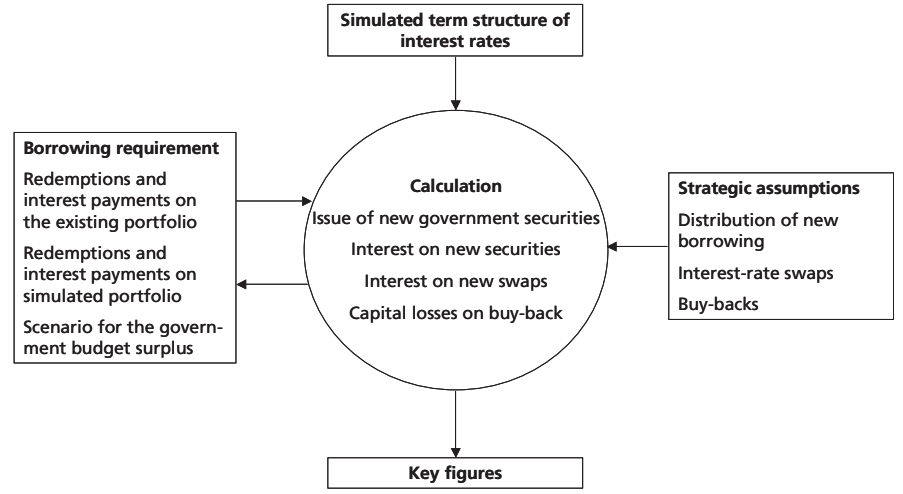
In Danish government debt management, deterministic scenario analyses are applied to e.g. stress tests of the development in costs. However, for the actual analysis of the trade-off between expected costs and risk, Government Debt Management has developed a stochastic simulation model, the Cost-at-Risk (CaR) model. In the CaR model, 2,500 scenarios for the development in interest rates are simulated for each quarter within a 10-year horizon, so that probability distributions of costs can be set up. The advantage is that actual quantification of the risk requires assignment of different probabilities to the cost scenarios.

So far, the CaR calculations have only been applied to the domestic debt, which constitutes the greater part of the debt, and the central government's asset portfolio from re-lending. The other portfolios of the government debt will be implemented in 2003. This makes it possible to quantify the trade-off between costs and risk for the overall government debt.

The Cost-at-Risk model

The structure of the CaR calculations is illustrated in Chart 10.4.1. The basis is information on the existing portfolio (outstanding amount in all government securities and the swap portfolio) and the central government's expected future budget surplus. In addition to this comes input concerning the strategic arrangement of the government debt policy,

STRUCTURE OF CaR CALCULATIONS Chart 10.4.1



including the distribution of future borrowing on various maturity segments, the frequency at which new securities series are opened, and the volume of future swaps and buy-backs of government securities.

All in all, this information gives the central government's current borrowing requirement, the distribution of new borrowing on various securities and the central government's interest-rate exposure. New redemptions and interest payments are subsequently included in the future borrowing requirement.

The interest costs are calculated on the basis of simulated zero-coupon-yield curves. The yield curves are applied in the model to determine coupon rates for new loans, the swap interest rates, and prices for bonds subject to buy-back.

The calculations are made for 2,500 scenarios. Each describes a particular development in interest rates on a quarterly basis over 10 years, and thereby a specific scenario for the development in the interest costs on the debt.

On the basis of the 2,500 scenarios, a probability distribution for the annual interest costs during the simulated period can be determined. The expected future annual costs of a given strategy are calculated as the mean value of the calculated costs. The risk is summarised in two measures: absolute CaR and relative CaR. Absolute CaR for a given year states the maximum costs with a probability of 95 per cent. Relative CaR is the difference between absolute CaR and the mean value. Relative CaR is thus a measure of the maximum increase in costs from the mean value for a given year, with a probability of 95 per cent. The quantifica-

CaR VERSUS VaR Box 10.2

In methodological terms, CaR is related to VaR, which is a risk-management instrument that is much used by asset portfolio managers. VaR expresses the maximum loss in a portfolio's market value with a given probability over a given – typically short – horizon. CaR expresses the maximum increase in the annual interest payments on the debt with a given probability in the medium and long term.

Both CaR and VaR entail quantification of the risk, depending on the probability distribution of the future market development. In CaR, the time horizon is relatively long. The purpose of the CaR analysis is to assess the differences between various strategies in the longer term, i.e. the strategies' average characteristics. The risk related to short-term fluctuations in market interest rates is countered by e.g. spreading borrowing across the year. This reduces the central government's exposure to short-term volatility.

tion of risk in CaR is methodologically related to Value-at-Risk (VaR), cf. Box 10.2.

In the CaR model, a number of other useful key figures are also calculated, e.g. the central government's annual borrowing requirement, the size of the government debt, the redemption profile of the debt, the outstanding volume in various securities, and the duration of the central-government debt.

Use of CaR to determine strategy

The results of the CaR model are used as a strategic reference when planning the government debt policy. The reference contains an analysis of the profile for the expected costs and risks (absolute and relative CaR), subject to various assumptions concerning the government debt policy.

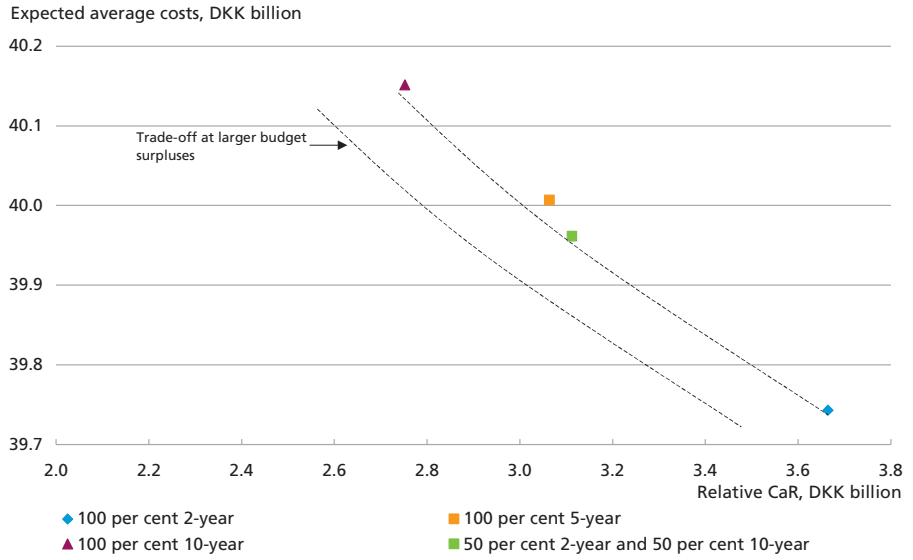
Chart 10.4.2 illustrates the trade-off between costs and risk in the medium term for the domestic government debt according to the CaR model. The calculations are based on the existing government debt portfolio and the assumption of a current budget surplus. It is also illustrated how the trade-off changes if a larger budget surplus is assumed.

The Chart shows the relation between average relative CaR and the average interest costs in the period 2003-05 for various distributions of borrowing on the 2-, 5- and 10-year segments. The various borrowing strategies result in various profiles of the duration of the debt.

It follows that issuance only in 2-year bonds gives the lowest average costs, but also the highest risk. On the other hand, issuance in 10-year bonds gives the highest costs, but also the lowest risk.

Borrowing in short-term bonds entails a larger interest-rate risk than borrowing in long-term bonds for two reasons. Issuance of short-term

TRADE-OFF BETWEEN INTEREST COSTS AND RISK, 2003-05 Chart 10.4.2



bonds gives a higher degree of refinancing. This means that, on average there is more re-financing at future unknown interest rates, leading to a higher interest-rate risk. Moreover, the volatility of interest rates at the short end of the yield curve is relatively high. The expected interest costs on short-term borrowing, on the other hand, are lower than on long-term borrowing as the yield curve is typically upward-sloping.

The Chart also indicates that issuance solely in 5-year securities is not advantageous in relation to the CaR analysis, since the trade-off between costs and risk for this strategy lies above the dashed line. By spreading the issues across several points of the yield curve instead, it is possible to achieve an equivalent risk profile with slightly lower expected costs. This result is achieved because the yield curve is often concave, i.e. the average costs of distributing the borrowing on 2-year and 10-year securities are often lower than when borrowing is concentrated in the 5-year segment.

As the Chart illustrates, the trade-off changes on assuming a larger budget surplus. A larger budget surplus reduces the central government's borrowing requirement, and thereby both the expected interest costs and the interest-rate risk.

Model uncertainty

The calculation of CaR figures is sensitive to the assumptions made. First, the risk analysis is sensitive to the choice of interest-rate model used to

generate the future interest rates, and the estimation basis chosen to estimate the parameters of the interest-rate model. The interest input to the CaR model has so far been simulated using the CIR model[1]. The CIR model is prominent in the finance literature, and can be implemented in practice. However, the model has difficulty in replicating certain empirical characteristics of the historical course of interest rates. For example, there is a tendency for the CIR model to underestimate the volatility of the long-term interest rates. The CIR model is also subject to certain limitations of its ability to generate various yield curves. In the light of the CaR results' sensitivity to the choice of interest-rate model, work is ongoing on modelling alternative interest-rate input to the CaR model. The first stage of this work was presented in Chapter 9 of *Danish Government Borrowing and Debt 2001.*

Second, the calculation of the risk is significantly influenced by assumptions concerning the development in the central-government budget, which entails great uncertainty. The CaR calculations are therefore made for various budget scenarios in order to illustrate the robustness of the results.

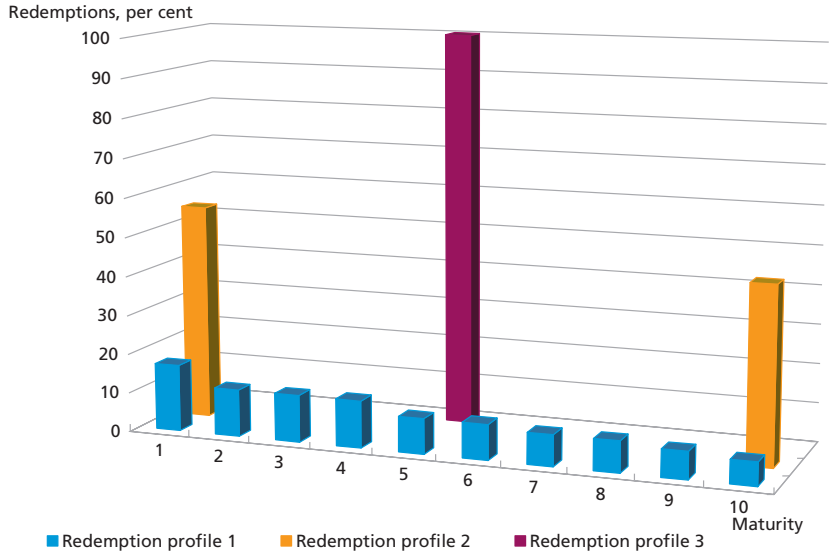
MANAGEMENT OF COSTS AND RISK BY USE OF STRATEGIC BENCHMARKS 10.5

The CaR analysis is used to support the setting of so-called strategic benchmarks. Strategic benchmarks are key portfolio figures that summarise the desired cost and risk profile and are used as guiding points in the ongoing management. CaR supports the setting of strategic benchmarks for the distribution of domestic borrowing on various maturities, the duration of the central-government debt and the profile of the future redemption payments.

Duration is a key risk management measure for many government debt managements. Duration is a measure of the portfolio's average fixed interest period. Long duration means that, in average terms, a longer period will pass before the debt is to be re-financed at unknown interest rates. This reduces the probability of a sudden increase in interest costs in the short term. As an average measure, duration does not, however, contain information on the distribution of the payments. A portfolio in which the redemption payments are concentrated in the medium-term segment can thus have the same duration as a portfolio where the redemptions are distributed over a longer horizon, cf. Chart

[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.

REDEMPTION PROFILES WITH SAME DURATION Chart 10.5.1



10.5.1. In order to avoid the interest-rate uncertainty related to refinancing a large proportion of the debt in particular years, the duration target is therefore combined with an objective of a certain smoothing of the redemption profile.

In Danish government debt management duration is managed by transacting interest-rate swaps. Interest-rate swaps make it possible to achieve a different interest-rate exposure to that determined by the maturity distribution of the government securities issues. The redemption profile is smoothed via buy-backs and the issuance policy. Since both interest-rate swaps and buy-backs are modelled in the CaR model, it is possible to quantify the risk for various levels of duration and objectives for the annual redemptions, in addition to the analysis of various issuance policies.

Benchmarking and performance measurement

Within private portfolio management, benchmarks are also applied as a measure of the desired exposure, and used to guide the ongoing management. Here, the strategic benchmark is often accompanied by a certain scope for tactical positions. Tactical positions are deviations from the strategic benchmark on the basis of certain expectations of e.g. the development in interest rates. Typically, portfolio management is subject to ongoing evaluation by comparing the result of the tactical positions with the result that would have been achieved had the manager followed the strategic benchmark.

A mandate, as a strategic benchmark, for a bond portfolio manager of an asset portfolio can e.g. be that the portfolio must consist of 30 per cent long-term mortgage-credit bonds, 30 per cent medium-term government bonds, and 40 per cent long-term government bonds. If the portfolio manager has certain expectations that mortgage-credit bonds will e.g. perform better than government bonds, or that yields will be higher at the long end of the yield curve, tactical positions can be taken by changing the distribution of securities within certain limits.

An equivalent application of strategic benchmarks to performance measurement of tactical positions has so far only been used by a few government debt managements, and typically only applied to foreign debt. In Denmark, performance measurement was previously used in the management of the net foreign-exchange exposure of the foreign debt and Danmarks Nationalbank's foreign-exchange reserve.

Two factors in particular make it problematic to apply benchmarks to performance measurement as regards the government debt management's domestic portfolios. First, it must be assumed that the central government as a portfolio manager is a small player in a large market, and therefore takes prices as given. Otherwise, the portfolio manager could influence the market prices and the benchmark. Secondly, it must be ensured that market participants do not gain the incorrect impression that the central government takes tactical positions in relation to the strategic benchmark based on privileged information, including information concerning the future fiscal policy.

With the introduction of the euro and the establishment of a large single market for financial services, the domestic financial markets in the euro area member states are less influenced by the transactions of the government debt managements. This improves the opportunities for use of benchmarking and performance measurement. At the same time, it is possible that the establishment of independent government debt managements will lead to increased use of benchmarking and performance measurement. A benchmark can clarify the government debt management's mandate, and make it possible for the portfolio owner to evaluate the manager's performance.

MANAGEMENT OF COSTS AND RISK IN A MACROPERSPECTIVE 10.6

The government debt managements' portfolios are typically substantial. There may thus be significant potential negative spill-over effects from cost development to the rest of the economy via the government budget in the event of turmoil on the financial markets. Budget smoothing is a risk-management approach within government debt manage-

ment that is based on planning government debt policy on the basis of overall macroeconomic considerations. In recent years, certain countries have put stronger emphasis on this approach.

Budget smoothing entails an alternative definition of costs and risk, and thereby a different approach to risk management. Here, the costs of the debt are related to the government budget, so that the "real" costs depend on both the size of the interest costs and the budget position. The less favourable the budget, the greater the "real" costs. Budget smoothing is therefore intended to establish a debt structure that ensures that the probability of high debt servicing costs is reduced in situations where the budget is tight.

The rationale behind this approach is that there can be important negative derived effects from cost shocks to the budget. In the literature on budget smoothing, the starting point is thus typically that a sudden increase in the costs of the debt can create a need for political initiatives such as tax increases or a reduction of government expenditure, and possibly default on the government's redemption payments.

Implementing budget smoothing can impose methodological difficulties. This is because the majority of the budget items, e.g. taxes and duties, do not have explicit financial characteristics which can be immediately matched to the financial characteristics of the debt.

It is thus relevant to know whether the economy is primarily affected by demand or supply shocks. In the event of a negative demand shock, there will be a tendency for inflation to decline, simultaneously with budget deterioration. In this case index-linked debt will alleviate the consequences of budgetary deterioration. If there are supply shocks instead, where the budget deteriorates while inflation and interest rates are rising, the nominal fixed-rate debt would be preferred, according to the budget-smoothing approach. It can be difficult to identify the various shocks to the economy, and therefore also to implement a suitable strategy.

The idea of budget smoothing is of particular interest if there are significant potential derived effects from a sudden increase in the debt servicing costs, and if it is possible to identify important shocks to the economy that can be hedged via a particular debt structure. Limited spillovers from the debt to the rest of the economy can be the reason to focus on the financial risks of the debt.

Appendices

Information on Government Borrowing and Debt

Government Debt Management focuses on transparency vis-à-vis the general public and the financial markets with regard to the government debt policy and government transactions. Further information on government debt and government debt policy is available at Danmarks Nationalbank's website, www.nationalbanken.dk.

On an ongoing basis, a wide range of information on government borrowing and debt is published via the Copenhagen Stock Exchange and DN News[1]. Several news agencies re-transmit the information from DN News, e.g. Reuters. The information is also available at Danmarks Nationalbank's website. It is possible to be notified directly of new information and updates concerning government borrowing and debt by joining Danmarks Nationalbank's electronic subscription service (see www.nationalbanken.dk under News service).

Enquiries concerning government borrowing and debt should be directed to Danmarks Nationalbank, Government Debt Management, Financial Markets, at governmentdebt@nationalbanken.dk.

The following table presents the information on government borrowing and debt that is published on an ongoing basis.

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

CURRENT INFORMATION ON GOVERNMENT BORROWING AND DEBT

	Overall content	Information at	Publication frequency
Announcement of central-government borrowing, etc., June and December	• Borrowing strategy • On-the-run issues • Securities eligible for buy-back • Duration band	• CSE • www.nationalbanken.dk	Semi-annually
Opening of new securities	• Coupon • Maturity date • Opening date	• CSE • DN News, screen 55 • Reuter, DKNA-55 • www.nationalbanken.dk	Irregularly
Treasury bill auction	• Convening of auction • Result of auction	• CSE • DN News, screen 53 • Reuters, DKNA-53 • www.nationalbanken.dk (result)	Monthly
Daily buy-backs and sales	• Daily sales by securities • Daily buy-backs by securities	• DN News, screen 51 and 58 • Reuters, page DKNA-51 and DKNA-58 • www.nationalbanken.dk	Daily
Monthly buy-backs and sales, first banking day	• Monthly sales by securities • Monthly buy-backs by securities • Monthly currency swaps	• CSE • www.nationalbanken.dk	Monthly
Monthly domestic borrowing requirement, first banking day	• Domestic borrowing, cf. Budget Review • Subsequent buy-backs • Subsequent currency swaps • Total domestic borrowing requirement	• www.nationalbanken.dk • DN News, screen 54 • Reuters, page DKNA-54	Monthly
Central government's actual financing requirement, etc., second banking day	• Change in balance of the central government's account • Gross central-government borrowing • Gross central-government financing requirement • Government redemptions and buy-backs	• DN News • www.nationalbanken.dk	Monthly
Day-to-day distribution of government payments, penultimate banking day	• Day-to-day distribution • Liquidity impact of central-government payments in coming months	• www.nationalbanken.dk	Monthly
Danish Government Borrowing and Debt. Danish edition normally in February and English edition normally in March.	• Development in the past year • Detailed statement of debt and transactions • Report on issues of relevance to debt management	• Publication from Danmarks Nationalbank • www.nationalbanken.dk	Annually
Budget Review, normally in May, August and December	• Gross financing requirement, current and coming years • Domestic and foreign borrowing requirements, current and coming years	• Publication from the Ministry of Finance • www.fm.dk (website of the Ministry of Finance)	Normally 3 times a year

Note: Budget Review is published by the Ministry of Finance.
CSE denotes the Copenhagen Stock Exchange. CSE's website is at www.xcse.dk.
It is possible to be notified directly of new information on government borrowing and debt by subscribing to Danmarks Nationalbank's electronic news service (see www.nationalbanken.dk, News service).

Principles for Management of the Credit Risk on Government Swaps

Counterparty credit standing (rating): To limit the credit risk on swap counterparties, swaps are only transacted with counterparties with a very high credit standing. A counterparty must normally be rated minimum Aa3/AA- by at least two well-reputed rating agencies (Moody's, Standard & Poor's or Fitch). For interest-rate swaps in kroner and DKK/EUR swaps, however, counterparties with a rating of minimum A3/A- are permitted.

Limits for credit-exposure lines: To avoid disproportionately high credit exposures, the credit exposure on a counterparty must be within an authorised line. The size of the lines granted depends on the counterparty's rating and equity, cf. the Table below.

Counterparty credit exposure: Counterparties' credit exposure and utilisation of lines are monitored on an ongoing basis. The central government's credit exposure to a given counterparty is compiled as the current positive market value of the portfolio less any pledged collateral, plus a premium, the potential credit exposure, that takes into account that the portfolio can develop additional market value as a consequence of market developments.

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

LINES FOR CREDIT EXPOSURE — Table 1

Counterparty rating		Lines (max. total credit exposure)		Threshold value (max. uncollateralised market value)
Moody's	Standard & Poor's, Fitch IBCA	DKK million	In 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: In the different ratings, the lowest rating is the basis for the granting of line and for determining the threshold value for the maximum uncollateralised market value in the favour of the central government.
If the counterparty has a rating of A1/A+, or below, the authorised line can only be used for interest-rate swaps in Danish kroner or DKK/EUR swaps with a maximum maturity of 10 years.

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.

Eligible swaps: Only plain-vanilla interest-rate and currency swaps may be transacted. The maturity will normally be 10 years or lower. Dual-currency swaps and zero-coupon swaps are considered to be plain-vanilla swaps. Structured swaps are no longer transacted. The same applies to deals that include option elements, including swaptions, interest-rate caps, etc.

Legal basis of agreement: Swaps are only transacted with counterparties with whom an ISDA Master Agreement, which governs the business relationship between the central government and the counterparty, and a collateral agreement, cf. below, have been established.

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

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

Early termination of swaps: 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. A rating trigger entails that swaps can be cancelled should a counterparty's rating fall to a given level. In most of the central government's ISDA Master Agreements the rating trigger is BBB+/Baa1, or below[1].

As a subsequent safeguard against credit losses, cross-default clauses are also applied. 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, swaps may only be transacted with counterparties that have signed a collateral agreement (ISDA Credit Support Annex) to the ISDA Master Agreements that regulate the relationship between the central government and the swap counterparties. The key elements of the agreements are:

- The agreements are unilateral, so that only the central government's counterparties pledge collateral

[1] Some Master Agreements dating from before the rating trigger requirement was formalised have none or a lower trigger.

- Collateral is not pledged unless the market value in the central government's favour exceeds an agreed amount (the threshold value). This threshold value will depend on the counterparty's rating, cf. Table 1
- The market value of swaps is compiled on a regular basis and as required. If the market value less the pledged collateral exceeds the agreed threshold, the counterparty is required to pledge collateral
- Only collateral of DKK 10 million or more is transferred (reversed)
- Permitted collateral will normally be government bonds with a rating of minimum Aa3/AA-. Other bonds can also be accepted, subject to individual assessment, e.g. Danish mortgage-credit bonds. The collateral value of the bonds is calculated as the market value after a haircut. Haircuts will depend on the remaining maturity of the bonds and must take account of the risk of a decrease in the value of the bonds
- The administration of bonds pledged as collateral to the central government is transferred to the custodian bank with which the securities are deposited. On behalf of the central government the custodian bank will request the counterparty to provide additional collateral, should the collateral value of the deposited bonds decrease and become insufficient to cover the market value of the transacted swaps after deduction of the threshold. In the event of surplus cover, the custodian bank is equivalently authorised to release bonds to the counterparty.

Terms for the Central Government's and the Social Pensions Fund's Securities Lending Facilities

The central government's securities lending facility

1. Lending is in on-the-run central-government securities. The specific terms for lending in the individual government securities series are published in the central government's announcements concerning on-the-run issues. If deemed appropriate, no lending facility will be established for certain on-the-run issues of government securities.
2. Lending in government securities is to all members of the bond market of the 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 on-the-run. In certain cases the facility may continue after a paper has become an off-the-run issue.
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 0.25 per cent per year for securities lending of Treasury notes and government bonds with an outstanding amount below DKK 20 billion. The fee is 0.5 per cent per year for securities lending

in securities with an outstanding amount above DKK 20 billion and for all Tresury bills. 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 3363 6713 or +45 3363 6714.

The Social Pension Fund's securities lending facility

1. Lending is in Danish central-government bullet loans.
2. Lending in government securities is to members of the bond market of the Copenhagen Stock Exchange.
3. The securities lending facility can be terminated at any time.
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 3363 6713 or +45 3363 6714.

Auction Terms for Treasury Bills

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.

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

Central-Government Borrowing in 2002, 18 December 2001 140

Central-Government Domestic Borrowing in 2nd Half of 2002, 17 June 2002 145

Extraordinary Issue in Government Securities with Reference to EU Draft Directive on Taxation of Savings, 7 May 2002 147

CENTRAL-GOVERNMENT BORROWING IN 2002, 18 DECEMBER 2001

Central-government domestic borrowing in 2002

In Budget Review, August 2001 by the Ministry of Finance, the central government's gross domestic borrowing requirement for 2002 is estimated at DKK 76.2 billion. A new estimate for the central-government's borrowing requirement is expected to be published by the Ministry of Finance by end January 2002. The borrowing requirement will be covered by issuing domestic government securities.

The overall strategy for the government debt policy is to build and maintain attractive on-the-run issues. This is done by building liquid series in the 2-, 5- and 10-year maturity segments.

The on-the-run issues will be replaced in 2002, as they have been open for a long time and have suitable outstanding amounts.

On 8 January 2002 a new series of Treasury notes 2004 will be opened. The interest payment date will be 15 November and the coupon rate 4 per cent (ID Code DK000992062-1). The Treasury notes will be repaid in full on 15 November 2004.

Sale of 4 per cent Treasury notes 2004 will commence at 11.00 a.m. on 8 January 2002 via the sub-market for government securities issues at the Copenhagen Stock Exchange. Further details of the amounts offered on the first day will be announced at 9.00 a.m. on 8 January 2002.

In connection with the test of the sub-market for government securities issues on 12 November 2001 the Copenhagen Stock Exchange issued a description of the sub-market's functionality. A copy of this description can be obtained from the Copenhagen Stock Exchange, Customer Desk, telephone +45 3377 0409.

On 22 January 2002 a new series of government bonds 2008 will be opened. The interest payment date will be 15 August and the coupon

ISSUES ON-THE-RUN JANUARY 2002

Series	Interest payment date
Government bonds	
6 per cent bullet loans 2011	15 November
4 per cent bullet loans 2008 (open on 22 January 2002)	15 August
5 per cent bullet loans 2005 (discontinue on 21 January 2002)	15 August
Treasury notes	
4 per cent Treasury notes 2004 (open on 8 January 2002)	15 November
5 per cent Treasury notes 2003 (discontinue on 7 January 2002)	15 November
Treasury bills	
Treasury bills 2002 IV	1 November
Treasury bills 2002 III	1 August
Treasury bills 2002 II	1 May

rate 4 per cent (ID Code DK000992070-4). The government bonds will be repaid in full on 15 August 2008.

Sale of 4 per cent bullet loans 2008 will commence at 11.00 a.m. on 22 January 2002 via the sub-market for government securities issues of the Copenhagen Stock Exchange. Further details of the amounts offered on the first day will be announced at 9.00 a.m. on 22 January 2002.

A description of terms of borrowing in Danish and English for respectively 4 per cent Treasury notes 2004 and 4 per cent bullet loans 2008 has been prepared. It can be ordered on telephone +45 3363 6105 or viewed on Danmarks Nationalbank's Website (www.nationalbanken.dk).

The sale of 5 per cent Treasury notes 2003 and 5 per cent bullet loans 2005 will be discontinued on 7 and 21 January 2002 respectively.

A new series of government bonds in the 10-year segment is expected to be opened in 1st quarter 2002. A separate announcement concerning the terms of the issue will be published prior to the opening. The outstanding amount of this issue is aimed to be at least DKK 60 billion.

In 2002 new 12-months Treasury bills will be opened at auctions with the settlement dates of 1 February, 1 May, 1 August and 1 November.

Buy-back and switch

There can be buy-backs in a wide range of securities. Buy-backs are used to smooth out the gross borrowing requirement between the years and to support a range of liquid market-conform on-the-run issues.

It is the intention to hold one or more switch operations in 1st half of 2002. A separate announcement will be published prior to a switch operation. Switch operations give investors the opportunity for direct exchange of off-the-run issues with on-the-run issues. Switch operations are used as a supplement to the central government's buybacks in off-the-run issues.

Securities will only be bought back or switched if this is considered advantageous on the basis of an overall evaluation of government debt policy.

As of 1 January 2002 the list of issues subject to buy-backs is as follows:

All issues maturing in 2002
All issues maturing in 2003
7 per cent bullet loans 2004
5 per cent bullet loans 2005 (from 22 January 2002)
8 per cent bullet loans 2006
7 per cent bullet loans 2007
6 per cent bullet loans 2009
10 per cent serial loans S 2004
5 per cent serial loans S 2007
4 per cent serial loans S 2017

3.5 per cent 1886 perpetual
3 per cent 1894 perpetual
3.5 per cent 1901 perpetual
3.5 per cent 1909 perpetual

The central government's and the Social Pension Fund's securities lending facilities

The central government's securities lending facility comprises the following securities in 2002:

Treasury bills
5 per cent Treasury notes 2003
4 per cent Treasury notes 2004 (after opening)
5 per cent bullet loans 2005
4 per cent bullet loans 2008 (after opening)
6 per cent bullet loans 2011

As of 1 January 2002 all governments bonds of the type bullet loans in the Social Pension Fund's bond portfolio can be subject to securities lending.

For more specific information on the securities lending facilities see the announcement of Danish Central-Government Borrowing Etc., 29 March 2001, Appendix 1 and 2. The announcement can be found on Danmarks Nationalbank's Website (www.nationalbanken.dk) under Government debt/Current information.

Central-government foreign borrowing in 2002

The central government's gross foreign borrowing requirement for 2002 is estimated at DKK 22.5 billion in Budget Review, August 2001 by the Ministry of Finance.

The central government's foreign borrowing requirement is covered primarily by raising larger loans, which preferably will be raised in euro. It is the intension to build a range of euro loans in the long run. It is aimed to issue loans in euro for about EUR 1½-2 billion each year depending on the borrowing requirement and the demand for the loans. If issuing in euro loans is not advantageous under the given market conditions, issues in other currencies may occur.

As a supplement to raising larger loans, currency swaps from DKK to euro are used. This form of foreign borrowing contributes to liquidity in the domestic on-the-run issues.

Duration of the government debt

The duration band of 3.5 years +/- 0.5 year for the government debt continues to apply in 2002.

Interest taxation directive

The European Commission has put forward a proposal for Council Directive to ensure taxation of interest received by a person in one EU member state from another EU member state (COM(2001) 400). The intention of the directive is for the authorities of one EU member state to gather information on interest paid from that member state to a person in another EU member state, and to send the information to the authorities in the country in which interest recipients are resident. The directive applies solely to physical persons. Interest payments to companies or other legal entities are not within the scope of the directive. For further information on the proposal for Council Directive reference is made to the Website of the Danish Parliament (Folketinget) (www.folketinget.dk).

Overall, the proposal for Council Directive does not affect the actual taxation of interest received from abroad by persons resident in Denmark who are thereby subject to full tax liability, or interest paid from Denmark to persons resident abroad. However, certain member states have announced that they will introduce a withholding tax on interests for a transition period, instead of exchanging information.

The proposal for Council Directive contains a clause that exempts the existing negotiable securities from the directive's area of application for a transition period of 7 years. The clause applies to all negotiable securities issued for the first time prior to 1 March 2001, or for which the original issue prospectus was endorsed prior to this date.

Whether a government security is subject to the clause is determined by whether further issues in the series take place on 1 March 2002 or thereafter. If there are further issues in the series on 1 March 2002 or thereafter the entire series, i.e. both the original issue and all subsequent issues, will no longer be subject to a clause. This means that interest payments for this series will be included in the exchange of information among the EU member states.

After the 7-year transition period all government securities will be subject to the directive.

The Danish central government will also in the future be able to reopen domestic government securities series and make issues therein. In case issuing is done in reopened government securities after 1 March 2002, the securities will be subject to the directive.

Further information

Information on government debt management can be obtained at Danmarks Nationalbank's Website (www.nationalbanken.dk) under Government debt.

The publication *Danish Government Borrowing and Debt 2001*, which sets out the central government's borrowing in 2001 and the strategy for the next years, will be published at the end of February 2002 (Danish edition with English summary).

For further information concerning the aforementioned please contact Danmarks Nationalbank, Financial Markets, Head of Government Debt Management, Ove Sten Jensen, tel. +45 3363 6102.

CENTRAL-GOVERNMENT DOMESTIC BORROWING IN 2ND HALF OF 2002, 17 JUNE 2002

In Budget Review 2, May 2002, by the Ministry of Finance, the central government's gross domestic borrowing requirement for 2002 is estimated at DKK 84.4 billion. The borrowing requirement will be covered by issuing domestic government securities.

The overall strategy for the government debt policy is to build and maintain attractive on-the-run issues. This is done by building liquid series in the 2-, 5- and 10-year maturity segments. Issues on-the-run in the 2nd half of 2002 are unchanged and consist of 4 per cent Treasury notes 2004, 4 per cent bullet loans 2008 and 5 per cent bullet loans 2013.

In the 2nd half of 2002 new 12-month Treasury bills will be opened at auctions with the settlement dates of 1 August and 1 November 2002.

Buy-back and switch

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

Furthermore, there can be buy-backs and switch operations in a wider range of securities. Buy-backs are used for smoothing out the redemption profile between the years and to support a range of on-the-run issues, which comprise liquid market-conform issues.

As of 1 July 2002 the list of issues subject to buy-backs is as follows:

All issues maturing in 2002
All issues maturing in 2003
7 per cent bullet loans 2004
5 per cent bullet loans 2005
8 per cent bullet loans 2006
7 per cent bullet loans 2007
6 per cent bullet loans 2009
10 per cent serial loans S 2004

ISSUES ON-THE-RUN JULY 2002

Series	Interest payment date
Government bonds	
5 per cent bullet loans 2013	15 November
4 per cent bullet loans 2008	15 August
Treasury notes	
4 per cent Treasury notes 2004	15 November
Treasury bills	
Treasury bills 2003 II	1 May
Treasury bills 2003 I	1 February
Treasury bills 2003 IV	1 November

5 per cent serial loans S 2007
4 per cent serial loans S 2017
3.5 per cent 1886 perpetual
3 per cent 1894 perpetual
3.5 per cent 1901 perpetual
3.5 per cent 1909 perpetual

The central government's and the Social Pension Fund's securities lending facilities

As of 1 July 2002 the central government's securities lending facility comprises the following securities:

Treasury bills
5 per cent bullet loans 2013
6 per cent bullet loans 2011
4 per cent bullet loans 2008
4 per cent Treasury notes 2004

Government bonds of the type bullet loans in the Social Pension Fund's bond portfolio can be subject to securities lending.

Central-government foreign borrowing in 2002

The central government's gross foreign borrowing requirement for 2002 is estimated at DKK 22.4 billion in Budget Review 2, May 2002 by the Ministry of Finance.

The central government's foreign borrowing requirement is covered primarily by raising larger loans, preferably in euro. In April 2002 the first larger euro loan at EUR 1½ billion was raised.

As a supplement to raising larger loans, currency swaps from DKK to euro are used. This form of foreign borrowing contributes to liquidity in the domestic on-the-run issues. The foreign borrowing in the 2nd half of 2002 is expected to be raised using currency swaps from DKK to euro.

Further information

Information on government debt management can be obtained at Danmarks Nationalbank's Website (www.nationalbanken.dk) under Government debt.

The publication *Danish Government Borrowing and Debt 2001*, which sets out the central government's borrowing in 2001 and the strategy for the next years, can be obtained on the same Website.

For further information concerning the aforementioned please contact Danmarks Nationalbank, Financial Markets, Head of Government Debt Management, Ove Sten Jensen, tel. +45 3363 6102.

EXTRAORDINARY ISSUE IN GOVERNMENT SECURITIES WITH REFERENCE TO EU DRAFT DIRECTIVE ON TAXATION OF SAVINGS, 7 MAY 2002

In the near future an extraordinary issue of DKK 1 million will take place in each of the following government securities:

5 per cent Treasury notes 2003
8 per cent bullet loans 2003
7 per cent bullet loans 2004
5 per cent bullet loans 2005
8 per cent bullet loans 2006
7 per cent bullet loans 2007
6 per cent bullet loans 2009
6 per cent bullet loans 2011
7 per cent bullet loans 2024

The extraordinary issue will take place to the Social Pension Fund and is of technical character. The sole objective is to ensure that the above-mentioned securities will be included by the EU Draft Directive on Taxation of Savings when it becomes effective. Thus, the uncertainty on the securities' status with reference to the directive will be removed.

For a further description of the draft directive, please see announcement on central-government borrowing from December 2001, available on: http://www.nationalbanken.dk/nb/nb.nsf/alldocs/F_current_information_new, with the title "Central-government borrowing in 2002 – I".

For further information concerning the aforementioned please contact Danmarks Nationalbank, Financial Markets, Head of Government Debt Management, Ove Sten Jensen, tel. +45 3363 6102.

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CENTRAL-GOVERNMENT DEBT, YEAR-END 1992-2002 Table 1

DKK million	1992	1993	1994
A. Debt			
Domestic debt denominated in DKK[1]			
- Fixed-rate bonds	316,690	357,346	409,565
- Floating-rate bonds	57,147	41,241	30,345
- Lottery bonds	1,200	1,200	1,200
- Compulsory savings	-	-	-
- Treasury notes	71,150	94,200	111,705
- Treasury bills	55,485	58,339	56,238
- Currency swaps from DKK to EUR	-	-	-
- Government securities held by the central government	0	-	-
- Interest-rate swaps, notional amount			
from fixed rate	-	-	-
to floating rate	-	-	-
Domestic debt denominated in DKK, total	501,672	552,326	609,053
Domestic debt denominated in EUR[2 3]			
- Fixed-rate bonds	9,827	9,824	9,697
- Government securities held by the central government	-	-	-970
Domestic debt, total	511,499	562,150	617,781
Foreign debt			
- in USD	37,802	50,889	24,913
- in CHF	13,952	20,914	18,393
- in JPY	3,159	5,612	10,419
- in EUR[3]	48,237	73,621	64,887
- in other currencies	1,482	14,575	12,954
- Government securities held by the central government[4]	-1,151	-1,338	-1,784
Foreign debt, total	103,482	164,274	129,782
Domestic and foreign debt, total	614,981	726,424	747,563
B. Government deposits with the central bank[5]	-30,927	-88,781	-55,266
C. The Social Pension Fund			
- Government securities	-43,611	-45,270	-50,143
- Other securities	-88,583	-93,105	-96,689
The Social Pension Fund, nominal value, total[6]	-132,194	-138,375	-146,832
Central-government debt, total (A+B+C)	451,860	499,268	545,465
Central-government debt, per cent of GDP	50.9	55.5	56.5

Note: +denotes liabilities, - denotes assets.

[1] Does not include the holdings of the central government under the location-swap facility, cf. *Danish Government Borrowing and Debt 1993*. 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.

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

CENTRAL-GOVERNMENT DEBT, YEAR-END 1992-2002 Table 1

1995	1996	1997	1998	1999	2000	2001	2002
466,608	516,812	556,874	550,989	537,289	506,992	494,875	497,938
20,722	16,760	9,848	4,346	-	-	-	-
1,200	1,200	1,200	1,000	900	900	900	400
-	-	-	-	-	-	-	-
102,697	84,499	49,140	58,830	74,040	81,257	70,788	79,371
58,385	51,234	50,001	41,255	36,350	36,846	49,224	63,404
-	-	-	-	-	-	-4,800	-16,200
-	-	-	-	-	-2,000	0	0
-	-	-	-500	-7,950	-20,950	-27,400	-37,300
-	-	-	500	7,950	20,950	27,400	37,300
649,612	670,505	667,063	656,420	648,579	623,995	610,987	624,913
9,244	9,597	6,634	-	-	-	-	-
-1,138	-2,372	-	-	-	-	-	-
657,719	677,730	673,697	656,420	648,579	623,995	610,987	624,913
6,425	4,562	1,514	1,336	1,187	0	0	0
13,836	6,179	3,974	1,094	3,616	3,822	0	0
9,329	2,396	1,047	562	2,453	1,672	0	0
69,975	88,826	90,661	84,982	82,386	79,287	83,753	83,689
11,599	6,519	6,418	365	383	428	42	42
-5,516	-6,986	0	0	0	0	0	0
105,647	101,495	103,613	88,338	90,025	85,209	83,795	83,730
763,366	779,225	777,310	744,758	738,604	709,204	694,782	708,643
-33,677	-31,052	-29,024	-30,400	-35,231	-31,332	-39,621	-46,687
-68,889	-83,435	-92,453	-100,135	-105,432	-106,312	-109,474	-113,132
-82,517	-65,336	-54,368	-43,468	-36,207	-33,244	-31,621	-28,230
-151,406	-148,772	-146,821	-143,603	-141,640	-139,556	-141,095	-141,362
578,283	599,401	601,465	570,755	561,733	538,316	514,066	520,594
57.3	56.5	53.9	49.4	46.5	42.1	38.8	38.1

[5] For 2002 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 2002	Table 2
No. 428, 5 per cent government bonds 2013 (5 pct. stående lån 2013)	
Issued in 2002, DKK million	45,845
Interest payable	15 Nov
Stock exchange code	0992089
Issue commenced	19 Feb 2002
Redemption date	15 Nov 2013
No. 358, 6 per cent government bonds 2011 (6 pct. stående lån 2011)	
Issued in 2002, DKK million	1,973
Interest payable	15 Nov
Stock exchange code	0991996
Issue commenced	4 May 2000
Redemption date	15 Nov 2011
No. 424, 4 per cent government bonds 2008 (4 pct. stående lån 2008)	
Issued in 2002, DKK million	20,954
Interest payable	15 Aug
Stock exchange code	0992070
Issue commenced	22 Jan 2002
Redemption date	15 Aug 2008
No. 422, 4 per cent Treasury notes 2004 (4 pct. statsgældsbevis 2004)	
Issued in 2002, DKK million	42,682
Interest payable	15 Nov
Stock exchange code	0992062
Issue commenced	8 Jan 2002
Redemption date	15 Nov 2004
No. 455, Treasury bills 2003 IV (Skatkammerbevis 2003 IV)	
Issued in 2002, DKK million	12,490
Interest payable	-
Stock exchange code	0981095
Issue commenced	1 Nov 2002
Redemption date	1 Nov 2003
No. 446, Treasury bills 2003 III (Skatkammerbevis 2003 III)	
Issued in 2002, DKK million	14,003
Interest payable	-
Stock exchange code	0981087
Issue commenced	1 Aug 2002
Redemption date	1 Aug 2003
No. 435, Treasury bills 2003 II (Skatkammerbevis 2003 II)	
Issued in 2002, DKK million	17,070
Interest payable	-
Stock exchange code	0981079
Issue commenced	1 May 2002
Redemption date	1 May 2003

DOMESTIC GOVERNMENT SECURITIES ISSUED IN 2002	Table 2
No. 426, Treasury bills 2003 I (Skatkammerbevis 2003 I)	
Issued in 2002, DKK million	19,841
Interest payable	-
Stock exchange code	0981060
Issue commenced	1 Feb 2002
Redemption date	1 Feb 2003
No. 421, Treasury bills 2002 IV (Skatkammerbevis 2002 IV)	
Issued in 2002, DKK million	8,932
Interest payable	-
Stock exchange code	0981052
Issue commenced	1 Nov 2001
Redemption date	1 Nov 2002
No. 415, Treasury bills 2002 III (Skatkammerbevis 2002 III)	
Issued in 2002, DKK million	7,490
Interest payable	-
Stock exchange code	0981044
Issue commenced	1 Aug 2001
Redemption date	1 Aug 2002
No. 401, Treasury bills 2002 II (Skatkammerbevis 2002 II)	
Issued in 2002, DKK million	3,392
Interest payable	-
Stock exchange code	0981036
Issue commenced	1 May 2001
Redemption date	1 May 2002

Note: In light of the EU's proposed new directive on taxation of interest income, in 2002, extraordinary issues were made for DKK 1 million in each of the following domestic government securities: 5 per cent Treasury notes 2003, 8 per cent bullet loans 2003, 7 per cent bullet loans 2004, 5 per cent bullet loans 2005, 8 per cent bullet loans 2006, 7 per cent bullet loans 2007, 6 per cent bullet loans 2009, 6 per cent bullet loans 2011, and 7 per cent bullet loans 2024.

CENTRAL-GOVERNMENT FOREIGN BORROWING TRANSACTIONS IN 2002[1] Table 3

Loan no.	Accept-ance date[3]	Issue date[3]	Nominal rate of interest, per cent p.a.	Type of loan[4]	Maturity date[3]	Nominal amount in million	Lead manager/Lender
962	11-04-02	18-04-02	4.875	Bond	18-04-07	1,500 EUR	Deutsche/Morgan Stanley
10011[2]	02-01-02	08-01-02		CS	08-01-09		
10012[2]	09-01-02	15-01-02		CS	15-01-09		
10013[2]	22-01-02	28-01-02		CS	28-01-09		
10014[2]	22-01-02	28-01-02		CS	28-01-07		
10015[2]	01-02-02	07-02-02		CS	07-02-09		
10016[2]	12-03-02	19-03-02		CS	19-03-09		
10017[2]	13-03-02	19-03-02		CS	19-03-09		
10018[2]	14-03-02	18-03-02		CS	18-03-09		
10019[2]	14-03-02	18-03-02		CS	18-03-09		
10020[2]	17-06-02	20-06-02		CS	20-06-09		
10021[2]	19-06-02	24-06-02		CS	24-06-09		
10022[2]	27-06-02	02-07-02		CS	02-07-09		
10023[2]	16-09-02	19-09-02		CS	19-09-07		
10024[2]	20-09-02	25-09-02		CS	25-09-07		
10025[2]	25-09-02	30-09-02		CS	30-09-07		
10026[2]	01-10-02	04-10-02		CS	04-10-07		
10027[2]	11-10-02	16-10-02		CS	16-10-07		
10028[2]	23-10-02	29-10-02		CS	29-10-07		
10029[2]	28-10-02	31-10-02		CS	31-10-07		
10030[2]	05-11-02	08-11-02		CS	08-11-07		
10031[2]	15-11-02	20-11-02		CS	20-11-07		
10032[2]	21-11-02	26-11-02		CS	26-11-07		
10033[2]	27-11-02	03-12-02		CS	03-12-07		
298	30-04-02	03-05-02	0	ECP	31-05-02	50 USD	Citibank International
244	07-08-02	07-08-02	0	USCP	28-08-02	50 USD	Merrill Lynch
244	07-08-02	07-08-02	0	USCP	28-08-02	25 USD	Merrill Lynch
244	03-09-02	04-09-02	0	USCP	25-09-02	50 USD	Merrill Lynch
244	03-09-02	04-09-02	0	USCP	18-09-02	50 USD	JPMorgan Chase Bank

[1] Including swaps, if any, in connection with new issues.
[2] EUR-leg of currency swap from DKK to EUR.
[3] Date format: dd-mm-yy.
[4] Bond is bond issue, CS is currency swap, ECP is Euro Commercial Paper and USCP is US Commercial Paper.

CENTRAL-GOVERNMENT FOREIGN BORROWING TRANSACTIONS IN 2002[1] Table 3

Issue price	Commissions and expenses, per cent	Counterparty	Notional amount in million	Nominal rate of interest	Amount in DKK million
99.623	0.1				11,107.9
		Citibank N.A.	53.77 EUR	6-month Euribor -0.215%	400.1
		CSFB	67.24 EUR	6-month Euribor -0.182%	499.8
		CDC IXIS	67.29 EUR	6-month Euribor -0.259%	500.0
		CDC IXIS	67.29 EUR	6-month Euribor -0.322%	500.0
		Deutsche Bank	67.31 EUR	6-month Euribor -0.336%	500.0
		Citibank N.A.	67.28 EUR	6-month Euribor -0.310%	500.1
		Citibank N.A.	40.37 EUR	6-month Euribor -0.309%	300.1
		UBS AG	67.28 EUR	6-month Euribor -0.292%	500.0
		BNP Paribas	67.28 EUR	6-month Euribor -0.295%	500.0
		CSFB	67.25 EUR	6-month Euribor -0.158%	499.8
		UBS AG	67.27 EUR	6-month Euribor -0.178%	500.0
		CSFB	134.62 EUR	6-month Euribor -0.179%	1,000.1
		Citibank N.A.	67.32 EUR	6-month Euribor -0.179%	500.0
		Nordea	67.29 EUR	6-month Euribor -0.188%	500.0
		Nordea	67.32 EUR	6-month Euribor -0.184%	500.0
		Nordea	67.32 EUR	6-month Euribor -0.165%	500.0
		Nordea	67.30 EUR	6-month Euribor -0.142%	500.0
		Nordea	67.28 EUR	6-month Euribor -0.120%	500.0
		RBS	67.28 EUR	6-month Euribor -0.126%	500.1
		UBS AG	67.27 EUR	6-month Euribor -0.105%	499.9
		Nordea	53.86 EUR	6-month Euribor -0.123%	400.0
		GSMMDP	53.86 EUR	6-month Euribor -0.102%	400.0
		Nordea	53,86 EUR	6-month Euribor -0.102%	400.0
99.86485					412.1
99.90025					382.6
99.90025					191.3
99.89967					374.3
99.93311					374.4

CENTRAL-GOVERNMENT DOMESTIC INTEREST-RATE SWAPS, 2002 Table 4a

Loan no.	Start date[1]	Termination date[1]	Amount in DKK million
423	17-01-02	17-01-07	400
425	25-01-02	26-01-09	200
427	18-02-02	19-02-07	500
429	06-03-02	06-03-07	300
430	13-03-02	13-03-07	300
431	21-03-02	21-03-07	300
432	17-04-02	17-04-07	400
433	22-04-02	23-04-07	400
434	23-04-02	23-04-07	300
436	29-04-02	29-04-07	500
437	14-05-02	14-05-07	400
438	22-05-02	22-05-07	500
439	11-06-02	11-06-07	500
440	19-06-02	19-06-07	500
441	27-06-02	27-06-07	300
442	05-07-02	05-07-07	300
443	16-07-02	16-07-07	300
444	18-07-02	18-07-07	400
445	25-07-02	25-07-07	300
447	16-08-02	16-08-07	300
448	09-09-02	09-09-07	300
449	17-09-02	17-09-07	300
450	20-09-02	20-09-07	300
451	01-10-02	01-10-07	300
452	04-10-02	04-10-07	300
453	09-10-02	09-10-07	300
454	22-10-02	22-10-07	400
456	31-10-02	31-10-07	300
Total			9,900

Note: The Kingdom of Denmark receives fixed interest and pays 6-month Cibor on all domestic interest-rate swaps entered into in 2002.

[1] Date format: dd-mm-yy.

CENTRAL-GOVERNMENT DOMESTIC INTEREST-RATE SWAPS
AS OF 31 DECEMBER 2002 Table 4b

Termination year	Notional amount in DKK million
2007	9,700
2008	500
2009	7,650
2010	13,000
2011	6,450
Total domestic interest-rate swaps	37,300

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

CENTRAL-GOVERNMENT SWAPS FROM DKK TO EUR, 2002 Table 4c

Loan no.	Start date[1]	Receiving			Paying			Termination date[1]	Fee in DKK million
		Currency	Million	Interest	Currency	Million	Interest		
10011	08-01-02	DKK	400.0	6-month Cibor -0.04%	EUR	53.8	6-month Euribor	08-01-09	0.1
10012	15-01-02	DKK	500.0	6-month Cibor -0.0425%	EUR	67.2	6-month Euribor	15-01-09	-0.2
10013	28-01-02	DKK	500.0	6-month Cibor -0.035%	EUR	67.3	6-month Euribor	28-01-09	0.0
10014	28-01-02	DKK	500.0	6-month Cibor -0.035%	EUR	67.3	6-month Euribor	28-01-07	0.0
10015	07-02-02	DKK	500.0	6-month Cibor -0.034%	EUR	67.3	6-month Euribor	07-02-09	0.0
10016	19-03-02	DKK	500.0	6-month Cibor -0.035%	EUR	67.3	6-month Euribor	19-03-09	0.1
10017	19-03-02	DKK	300.0	6-month Cibor -0.035%	EUR	40.4	6-month Euribor	19-03-09	0.1
10018	18-03-02	DKK	500.0	6-month Cibor -0.033%	EUR	67.3	6-month Euribor	18-03-09	0.0
10019	18-03-02	DKK	500.0	6-month Cibor -0.03%	EUR	67.3	6-month Euribor	18-03-09	0.0
10020	20-06-02	DKK	500.0	6-month Cibor -0.0325%	EUR	67.3	6-month Euribor	20-06-09	-0.2
10021	24-06-02	DKK	500.0	6-month Cibor -0.0325%	EUR	67.3	6-month Euribor	24-06-09	0.0
10022	02-07-02	DKK	1,000.0	6-month Cibor -0.03%	EUR	134.6	6-month Euribor	02-07-09	0.1
10023	19-09-02	DKK	500.0	6-month Cibor -0.0425%	EUR	67.3	6-month Euribor	19-09-07	0.0
10024	25-09-02	DKK	500.0	6-month Cibor -0.04%	EUR	67.3	6-month Euribor	25-09-07	0.0
10025	30-09-02	DKK	500.0	6-month Cibor -0.04%	EUR	67.3	6-month Euribor	30-09-07	0.0
10026	04-10-02	DKK	500.0	6-month Cibor -0.045%	EUR	67.3	6-month Euribor	04-10-07	0.0
10027	16-10-02	DKK	500.0	6-month Cibor -0.0475%	EUR	67.3	6-month Euribor	16-10-07	0.0
10028	29-10-02	DKK	500.0	6-month Cibor -0.0475%	EUR	67.3	6-month Euribor	29-10-07	0.0
10029	31-10-02	DKK	500.0	6-month Cibor -0.0425%	EUR	67.3	6-month Euribor	31-10-07	0.1
10030	08-11-02	DKK	500.0	6-month Cibor -0.05%	EUR	67.3	6-month Euribor	08-11-07	-0.1
10031	20-11-02	DKK	400.0	6-month Cibor -0.05%	EUR	53.9	6-month Euribor	20-11-07	0.0
10032	26-11-02	DKK	400.0	6-month Cibor -0.05%	EUR	53.9	6-month Euribor	26-11-07	0.0
10033	03-12-02	DKK	400.0	6-month Cibor -0.05%	EUR	53.9	6-month Euribor	03-12-07	0.0

[1] Date format: dd-mm-yy.

CENTRAL-GOVERNMENT FOREIGN SWAPS UNCONNECTED TO NEW ISSUES, 2002 Table 4d

Loan no.	Start date[2]	Receiving			Paying			Termination date[2]	Fee in DKK million
		Currency	Million	Interest	Currency	Million	Interest		
957	18-01-02	EUR	75.0	5.0225	EUR	75.0	6-month Euribor	18-01-12	0.0
958	22-01-02	EUR	60.0	5.076	EUR	60.0	6-month Euribor	23-01-12	0.0
959	15-02-02	EUR	100.0	5.255	EUR	100.0	6-month Euribor	15-02-12	0.0
960	14-03-02	EUR	100.0	5.3825	EUR	100.0	6-month Euribor	14-03-12	0.0
961	25-03-02	EUR	100.0	5.455	EUR	100.0	6-month Euribor	25-03-12	0.0
963	18-04-02	EUR	500.0	5.025	EUR	500.0	6-month Euribor	18-04-07	0.0
964	19-04-02	EUR	200.0	5.02125	EUR	200.0	6-month Euribor	19-04-07	0.0
966	14-05-02	EUR	200.0	5.425	EUR	200.0	6-month Euribor	14-05-12	0.0
967	15-05-02	EUR	200.0	5.434	EUR	200.0	6-month Euribor	15-05-12	0.0
968	16-05-02	EUR	100.0	5.49	EUR	100.0	6-month Euribor	16-05-12	0.0
969	18-06-02	EUR	50.0	5.2125	EUR	50.0	6-month Euribor	18-06-12	0.0
970	19-06-02	EUR	100.0	5.245	EUR	100.0	6-month Euribor	19-06-12	0.0
972	25-06-02	EUR	200.0	5.17625	EUR	200.0	6-month Euribor	25-06-12	0.0
973	25-06-02	EUR	200.0	5.205	EUR	200.0	6-month Euribor	25-06-12	0.0
974	27-06-02	EUR	100.0	5.195	EUR	100.0	6-month Euribor	27-06-12	0.0
975	02-07-02	EUR	150.0	5.17625	EUR	150.0	6-month Euribor	02-07-12	0.0
976	08-07-02	EUR	100.0	5.2125	EUR	100.0	6-month Euribor	08-07-12	0.0
977	09-07-02	EUR	200.0	5.2325	EUR	200.0	6-month Euribor	09-07-12	0.0
978	01-08-02	EUR	200.0	5.066	EUR	200.0	6-month Euribor	01-08-12	0.0
980	16-08-02	EUR	200.0	4.7525	EUR	200.0	6-month Euribor	16-08-12	0.0
981	20-08-02	EUR	100.0	4.85	EUR	100.0	6-month Euribor	20-08-12	0.0
982	29-08-02	EUR	200.0	4.9175	EUR	200.0	6-month Euribor	29-08-12	0.0
983[1]	03-09-02	EUR	6.8	6-month Euribor	JPY	800.0	5	06-02-03	0.7
984	30-08-02	EUR	100.0	4.8375	EUR	100.0	6-month Euribor	30-08-12	0.0
987	12-09-02	EUR	100.0	4.735	EUR	100.0	6-month Euribor	12-09-12	0.0
988	16-09-02	EUR	100.0	4.76625	EUR	100.0	6-month Euribor	16-09-12	0.0
989	24-09-02	EUR	200.0	4.6375	EUR	200.0	6-month Euribor	24-09-12	0.0
990	25-09-02	EUR	150.0	4.621	EUR	150.0	6-month Euribor	25-09-12	0.0
991	27-09-02	EUR	100.0	4.58	EUR	100.0	6-month Euribor	27-09-12	0.0
992	27-09-02	EUR	100.0	4.5975	EUR	100.0	6-month Euribor	27-09-12	0.0
993	01-10-02	EUR	100.0	4.6025	EUR	100.0	6-month Euribor	01-10-12	0.0
994	04-10-02	EUR	100.0	4.635	EUR	100.0	6-month Euribor	04-10-12	0.0
995	08-10-02	EUR	100.0	4.666	EUR	100.0	6-month Euribor	08-10-12	0.0
996	15-10-02	EUR	100.0	4.621	EUR	100.0	6-month Euribor	15-10-12	0.0
997	15-10-02	EUR	100.0	4.645	EUR	100.0	6-month Euribor	15-10-12	0.0
998	16-10-02	EUR	100.0	4.721	EUR	100.0	6-month Euribor	16-10-12	0.0
999	22-10-02	EUR	50.0	4.82375	EUR	50.0	6-month Euribor	22-10-12	0.0

[1] Asset swap connected to buy-back in loan no 924. The Kingdom of Denmark will repay the principal amount by USD 7,565,024.

[2] Date format: dd-mm-yy.

CENTRAL-GOVERNMENT FORWARD CONTRACTS IN FOREIGN-EXCHANGE WITH DANMARKS NATIONALBANK, 2002[1] Table 4e

Loan no.	Start date[2]	Receiving on the termination date USD million	Paying on the termination date EUR million	Termination date[2]
965	03-05-02	50.0	55.6	31-05-02
979	09-08-02	75.0	77.4	28-08-02
985	04-09-02	50.0	50.5	25-09-02
986	04-09-02	50.0	50.5	18-09-02

[1] Forward contracts in foreign-exchange connected to Commercial Paper issues.
[2] Date format: dd-mm-yy.

CENTRAL-GOVERNMENT DOMESTIC DEBT AS OF 31 DECEMBER 2002 — 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	43,586.0
257	7	Stående lån 2004 25 May 1993-5 Dec 1994	15 Dec 2004	67,101.0
264	7	Stående lån 2024 6 Apr 1994-31 Dec 2000	10 Nov 2024	25,001.0
269	8	Stående lån 2006 5 Dec 1994-10 Apr 1996	15 Mar 2006	56,676.0
279	7	Stående lån 2007 10 Apr 1996-30 Dec 1997	15 Nov 2007	52,069.0
286	5	Stående lån 2005 14 Jan 1997-21 Jan 2002	15 Aug 2005	57,511.0
291	6	Stående lån 2009 14 Jan 1998-3 May 2000	15 Nov 2009	66,646.0
358	6	Stående lån 2011 4 May 2000-18 Feb 2002	15 Nov 2011	60,501.0
424	4	Stående lån 2008 22 Jan 2002-	15 Aug 2008	20,954.0
428	5	Stående lån 2013 19 Feb 2002-	15 Nov 2013	45,845.0
Amortised loans				
14	5	S 2007 20 Oct 1953-12 Sep 1958	15 Sep 2007[2]	27.5
16	4	S 2017 29 Nov 1955-12 Sep 1958	15 Jun 2017[2]	79.0
57	10	S 2004 10 May 1983-30 Aug 1985	15 Oct 2004	1,896.0
Perpetuals				
1	3.5	Dansk Statslån 11 Dec 1886	perpetuals[2]	45.0
80	5	Dansk-Islandsk Fond 1918 20 May 1919	perpetuals	1.0
Government bonds, fixed interest rate, total				497,938.4

CENTRAL-GOVERNMENT DOMESTIC DEBT AS OF 31 DECEMBER 2002 Table 5

Serial no.	Coupon, per cent	Name Issue Period[1]	Redemption date	Outstanding amount, DKK million
Treasury notes				
Bullet loans				
371	5	Statsgældsbevis 2003 29 Jun 2000-7 Jan 2002	15 Nov 2003	36,689.0
422	4	Statsgældsbevis 2004 8 Jan 2002 –20 Jan 2003	15 Nov 2004	42,682.0
Treasury notes, total				79,371.0
Treasury bills				
Zero-coupon loans				
426	0	Skatkammerbevis 2003 I 1 Feb 2002-1 Nov 2002	3 Feb 2003	19,841.0
435	0	Skatkammerbevis 2003 II 1 May 2002-3 Feb 2003	1 May 2003	17,070.0
446	0	Skatkammerbevis 2003 III 1 Aug 2002-	1 Aug 2003	14,003.0
455	0	Skatkammerbevis 2003 IV 1 Nov 2002-	3 Nov 2003	12,490.0
Treasury bills, total				63,404.0
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
39	10	Præmieobligationslån af 1980/2005 28 Oct 1980	1 Jul 2005	200.0
Lottery bonds, total				400.0
Domestic government securities, total				641,113.4
Swap from DKK to EUR				-16,200.0
Central-government domestic debt, total				624,913.4

Note: In light of the EU's proposed new directive on taxation of interest income, 28 May 2002, extraordinary issues were made for DKK 1 million in each of the following domestic government securities: 5 per cent Treasury notes 2003, 8 per cent bullet loans 2003, 7 per cent bullet loans 2004, 5 per cent bullet loans 2005, 8 per cent bullet loans 2006, 7 per cent bullet loans 2007, 6 per cent bullet loans 2009, 6 per cent bullet loans 2011, and 7 per cent bullet loans 2024.

[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 2002[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	401.0	
-	5.625	1998/03 swap to DEM with floating rate	-100.0	-401.0	
Total AUD			0.0	0.0	
CAD loans					
876	5.25	1998/03	100.0	449.2	
-	5.25	1998/03 swap to DEM with floating rate	-100.0	-449.2	
Total CAD			0.0	0.0	
CHF loans					
796	2.25	1997/04	200.0	1,021.4	
-	2.26688	1997/04 swap to DEM with floating rate	-200.0	-1,021.4	
Total CHF			0.0	0.0	
DKK loans					
1	3	1894 perpetual	17.0	17.0	(3)
2	3.5	1901 perpetual	8.4	8.4	(3)
3	3.5	1909 perpetual	16.3	16.3	(3)
Total DKK			41.6	41.6	
EUR					
BEF loans					
619	0	1995/03 swap to floating rate	-5,000.0	-920.2	(2)
-	float.	1995/03 swap from fixed rate	2,705.3	497.9	(2)
Total BEF			-2,294.8	-422.3	
DEM loans					
713	float.	1996/06 swap from FRF with floating rate	146.6	556.6	
735	6.3875	1996/06 swap from floating rate	146.6	556.6	
-	float.	1996/06 swap to fixed rate	-146.6	-556.6	
772	float.	1996/06 swap from USD with fixed rate	29.9	113.7	
790	5.925	1996/06 swap from floating rate	29.9	113.7	
-	float.	1996/06 swap to fixed rate	-29.9	-113.7	
794	float.	1997/07 swap from JPY with structured rate	13.6	51.7	
796	float.	1997/04 swap from CHF with fixed rate	228.7	868.0	

[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 2002[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 – continued					
DEM loans - continued					
799	5.73	1997/07 swap from floating rate	13.6	51.7	
-	float.	1997/07 swap to fixed rate	-13.6	-51.7	
800	5.275	1997/04 swap from floating rate	228.7	868.0	
-	float.	1997/04 swap to fixed rate	-228.7	-868.0	
835	float.	1997/07 swap from JPY with fixed rate	69.4	263.6	
838	float.	1997/07 swap from AUD(interest)/JPY (redemption) with fixed rate	44.3	168.3	
841	float.	1997/03 swap from USD with fixed rate	862.5	3,274.0	
842	5.826	1997/07 swap from floating rate	69.4	263.6	
-	float.	1997/07 swap to fixed rate	-69.4	-263.6	
843	5.0625	1997/03 swap from floating rate	862.5	3,274.0	
-	float.	1997/03 swap to fixed rate	-862.5	-3,274.0	
844	5.6925	1997/07 swap from floating rate	44.3	168.3	
-	float.	1997/07 swap to fixed rate	-44.3	-168.3	
845	5	1997/03	471.5	1,789.8	
849	float.	1997/04 swap from USD with fixed rate	926.0	3,515.1	
850	float.	1997/07 swap from JPY with structured rate	31.0	117.7	
852	5.4675	1997/04 swap from floating rate	926.0	3,515.1	
-	float.	1997/04 swap to fixed rate	-926.0	-3,515.1	
853	float.	1997/07 swap from JPY with structured rate	7.6	28.8	
854	5.25	1997/04	1,000.0	3,796.0	
855	float.	1997/07 swap from JPY with fixed rate	49.3	187.0	
862	float.	1997/07 swap from USD with fixed rate	43.5	165.2	
863	float.	1997/04 swapped to floating rate	125.0	474.5	
864	5	1998/03	424.0	1,609.5	
869	float.	1998/03 swap from AUD with fixed rate	120.0	455.5	
870	float.	1998/05 swap from USD with fixed rate	908.6	3,449.0	
873	float.	1998/03 swap from GRD with fixed rate	57.7	218.9	
876	float.	1998/03 swap from CAD with fixed rate	121.5	461.0	
881	float.	1998/07 swap from NOK with fixed rate	74.3	282.0	
888	float.	1998/07 swap from SEK with fixed rate	102.0	387.2	
890	float.	1998/07 swap from SEK with fixed rate	101.5	385.3	
891	float.	1998/06 swap from SEK with fixed rate	81.9	310.9	
Total DEM			6,040.4	22,929.4	
EUR loans					(4)
877	4.05	1998/03 swapped to floating rate	113.0	838.9	
879	4.625	1998/08	475.0	3,526.5	
889	3.4	1998/04 swapped to floating rate	89.0	660.8	
895	float.	1999/06 swap to USD with fixed rate (Swap concerning buy-back (USD 20 million) of loan no. 772)	-17.1	-126.8	
906	float.	1999/04 swap from GBP with fixed rate	231.7	1,719.9	
-	float.	2000/04 swap from GBP with fixed rate	79.7	592.0	
907	float.	1999/05 swap from NOK with fixed rate	61.7	458.3	
909	float.	1999/03 swap from USD with fixed rate	233.7	1,735.1	

CENTRAL-GOVERNMENT FOREIGN DEBT AS OF 31 DECEMBER 2002[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 – continued					
EUR loans - continued					
912	float.	1999/03 swap from SEK with fixed rate	171.4	1,272.2	
913	float.	1999/05 swap from USD with fixed rate	465.0	3,452.3	
-	float.	2000/05 swap from USD with fixed rate	35.1	260.6	
914	5.125	1999/05 swap from floating rate	100.0	742.4	
-	float.	1999/05 swap to fixed rate	-100.0	-742.4	
915	5.1625	1999/05 swap from floating rate	100.0	742.4	
-	float.	1999/05 swap to fixed rate	-100.0	-742.4	
920	float.	2000/03 swap from USD with fixed rate	309.3	2,296.1	
921	3.4	2000/04 swap from floating rate	4.0	29.7	
-	float.	2000/04 swap to fixed rate (Swap concerning buy-back (EUR 4 million) of loan no. 889)	-4.0	-29.7	
922	3.4	2000/04 swap from floating rate	3.0	22.3	
-	float.	2000/04 swap to fixed rate (Swap concerning buy-back (EUR 3 million) of loan no. 889)	-3.0	-22.3	
923	4.05	2000/03 swap from floating rate	3.0	22.3	
-	float.	2000/03 swap to fixed rate (Swap concerning buy-back (EUR 3 million) of loan no. 877)	-3.0	-22.3	
924	float.	2000/03 swap from JPY(interest)/USD (redemption) with fixed rate	90.7	673.7	
926	3.4	2000/04 swap from floating rate	4.0	29.7	
-	float.	2000/04 swap to fixed rate (Swap concerning buy-back (EUR 4 million) of loan no. 889)	-4.0	-29.7	
927	4.05	2000/03 swap from floating rate	8.0	59.4	
-	float.	2000/03 swap to fixed rate (Swap concerning buy-back (EUR 8 million) of loan no. 877)	-8.0	-59.4	
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	-35.1	
939	float.	2000/03 swap from USD with fixed rate	262.9	1,952.1	
941	float.	2000/03 swap from GBP with floating rate	65.0	482.7	
943	float.	2000/03 swap from GBP with floating rate	9.9	73.4	
944	float.	2000/03 swap from ZAR with fixed rate	7.9	58.9	
948	float.	2001/05 swap from GBP with fixed rate	40.7	302.0	
949	float.	2001/04 swap from USD with fixed rate	555.2	4,122.3	
950	float.	2001/04 swap from USD with fixed rate	17.0	126.3	
951	float.	2001/04 swap from USD with fixed rate	17.1	126.8	
952	float.	2001/06 swap from USD with fixed rate	1,129.5	8,386.1	
953	float.	2001/11 swap from fixed rate	75.0	556.8	
-	4.985	2001/11 swap to floating rate	-75.0	-556.8	
954	float.	2001/11 swap from fixed rate	75.0	556.8	
-	4.985	2001/11 swap to floating rate	-75.0	-556.8	
10001	float.	2001/06 swap from DKK with floating rate	67.1	498.1	
10002	float.	2001/06 swap from DKK with floating rate	67.2	498.5	
10003	float.	2001/06 swap from DKK with floating rate	134.4	997.5	

CENTRAL-GOVERNMENT FOREIGN DEBT AS OF 31 DECEMBER 2002[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 – continued					
EUR loans- continued					
10004	float.	2001/08 swap from DKK with floating rate	47.1	349.5	
10005	float.	2001/08 swap from DKK with floating rate	47.1	349.5	
10006	float.	2001/06 swap from DKK with floating rate	40.3	299.6	
10007	float.	2001/07 swap from DKK with floating rate	67.2	498.6	
10008	float.	2001/08 swap from DKK with floating rate	53.7	398.6	
10009	float.	2001/08 swap from DKK with floating rate	67.1	498.4	
10010	float.	2001/06 swap from DKK with floating rate	53.7	398.9	
957	float.	2002/12 swap from fixed rate	75.0	556.8	
-	5.0225	2002/12 swap to floating rate	-75.0	-556.8	
958	float.	2002/12 swap from fixed rate	60.0	445.5	
-	5.076	2002/12 swap to floating rate	-60.0	-445.5	
959	float.	2002/12 swap from fixed rate	100.0	742.4	
-	5.255	2002/12 swap to floating rate	-100.0	-742.4	
960	float.	2002/12 swap from fixed rate	100.0	742.4	
-	5.3825	2002/12 swap to floating rate	-100.0	-742.4	
961	float.	2002/12 swap from fixed rate	100.0	742.4	
-	5.455	2002/12 swap to floating rate	-100.0	-742.4	
962	4.875	2002/07	1,500.0	11,136.5	
963	float.	2002/07 swap from fixed rate	500.0	3,712.2	
-	5.025	2002/07 swap to floating rate	-500.0	-3,712.2	
964	float.	2002/07 swap from fixed rate	200.0	1,484.9	
-	5.02125	2002/07 swap to floating rate	-200.0	-1,484.9	
966	float.	2002/12 swap from fixed rate	200.0	1,484.9	
-	5.425	2002/12 swap to floating rate	-200.0	-1,484.9	
967	float.	2002/12 swap from fixed rate	200.0	1,484.9	
-	5.434	2002/12 swap to floating rate	-200.0	-1,484.9	
968	float.	2002/12 swap from fixed rate	100.0	742.4	
-	5.49	2002/12 swap to floating rate	-100.0	-742.4	
969	float.	2002/12 swap from fixed rate	50.0	371.2	
-	5.2125	2002/12 swap to floating rate	-50.0	-371.2	
970	float.	2002/12 swap from fixed rate	100.0	742.4	
-	5.245	2002/12 swap to floating rate	-100.0	-742.4	
972	float.	2002/12 swap from fixed rate	200.0	1,484.9	
-	5.17625	2002/12 swap to floating rate	-200.0	-1,484.9	
973	float.	2002/12 swap from fixed rate	200.0	1,484.9	
-	5.205	2002/12 swap to floating rate	-200.0	-1,484.9	
974	float.	2002/12 swap from fixed rate	100.0	742.4	
-	5.195	2002/12 swap to floating rate	-100.0	-742.4	
975	float.	2002/12 swap from fixed rate	150.0	1,113.6	
-	5.17625	2002/12 swap to floating rate	-150.0	-1,113.6	
976	float.	2002/12 swap from fixed rate	100.0	742.4	
-	5.2125	2002/12 swap to floating rate	-100.0	-742.4	
977	float.	2002/12 swap from fixed rate	200.0	1,484.9	
-	5.2325	2002/12 swap to floating rate	-200.0	-1,484.9	
978	float.	2002/12 swap from fixed rate	200.0	1,484.9	
-	5.066	2002/12 swap to floating rate	-200.0	-1,484.9	
980	float.	2002/12 swap from fixed rate	200.0	1,484.9	
-	4.7525	2002/12 swap to floating rate	-200.0	-1,484.9	
981	float.	2002/12 swap from fixed rate	100.0	742.4	

CENTRAL-GOVERNMENT FOREIGN DEBT AS OF 31 DECEMBER 2002[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 – continued					
EUR loans- continued					
-	4.85	2002/12 swap to floating rate	-100.0	-742.4	
982	float.	2002/12 swap from fixed rate	200.0	1,484.9	
-	4.9175	2002/12 swap to floating rate	-200.0	-1,484.9	
983	float.	2002/03 swap to JPY(interest)/USD (redemption) (Swap concerning buy-back (JPY 800 million/USD 7.6 million) of loan no. 924)	-6.8	-50.5	
984	float.	2002/12 swap from fixed rate	100.0	742.4	
-	4.8375	2002/12 swap to floating rate	-100.0	-742.4	
987	float.	2002/12 swap from fixed rate	100.0	742.4	
-	4.735	2002/12 swap to floating rate	-100.0	-742.4	
988	float.	2002/12 swap from fixed rate	100.0	742.4	
-	4.76625	2002/12 swap to floating rate	-100.0	-742.4	
989	float.	2002/12 swap from fixed rate	200.0	1,484.9	
-	4.6375	2002/12 swap to floating rate	-200.0	-1,484.9	
990	float.	2002/12 swap from fixed rate	150.0	1,113.6	
-	4.621	2002/12 swap to floating rate	-150.0	-1,113.6	
991	float.	2002/12 swap from fixed rate	100.0	742.4	
-	4.58	2002/12 swap to floating rate	-100.0	-742.4	
992	float.	2002/12 swap from fixed rate	100.0	742.4	
-	4.5975	2002/12 swap to floating rate	-100.0	-742.4	
993	float.	2002/12 swap from fixed rate	100.0	742.4	
-	4.6025	2002/12 swap to floating rate	-100.0	-742.4	
994	float.	2002/12 swap from fixed rate	100.0	742.4	
-	4.635	2002/12 swap to floating rate	-100.0	-742.4	
995	float.	2002/12 swap from fixed rate	100.0	742.4	
-	4.666	2002/12 swap to floating rate	-100.0	-742.4	
996	float.	2002/12 swap from fixed rate	100.0	742.4	
-	4.621	2002/12 swap to floating rate	-100.0	-742.4	
997	float.	2002/12 swap from fixed rate	100.0	742.4	
-	4.645	2002/12 swap to floating rate	-100.0	-742.4	
998	float.	2002/12 swap from fixed rate	100.0	742.4	
-	4.721	2002/12 swap to floating rate	-100.0	-742.4	
999	float.	2002/12 swap from fixed rate	50.0	371.2	
-	4.82375	2002/12 swap to floating rate	-50.0	-371.2	
10011	float.	2002/09 swap from DKK with floating rate	53.8	399.2	
10012	float.	2002/09 swap from DKK with floating rate	67.2	499.2	
10013	float.	2002/09 swap from DKK with floating rate	67.3	499.6	
10014	float.	2002/07 swap from DKK with floating rate	67.3	499.6	
10015	float.	2002/09 swap from DKK with floating rate	67.3	499.7	
10016	float.	2002/09 swap from DKK with floating rate	67.3	499.5	
10017	float.	2002/09 swap from DKK with floating rate	40.4	299.7	
10018	float.	2002/09 swap from DKK with floating rate	67.3	499.5	
10019	float.	2002/09 swap from DKK with floating rate	67.3	499.5	
10020	float.	2002/09 swap from DKK with floating rate	67.3	499.3	
10021	float.	2002/09 swap from DKK with floating rate	67.3	499.4	
10022	float.	2002/09 swap from DKK with floating rate	134.6	999.4	
10023	float.	2002/07 swap from DKK with floating rate	67.3	499.8	
10024	float.	2002/07 swap from DKK with floating rate	67.3	499.6	

CENTRAL-GOVERNMENT FOREIGN DEBT AS OF 31 DECEMBER 2002[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 – continued					
EUR loans- continued					
10025	float.	2002/07 swap from DKK with floating rate	67.3	499.8	
10026	float.	2002/07 swap from DKK with floating rate	67.3	499.8	
10027	float.	2002/07 swap from DKK with floating rate	67.3	499.7	
10028	float.	2002/07 swap from DKK with floating rate	67.3	499.5	
10029	float.	2002/07 swap from DKK with floating rate	67.3	499.5	
10030	float.	2002/07 swap from DKK with floating rate	67.3	499.4	
10031	float.	2002/07 swap from DKK with floating rate	53.9	399.9	
10032	float.	2002/07 swap from DKK with floating rate	53.9	399.9	
10033	float.	2002/07 swap from DKK with floating rate	53.9	399.9	
Total EUR			8,111.1	60,219.1	
FRF loans					
713	float.	1996/06	500.0	565.9	
-	float.	1996/06 swap to DEM with floating rate	-500.0	-565.9	
Total FRF			0.0	0.0	
GRD loans					
873	7.5	1998/03	8,410.5	183.2	
-	7.5	1998/03 swap to DEM with floating rate	-10,000.0	-217.9	
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	34.6	
Total GRD			0.0	0.0	
LUF loans					
619	0	1995/03	5,000.0	920.2	
Total LUF			5,000.0	920.2	
NLG loans					
211	9.5	1984/04	12.5	42.1	(5)
Total NLG			12.5	42.1	
EUR total			11,272.2	83,688.5	
GBP loans					
120	13	1980/05	25.5	290.5	
906	5.875	1999/04	200.0	2,279.8	
-	5.875	1999/04 swap to EUR with floating rate	-150.0	-1,709.9	
-	5.875	2000/04 swap to EUR with floating rate	-50.0	-570.0	
941	float.	2000/09 EIB loan, Danish Higher Education Framework A	40.8	465.1	
-	float.	2000/03 swap to EUR with floating rate	-40.8	-465.1	
943	float.	2000/09 EIB loan, Danish Motorways III B	6.2	70.1	
-	float.	2000/03 swap to EUR with floating rate	-6.2	-70.1	

CENTRAL-GOVERNMENT FOREIGN DEBT AS OF 31 DECEMBER 2002[1] Table 6

Loan no.	Rate of interest, per cent p.a.	Title	Outstanding amount, million of currency	Outstanding amount DKK million (1)	Note
GBP loans- continued					
948	13	2001/05 swap to EUR with floating rate	-25.5	-290.5	
Total GBP			0.0	0.0	
JPY loans					
794	float.	1997/07	1,000.0	59.7	
-	float.	1997/07 swap to DEM with floating rate	-1,000.0	-59.7	
835	2.63	1997/07	5,000.0	298.4	
-	2.63	1997/07 swap to DEM with floating rate	-5,000.0	-298.4	
838	0	1997/07 JPY(redemption)/AUD(interest)	3,000.0	179.1	
-	0	1997/07 swap to DEM with floating rate	-3,000.0	-179.1	
850	float.	1997/07	2,000.0	119.4	
-	float.	1997/07 swap to DEM with floating rate	-2,000.0	-119.4	
853	float.	1997/07	500.0	29.8	
-	float.	1997/07 swap to DEM with floating rate	-500.0	-29.8	
855	2.02	1997/07 EIB loan, Danish Road By-passes B	3,400.0	202.9	
-	2.02	1997/07 swap to DEM with floating rate	-3,400.0	-202.9	
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	
983	5	2002/03 swap from EUR with floating rate (Swap concerning buy-back (JPY 800 million) of loan no. 924)	0.0	0.0	
Total JPY			0.0	0.0	
NOK loans					
881	6.25	1998/07	330.0	336.0	
-	6.25	1998/07 swap to DEM with floating rate	-330.0	-336.0	
907	5.75	1999/05	500.0	509.1	
-	5.75	1999/05 swap to EUR with floating rate	-500.0	-509.1	
Total NOK			0.0	0.0	
SEK loans					
888	5	1998/07	500.0	403.8	
-	5	1998/07 swap to DEM with floating rate	-500.0	-403.8	
890	5.12	1998/07	500.0	403.8	
-	5.12	1998/07 swap to DEM with floating rate	-500.0	-403.8	
891	5.065	1998/06	400.0	323.0	
-	5.065	1998/06 swap to DEM with floating rate	-400.0	-323.0	
912	5.375	1999/03	1,500.0	1,211.3	
-	5.375	1999/03 swap to EUR with floating rate	-1,500.0	-1,211.3	
Total SEK			0.0	0.0	
USD loans					
772	6.065	1996/06 swap to DEM with floating rate	-20.0	-141.6	
841	6.625	1997/03	500.0	3,541.1	
-	6.625	1997/03 swap to DEM with floating rate	-500.0	-3,541.1	
849	6.25	1997/04	500.0	3,541.1	

CENTRAL-GOVERNMENT FOREIGN DEBT AS OF 31 DECEMBER 2002[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					
-	6.25	1997/04 swap to DEM with floating rate	-500.0	-3,541.1	
862	4	1997/07	30.0	212.5	
-	4	1997/07 swap to DEM with floating rate	-30.0	-212.5	
870	5.75	1998/05	500.0	3,541.1	
-	5.75	1998/05 swap to DEM with floating rate	-500.0	-3,541.1	
895	6.065	1999/06 swap from EUR with floating rate (Swap concerning buy-back (USD 20 million) of loan no. 772)	20.0	141.6	
909	6.375	1999/03	250.0	1,770.6	
-	6.375	1999/03 swap to EUR with floating rate	-250.0	-1,770.6	
913	6.625	1999/05	530.0	3,753.6	
-	6.625	1999/05 swap to EUR with floating rate	-500.0	-3,541.1	
-	6.625	2000/05 swap to EUR with floating rate	-30.0	-212.5	
920	7	2000/03	300.0	2,124.7	
-	7	2000/03 swap to EUR with floating rate	-300.0	-2,124.7	
924	0	2000/03 USD(redemption)/JPY(interest)	87.0	616.1	
-	0	2000/03 swap to EUR with floating rate	-94.6	-669.7	
939	7	2000/03	250.0	1,770.6	
-	7	2000/03 swap to EUR with floating rate	-250.0	-1,770.6	
949	5	2001/04	500.0	3,541.1	
-	5	2001/04 swap to EUR with floating rate	-500.0	-3,541.1	
950	0	2001/04	15.0	106.2	
-	0	2001/04 swap to EUR with floating rate	-15.0	-106.2	
951	0	2001/04	15.0	106.2	
-	0	2001/04 swap to EUR with floating rate	-15.0	-106.2	
952	5.125	2001/06	1,000.0	7,082.2	
-	5.125	2001/06 swap to EUR with floating rate	-1,000.0	-7,082.2	
983	0	2002/03 swap from EUR with floating rate (Swap concerning buy-back (JPY 800 million) of loan no. 924)	7.6	53.6	
Total USD			0.0	0.0	
ZAR loans					
944	11.375	2000/03	50.0	40.9	
-	11.375	2000/03 swap to EUR with floating rate	-50.0	-40.9	
Total ZAR			0.0	0.0	
Central-government foreign debt, total				83,730.2	

(1) The outstanding amount as of 31 December 2002 is calculated on the basis of the following exchange rates as of 31 December 2002 expressed as the exchange rate per 100 units: AUD = 400.99, CAD = 449.22, CHF = 510.68, EUR = 742.43, GBP = 1,139.92, JPY = 5.9686, NOK = 101.81, SEK = 80.75, USD = 708.22, ZAR = 81.77. The outstanding amount as of 31 December 2002 in the former national currencies in the eurozone is converted into DKK by use of the irrevocable fixed exchange rates vis-à-vis EUR: BEF = 40.3399, DEM = 1.95583, FRF = 6.55957, GRD = 340.75, LUF = 40.3399, NLG = 2.20371.

(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-2002 Table 7

DKK billion	Interest	Redemptions	Total
2003	34.1	81.2	115.4
2004	28.7	110.7	139.5
2005	22.2	57.7	79.9
2006	19.4	54.0	73.3
2007	14.8	45.9	60.7
2008	11.6	19.4	31.0
2009	10.9	61.1	71.9
2010	7.0	0.1	7.2
2011	7.5	60.5	68.0
2012	4.0	0.0	4.0
2013	4.0	45.9	49.9
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	183.6	561.5	745.1

[1] Excluding Treasury bills. Including net interest payments on domestic interest-rate swaps. Currency swaps from kroner to euro are included in the redemptions. In the expiry year of the swap the central government receives kroner, which reduces the need for issuing domestic government securities.

SERVICE ON CENTRAL-GOVERNMENT FOREIGN DEBT[1], END-2002 Table 8

DKK billion	Interest	Redemptions	Total
2003	2.6	17.1	19.7
2004	1.9	16.0	17.9
2005	1.2	7.9	9.1
2006	1.0	11.9	12.9
2007	0.5	19.4	19.9
2008	-0.1	5.1	5.0
2009	-0.4	6.2	5.8
2010	-0.6	0.0	-0.6
2011	-0.6	0.0	-0.6
2012	-0.7	0.0	-0.7
Total	4.7	83.7	88.4

[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	Aaa	AAA	AA+
Belgium	Aa1	Aa1	AA+	AA+
Denmark	Aaa	Aaa	AAA	AAA
Finland	Aaa	Aaa	AAA	AAA
France	Aaa	Aaa	AAA	AAA
Greece	A1	A1	A	A
Netherlands	Aaa	Aaa	AAA	AAA
Ireland	Aaa	Aaa	AAA	AAA
Italy	Aa2	Aa2	AA	AA
Japan	A2	Aa1	AA-	AA-
New Zealand	Aaa	Aaa	AAA	AA+
Norway	Aaa	Aaa	AAA	AAA
Portugal	Aa2	Aa2	AA	AA
Spain	Aaa	Aaa	AA+	AA+
UK	Aaa	Aaa	AAA	AAA
Sweden	Aaa	Aaa	AAA	AA+
South Africa	A2	Baa2	A-	BBB-
Czech Republic	A1	A1	A+	A-
Germany	Aaa	Aaa	AAA	AAA
USA	Aaa	Aaa	AAA	AAA
Austria	Aaa	Aaa	AAA	AAA

Note: As published in January 2003. See the note in Table 9a for ranking of the rating categories.
Source: Moody's Investors Service and Standard & Poor's.

Glossary

This glossary presents explanations of a number of terms and concepts related to financial arrangements that are often used in Danish Government Borrowing and Debt. Terms in *italics* are included elsewhere in the glossary.

Acceptance date
The date on which a loan is agreed.

Amortised loan
A loan for which the debt is repaid in equal instalments on each interest due date. As the outstanding debt decreases throughout the maturity of the loan, the interest payments, and thereby the overall payments, are lower for each due date.

Auction
Government securities are sold via auction in large single issues at frequent intervals. At an auction, a bond is offered at a given nominal interest rate, maturity and redemption profile. A group of market participants may give bids for a certain volume of bonds at a given price (or interest rate).

When government securities are sold via auction a distinction is often drawn between two different methods of fixing the price paid by the bidders. In the "uniform pricing" method, a cut-off price is fixed on the basis of the bids received, and all bids at the cut-off price or above are met at the cut-off price. If the total volume of bids at the cut-off price and above exceeds the volume that the issuer wishes to sell, allocation can take place on a pro-rata basis. This entails that for bidders who have submitted bids at the actual cut-off price only a part of the bids are honoured. The Danish government uses auctions with "uniform pricing" on sale of Treasury bills where bids are made for an interest rate rather than a price.

By the "multiple pricing" method a cut-off price is likewise fixed on the basis of the bids received, and all bids at the cut-off price or above are met at the prices offered by the individual bidders.

Basis points
1 basis point is 0.01 percentage points. This is applied especially to interest-rate spreads.

Benchmark bond
A bond which is a bond-market leader. Benchmark bonds are used as a reference in the price fixing of other bonds and financial products in the market. In Denmark, benchmark bonds are determined by the Danish Securities Dealers Association.

Bid-ask
The purchase/sale price. The bid-ask spread is the difference between bid and ask prices.

Bullet loan
Loan that is repaid in full on the maturity date.

Buy-back issues
The government securities which the central government can buy back before maturity. Buy-backs are e.g. used to smooth redemptions between years.

Callable bond
Bond that can be prematurely redeemed by the debtor on terms agreed in advance. The debtor has a call *option* on the bond.

Capital losses/gains on issue
Capital losses and gains on issue arise when a loan is issued at prices respectively above and below par. Capital losses/gains on issue are distributed in the government accounts across the maturity of the loan under *Distributed capital losses on issue.*

Clearstream
Settlement and custody institution for securities.

Commercial Paper (CP)
Short-term debt instruments (zero-coupon paper) with maturities of up to one year. The central government has a USCP programme in the US market with a maximum outstanding of USD 6 billion, where the debt certificates are issued in USD with a maturity ranging from 1 to 270 days. The central government also has an ECP programme in the European market with a maximum outstanding equivalent to USD 6 billion, where the debt certificates can be issued in various currencies with a maturity varying from 7 to 365 days.

Copenhagen Inter Bank Offered Rate (Cibor)
The rate of interest at which a bank in the Copenhagen interbank market is willing to lend Danish kroner without collateral to another creditworthy bank. Cibor is fixed for loans of maturities of up to 12 months. Cibor is the reference interest rate for a large number of financial contracts. See also *Euribor* and *Libor*.

Cost-at-Risk (CaR)
Risk measure developed by Government Debt Management as a supplement to *duration* and redemption profile in the management of the interest-rate risk on the central-government debt.

Absolute CaR for a given year indicates the maximum interest costs for the debt with a probability of 95 per cent. Relative CaR is the difference between absolute CaR and the expected interest costs (mean value). Relative CaR thereby indicates the maximum increase in costs for a given year with a probability of 95 per cent.

Coupon interest
Coupon interest is the interest accruing on a paper since the last interest due date. In the Danish bond market trades are with coupon interest. The buyer of the paper pays a proportion of the coupon interest to the seller for the period from the last due date to the purchase date. In return, the buyer receives the whole of the following coupon interest payment.

Credit risk
The risk of a financial loss as a consequence of a counterparty's default on its payment obligations. In connection with the government debt the credit risk occurs in relation to *swaps*.

Cross default
Clause of loan or swap agreement that permits cancellation of the agreement should the counterparty default on its payment obligations vis-à-vis a third party.

Distributed capital losses on issue
Capital losses/gains on issue are distributed over the maturity of the loan in the government accounts. Losses/gains on issue at prices that deviate from par are distributed in accordance with the interest costs of the loan.

Domestic borrowing requirement
The part of the *gross domestic financing requirement* that is covered by issuing domestic government securities.

Dual currency bond
Loan raised and serviced in one currency, but repaid in another currency. In reality, the loan is a combination of an annuity loan (interest payments) in one currency and a zero-coupon loan (redemptions) in the other currency. See also *Reverse dual currency bond.*

Duration
Duration is the average fixed interest period for a portfolio of financial assets or liabilities. Since the government debt is compiled at nominal value, long duration expresses low risk on the debt, since on average smaller proportions of the interest costs on the government debt are adjusted to changes in the level of interest rates.

In other contexts duration is also used to express the price sensitivity of the portfolio. The higher the duration, the greater the sensitivity to fluctuations in market prices. Duration as a measure of sensitivity is relevant to the risk management of the market value of the portfolio.

Euro Interbank Offered Rate (Euribor)
The rate of interest at which a bank in the euro-interbank market is willing to grant money-market loans in euro to another creditworthy bank. Used as reference interest rate in numerous financial contracts, e.g. *swaps*.

Euro Medium Term Notes (EMTN)
Bonds issued under a loan programme subject to standardised documentation. Under the government programme the loan tranche is maximum USD 15 billion. The bonds can have maturities ranging between 1 month and 30 years.

Euroclear
Settlement and custody institution for securities.

EuroMTS
Electronic trading system for the most liquid European euro-government bonds.

Final exposure
Denotes the currency or interest-rate exposure of a loan compiled after a *swap*.

Floating interest rate
An interest rate that is agreed to float as, or in step with, another interest rate listed on the market at specific shorter intervals than the maturity of the loan, typically every third or sixth month.

Floating rate note (FRN)
Bond loan at a floating interest rate.

Foreign-exchange reserve
The foreign-exchange reserve is Danmarks Nationalbank's holdings of net foreign assets.

Forward contract
Agreement on delivery and payment of goods, securities or currency on a future date at a price fixed at the time of the agreement.

Forward rate
The price for delivery of currency at an agreed future date. Expressed as a discount or premium on the spot rate (day market rate), e.g. the krone rate for USD.

Gross domestic financing requirement
Compiled as the *gross financing requirement* less redemptions of the foreign government debt.

Gross financing requirement
The gross financing requirement is compiled as expenditures by the central government less receipts to the central government, with addition of redemptions on the domestic and foreign debt and the net bond purchases of the Social Pension Fund (SPF). See also *Gross domestic financing requirement* and *Gross domestic borrowing requirement*.

Haircut
The deduction made from a paper's market value on determining its collateral value. This gives a prudent estimate of the value of the securities received as collateral for lending or another outstanding. A haircut must take account of the risk of the paper's depreciation from the date of compilation until the possible enforced realisation of the paper, should the borrower default. The central government uses haircuts for collateral pledged by counterparties in connection with swaps and re-lending of on-the-run government securities.

International Securities Market Association (ISMA)
International association of financial institutions that trades securities in the *secondary market*.

International Swaps and Derivatives Association (ISDA)
ISDA's objective is to achieve standardisation of practice and documentation in relation to *swaps*.

ISDA Master Agreement
Framework agreement whereby all swaps with one and the same counterparty are documented.

ISO currency codes

Country	Currency	ISO code
Australia	Dollar	AUD
Canada	Dollar	CAD
Czech Republic	Koruna	CZK
Denmark	Krone	DKK
Euro area	Euro	EUR
Austria	*Schilling*	*ATS*
Belgium	*Franc*	*BEF*
Finland	*Markka*	*FIM*
France	*Franc*	*FRF*
Germany	*Deutsche Mark*	*DEM*
Greece	*Drachma*	*GRD*
Ireland	*Punt*	*IEP*
Italy	*Lire*	*ITL*
Luxembourg	*Franc*	*LUF*
Netherlands	*Guilder*	*NLG*
Portugal	*Escudo*	*PTE*
Spain	*Peseta*	*ESP*
Iceland	Krone	ISK
Japan	Yen	JPY
New Zealand	Dollar	NZD
Norway	Krone	NOK
South Africa	Rand	ZAR
Sweden	Krona	SEK
Switzerland	Franc	CHF
UK	Pound sterling	GBP
USA	Dollar	USD
SDR	Special drawing rights	XDR

Lead manager
The bank(s) that arrange(s) a bond loan. Lead manager is responsible for coordination, distribution and documentation of the supply of bonds. Distribution of the bond loan is normally by a syndicate of banks, cf. also *syndicated bond issue.* Government debt management uses syndicated bond issues in its foreign borrowing.

Liquidity
Liquidity is an expression of negotiability. Liquid bonds are often characterised by a large circulating volume, high turnover and a narrow spread between bid and ask prices. Investors will generally be willing to pay a higher price for a more liquid bond (liquidity premium).

London Inter Bank Offered Rate (Libor)
The interest rate at which a bank in the London interbank market is willing to undertake money-market lending in various currencies to another creditworthy bank. Used as a reference interest rate in a large number of financial contracts, e.g. *swaps*.

Market-maker
A securities dealer that quotes current binding bid and ask prices in securities.

Medium Term Note (MTN)
A bond issued in accordance with standardised loan documentation, e.g. *EMTN.*

Minimum coupon rate
The permitted minimum coupon rate for bonds that exempts the capital gains of investors who are liable to pay income tax in Denmark from taxation, cf. the Capital Gains Act (Legislative Order No. 901 of 11 October 2001 with subsequent amendments).

Ordinary fixing of the minimum coupon rate takes place for the six-month periods January-June and July-December. The minimum coupon rate is fixed on the basis of a reference yield calculated on a daily basis by the Copenhagen Stock Exchange. The reference yield is calculated to two decimal places as a simple average of the yields to maturity for open, fixed-yield krone bonds (apart from *callable bonds* quoted above par and index-linked bonds) for the last 20 trading days prior to 15 December and 15 June. The minimum coupon rate is 7/8 of the average yield thus compiled, rounded down to the nearest whole number of percentage points.

The minimum coupon rate can be changed extraordinarily should the reference yield on 10 consecutive trading days be more than 2 percentage points higher, or 1 percentage point lower, than the average which is the basis for the current minimum coupon rate. The new minimum coupon rate is 7/8 of the average of the reference yield for these 10 trading days, rounded down to the nearest whole number of percentage points.

The ordinary minimum coupon rate was 4 per cent up to 9 October 2002. With effect from 10 October 2002 the minimum coupon rate was lowered extraordinarily to 3 per cent. The minimum coupon rate for the first half of 2003 is 3 per cent.

Monetary-policy counterparties
Financial institutions with access to the monetary-policy instruments: deposits with Danmarks Nationalbank on a day-to-day basis, purchase of certificates of deposit and loans against securities as collateral. Danish banks and mortgage-credit institutes, as well as a number of branches of foreign credit institutions, are the monetary-policy counterparties in Denmark.

MTS
Electronic trading system for wholesale trading of bonds. The predominant system for wholesale trading of European benchmark bonds.

Negative pledge
A clause of a loan document that limits the borrower's opportunity to pledge collateral for other debt. For the lender, negative pledge entails the advantage of limiting other creditors' access to preferential ranking via a mortgage on the borrower's assets. Often, a negative pledge on a loan is worded as a prohibition, but usually only states that the borrower may not pledge collateral for other debt without equivalent collateral being pledged for the respective loan.

The central government's foreign loans normally include a negative pledge clause. In this case the clauses are limited to solely prohibit the central government from pledging collateral for other debt in foreign currency.

Net financing requirement
The net financing requirement is compiled as expenditure by the central government less receipts to the central government. Corresponds to the net cash balance with sign opposite.

On-the-run issues
On-the-run issues are the government securities issued to cover the current borrowing requirement. On-the-run issues are government securities in the 2-, 5- and 10-year maturity segments, as well as Treasury bills.

Operational risk
Primarily the risk of loss on a transaction, the settlement of trades and other portfolio handling.

Option
A contract giving the owner (the purchaser) the right, but not the obligation, to buy or sell an underlying instrument (goods, a financial instrument or a currency) at an agreed price (strike price) at an agreed future time or for a future period. The seller is obliged to recognise the owner's right.

Option-adjusted duration
The *duration* for *callable bonds* with adjustment for the uncertainty of the maturity structure as a consequence of the borrower's right to early redemption of the bond. The option-adjusted duration is lower than if the borrower did not have access to early redemption. In connection with government debt management the option-adjusted duration is used to compile the duration of the bond portfolio of the Social Pension Fund.

Perpetual bullet loan
Infinite *bullet loans*, i.e. the only payments are the ongoing coupon payments. The Kingdom of Denmark has a few minor perpetual loans from the end of the 19th century and beginning of the 20th century.

Plain vanilla
Term used for standardised and simple products, e.g. *bullet loans* and simple interest-rate *swaps.* See also *Structured loans.*

Primary dealer
Primary dealers are financial institutions that by agreement with the issuer, against payment or special rights, are obliged to create *liquidity* and turnover in specific government securities. Primary dealers typically have the exclusive right to bid at government securities auctions, and are normally obliged to accept a certain minimum volume. Primary dealers are also typically obliged to e.g. contribute to liquidity in the bond market by setting current binding bid and ask prices for bonds vis-à-vis other banks (market-making).

Primary market
Market for newly issued bonds. See also *Secondary market.*

Private placement
Bond loan or other loan offered to a small group of buyers and not normally subject to stock-exchange listing. See also *Public issue.*

Public issue
Bond loan that is offered to the general public and is stock-exchange listed. See also *Private placement.*

Rating
Credit rating given by rating institutes such as Standard & Poor's and Moody's, cf. Tables 9 and 10 of the Appendix of Tables.

Re-financing risk
The risk that the borrower has to refinance redemptions on the debt at a time when interest-rate levels are temporarily high, or in a period where the borrower's specific borrowing terms are particularly unfavourable.

Re-lending
Government-guaranteed entities, etc. can make use of re-lending, whereby the entities borrow from the central government. The central government grants re-lending to precisely reflect an existing government issue. Coupon, interest due date and maturity date will thus be identical with an existing government issue. The entities must pay a price for the loan equivalent to the average price of the underlying government issue for "member trades" on the Copenhagen Stock Exchange 3 trading days prior to disbursement of the loan.

Re-lending list
The range of government securities in which the government can grant re-lending is called the re-lending list. The re-lending list is determined by Danmarks Nationalbank, and comprises government bonds and Treasury notes that are on-the-run issues, as well as a number of other government bonds. The central government finances re-lending to the entities by issue in on-the-run issues.

Repo
A repo (Repurchase Agreement) is a transaction whereby the seller/borrower against payment transfers securities to a buyer/lender. When the agreement is established, the seller/borrower is obliged to simultaneously buy back the securities at a price fixed in advance on expiry of the agreement. For legal and technical reasons repos are defined in the contracts as sale and buy-back of securities, but in reality they are collateralised loans. The counterparty in such a deal transacts a reverse repo, i.e. lends a monetary amount against securities as collateral.

Reverse dual currency bond
Loans raised and repaid in one currency, while interest is paid in another. See also *Dual currency* loan.

Saxess
Electronic trading system for bonds and shares used on e.g. the Copenhagen Stock Exchange.

Secondary market
Market for trading of bonds after they are issued in the *primary market.*

Structured interest rate
Coupon rate on a *structured loan*.

Structured loan
A loan on special terms, e.g. with special redemption terms or built-in *options,* is a structured loan, in contrast to a *plain vanilla* loan.

Swap
A swap is an agreement between two parties to exchange payments over a fixed period. A swap is a separate financial transaction.

Currency swaps are used to restructure debt among various payment currencies. Payments in one currency are thus swapped to payments in another currency. In a currency swap from kroner to euro the central government e.g. receives interest in kroner at a floating rate and pays interest in euro at a floating rate. The counterparty pays interest and instalments on the principal denominated in kroner, in return for payments on the principal denominated in euro. Normally, principals are exchanged both at the start and end of the deal.

Interest-rate swaps are typically used to restructure debt between fixed and floating interest rates. In an interest-rate swap from fixed to floating interest rates in the krone market the central government e.g. receives interest on the swap at a fixed rate (e.g. 5- or 10-year) and pays interest in kroner at a floating rate. In contrast to a currency swap there is no exchange of principal between the parties to an interest-rate swap. The principal in an interest-rate swap is synthetic and is used only to determine the size of the payments at the individual due dates. The principal in an interest-rate swap is often described as the notional value rather than the nominal value.

The overall value of a swap is usually zero when the swap is transacted, but the swap can subsequently become positive or negative, depending on market developments in interest and exchange rates.

The central government's swaps can be divided into three categories: portfolio swaps, liability swaps and asset swaps. Portfolio swaps are transacted without being related directly to a specific loan. In a liability swap the central government receives payments that are identical with the instalments on a specific loan. An asset swap in principle corresponds to a liability swap, but is related to an asset rather than a liability.

Swap assignment
Term used when a *swap* is assigned to another counterparty. The purpose of the transaction can be to reduce the potential *credit risk* on the original swap counterparty.

Swap interest rate
The swap interest rate is the fixed interest rate on a *swap* from floating (normally *Euribor* for euro interest-rate swaps and *Cibor* for krone interest-rate swaps) to fixed interest rates.

Swap termination
When a swap agreement is cancelled before actual expiry, it is said to be terminated. This can be by specific agreement between the parties or because an event has occurred which gives one party the right to terminate the swap. On termination, the swap's market value is compiled and hereafter settled.

Syndicated bond issue
Bond issue intermediated by a syndicate of banks, typically comprising 2-4 *lead managers* and 4-6 co-lead managers. The lead manager is responsible for coordinating and distributing the largest share of the issue, while the remaining bonds are sold via co-lead managers. Issue is often based on bookbuilding whereby *lead managers* and co-lead managers obtain bids from investors. When the "book" of bids has been built up, the issuer determines price and allocation that are subsequently accepted by investors.

Tap sale
Ongoing issues in the same series. In Denmark, the issue of Treasury notes and government bonds, as well as mortgage-credit bonds, is normally via tap sale. See also *Auction.*

Value date
Settlement date, i.e. the date on which a securities deal is closed by delivery of securities against payment.

Yield curve
Relationship between the interest rate and maturity of securities. A rising yield curve – i.e. where interest rates for short-term securities are lower than interest rates for long-term securities – is normal. If the yield curve is declining, it is normally described as inverse.

Yield to maturity
The fixed discount rate that makes the present value of payments on the bond equivalent to the actual price of the bond. On calculating the yield to maturity all payments are included, irrespective of whether they are interest or redemption payments.

Zero-coupon bond
Bond not subject to current interest payments, where the redemption payment falls due when the loan matures. For a zero-coupon loan the costs of borrowing are solely a *capital loss on issue* when the bond is issued.

Zero-coupon rate
The *yield to maturity* on a *zero-coupon bond.* The zero-coupon-yield structure indicates the relation between outstanding maturity and the zero-coupon rate.