RIKSGÄLDS KONTORET
THE SWEDISH NATIONAL DEBT OFFICE

Central Government Borrowing:

Forecast and Analysis

2003:1

The central government borrowing requirement

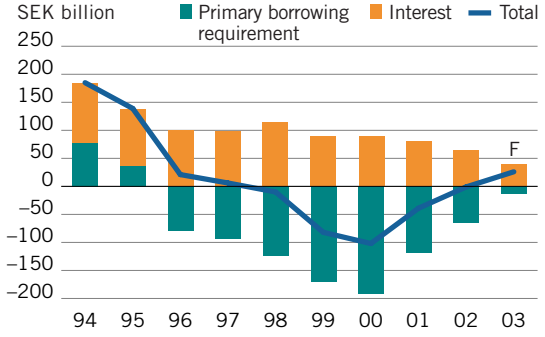
The Swedish National Debt Office's forecast of the borrowing requirement in 2003 indicates a deficit in central government payments of SEK 26 billion, in principle unchanged from the October forecast. Although the forecast of the borrowing requirement is unchanged, underlying components show deterioration in central government finances. This is however compensated by lower interest payments due to premiums on the sale prices of coming 10-year bond issues. Adjusted for nonrecurring effects, the 2003 deficit will total SEK 45 billion.

The conditions behind the forecast

The Debt Office's assessment of the borrowing requirement is based on the forecast of the Swedish National Institute of Economic Research (NIER) on the economic trend, presented in its publication *The Swedish Economy*. The NIER's December report predicts continued weak economic performance during 2003. It estimates that the economic turnaround will be delayed by one year, compared to the August report. Therefore, the economic upturn is not expected to have a positive impact on central government finances until 2004. This lower growth means that private consumption and increases in wages and salaries are expected to be lower than the Debt Office anticipated in its October forecast.

Aside from the economic picture, actual outcomes of the central government borrowing requirement are an important factor in the Debt Office's assessments. The Debt Office monitors the government's incoming and outgoing payments on a daily basis and can therefore evaluate its forecasts continuously. The outcomes until February 13 have been weighed into the current assessment. The Debt Office's forecast of interest payments on the central government debt is based on the interest rates and foreign exchange rates prevailing on the forecast dates. The cut-off date for this forecast is February 6, 2003.

Central government borrowing requirement, 1994–2003



Forecast for 2003

The Debt Office's forecast for 2003 indicates that the central government will run a payments deficit of SEK 26 billion. The deficit is thus projected to be as large as in the October forecast. The forecast and its effect on central government debt are summarised in the table below, which also presents the outcome for 2002. To facilitate comparisons with earlier reports, the government debt for 2002 is also presented according to the old valuation principles. The chart above shows changes in the borrowing requirement over the past decade.

Compared to last year, the central government borrowing requirement is expected to increase by SEK 27 billion. The primary surplus is expected to decrease by SEK 53 billion and interest payments on the central government debt is expected to decrease by SEK 26 billion.

Central government borrowing requirement and debt, 2002–2003, SEK billion

	2002 (old mesure)	2002 (new measure)	2003 (forecast)
Primary borrowing requirement	–66	–66	–13
Interest payments on debt	65	65	39
Net borrowing requirement	–1	–1	26
Debt adjustments	7	51	0
Deposit Guarantee Board, Nuclear Waste Fund and Premium Pension Authority	39	39	–
Revaluation, foreign currency loans, etc	–32	–32	0
New measure of debt*		44	–
Short-term investments	–2	–2	0
Change in central government debt	4	48	26
Debt at year-end	1,160	1,204	1,230

* There is an increase of SEK 44 billion compared to the old measure of central government debt because the valuation of derivative instruments includes unrealised exchange rate losses and the nominal final value of Treasury bills and inflation-linked bonds is larger than the acquisition value.

The primary surplus is estimated at SEK 13 billion. This is SEK 15 billion less than in the October forecast. Weak economic performance during 2002, including lower profitability in the company sector and falling asset prices, are expected to reduce revenues from taxes that are not invoiced on a preliminary basis, such as supplementary taxes, during 2003. Due to the slowdown in household consumption and lower growth in overall wages and salaries, forecasted value-added tax (VAT) and payroll-based

taxes will also decrease. Preliminary corporate tax payments have also been revised downward to some extent.

Central government sickness benefit disbursements will continue to rise, but the rate of increase will be slower than the Debt Office forecasted in October. In addition, a number of central government agencies and state enterprises made larger disbursements late in 2002 than the Debt Office anticipated in October. To some extent, this is expected to reduce disbursements in 2003. During January 2003, for example, disbursements were SEK 2 billion less than stated in the October forecast. Finally, the Debt Office anticipates that the government will carry out SEK 5 billion worth of reductions in cash expenditures in order to keep its budget from exceeding the expenditure ceiling during 2003, exactly as in the Debt Office's October forecast.

The Debt Office's net lending to central government agencies, state enterprises and state-owned companies is expected to total SEK 14 billion. This is SEK 1 billion more than in the October forecast.

When it comes to revenues from divestments of state-owned property, the Debt Office assumes that the incoming payments during 2003 will be SEK 5 billion, unchanged since the previous forecast date. This is SEK 10 billion lower than the Government's estimate in its Budget Bill but is consistent with the experiences of recent years, when such divestments have been small.

It should be noted that both the assumption about divestment revenues and the assumption about reductions in cash expenditures aimed at keeping the budget below the expenditure ceiling are uncertain. Adjusted for these assumptions, the borrowing requirement would be SEK 10 billion larger.

Interest payments on the central government debt will amount to an estimated SEK 39 billion in 2003, which is SEK 14 billion lower than the last estimate. One reason for the lower interest payments is that bond loan 1041 (6.75%, May 2014) will be issued instead of loan 1046 (5.5, October 2012) earlier than estimated. The new loan has a higher coupon interest rate than the old one, which will result in lower interest payments as a consequence of an issue premium (see the box below). Furthermore, interest rates both in Sweden and internationally are lower than on the previous forecast date, which will also result in larger premiums.

It should be pointed out that the forecast of interest payments on the central government debt is more uncertain than usual, especially in light of the possible need to issue a new long-term bond during the latter part of 2003 with a coupon interest rate at the same level as the market interest rate (see the funding section). This would lead to an increase in interest payments, since part of the projected premiums would disappear if loan 1041 were replaced by a loan with a coupon interest rate close to the market rate.

Interest expenses for government debt and bond issues

The long-term association between interest payments on the central government debt and the central government borrowing requirement is comparatively simple: an increased borrowing requirement means a larger government debt and thus higher interest expenses.

In the short term, however, the association is more complex and its effects are not entirely self-evident. Increased short-term borrowing may lead to lower interest payments on the government debt. One important reason for this is that Treasury bonds may have coupon interest rates that deviate from the prevailing market interest rates.

According to existing plans, during 2003 the Debt Office will give priority to the issuance of bonds with two-, five- and ten-year maturities. In January, it issued loan 1046 (5.5%, October 2012), but beginning in February, issues will occur in loan 1041 (6.75%, May 2014). Since the market interest rate on these loans is about 4.5 per cent, they command a market price that exceeds their nominal value. The current premiums on the two loans are 8 and 19 per cent, respectively. This means that when the Debt Office issues a bond in loan 1046 with a nominal value of 100, the Debt Office receives a payment in the range of 108. When it is issued in bond loan 1041 instead, the Debt Office receives a payment on the range of 119.

The premium is the difference between the market price that the central government receives upon issuance and the nominal value. In reporting interest payments on the central government debt, premiums are treated as interest income and are thus reported as an income item under the category interest payments on central government debt on the issue date. This means that if issue volumes increase due to a higher borrowing requirement, interest income from premiums will rise. Interest income will also increse as the Debt Office is replacing planned issues of bond loan 1046 with issues of loan 1041. Since the borrowing requirement is affected by the central government's net interest payments, the total borrowing requirement will diminish.

Sensitivity analysis

All forecasts include an element of uncertainty, and this also applies to forecasts of the borrowing requirement. For example, assumptions about economic developments may prove incorrect. The Debt Office does not produce any overall uncertainty analysis, but presents a partial analysis of the impact on the borrowing requirement that changes in some important macro variables, roughly estimated, will have in a one-year perspective. If one wishes to make an assessment of an alternative scenario in which several variables develop differently, their effects must be added together.

Sensitivity analysis, SEK billion

One per cent/percentage point increase	Effect on borrowing requirement
Total wages and salaries[1]	6
Household consumption, current prices	– 2
Registered unemployment	4
Swedish interest rates	3
International interest rates	1
Exchange rate	0.5

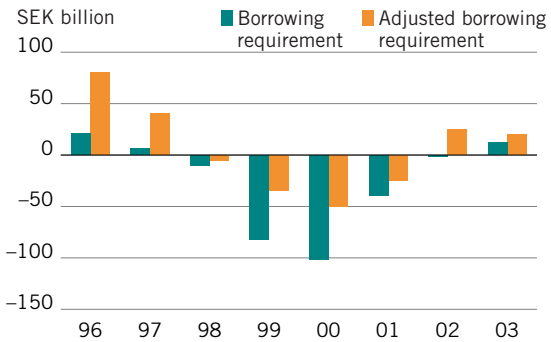
[1] Local taxes based on working income are disbursed to the local governments with a one-year time lag. As a result, the effect on the central government borrowing requirement in a one-year perspective – the time horizon in the table – is larger than the permanent effect.

Borrowing requirement adjusted for nonrecurring effects

During 2003, a borrowing requirement of SEK 26 billion is forecasted. Adjusted for nonrecurring payments, calculations indicate a borrowing requirement in the range of SEK 45 billion. Nonrecurring payments to the central government will thus fund about SEK 20 billion of the budget deficit that the government would otherwise have needed to borrow.

The main nonrecurring payments to the central government consist of SEK 13 billion from maturing mortgage bonds transferred from the National Pension Fund, SEK 10 billion in gains related to bond issues and revenues of SEK 5 billion from the sale of state-owned assets. Working in the opposite direction is SEK 12 billion of the Debt Office's net lending, primarily study loans. The latter are defined as nonrecurring disbursements since the loans are eventually expected to be repaid to the central government.

Reported and adjusted borrowing requirement



Comparisons with other forecasts of the borrowing requirement

The Swedish National Financial Management Authority (ESV) and the National Institute of Economic Research (NIER) published their most recent forecasts of the central government borrowing requirement in December. The Government presented its latest forecast of the borrowing requirement in its Budget Bill in October.

The Debt Office's current forecast indicates a borrowing requirement of SEK 26 billion in 2003. ESV and the NIER expect the borrowing requirement to be SEK 41 and 33 billion, respectively. Adjusted for known differences in divestment and interest rate assumptions, the Debt Office's forecast indicates, in principle, the same borrowing requirement as ESV and the NIER expect.[2]

[2] The Debt Office assumes SEK 5 billion in divestment revenues. This is SEK 5 billion higher than ESV, SEK 5 billion lower than the NIER and SEK 10 billion lower than the Government.

Comparison between borrowing requirement forecasts, SEK billion

	Debt Office	ESV	NIER	Government
Primary borrowing requirement	–13	–11	–19	–41
Interest payments	39	52	52	55
Net borrowing requirement	25	41	33	14

Monthly forecasts

The Debt Office presents detailed forecasts three times per year. Meanwhile it publishes monthly forecasts for the intervening months. This forecast presents monthly forecasts for February 2003 up to and including June 2003, when the next report will be published. Between regular publications, the Debt Office only makes revisions of annual and monthly forecasts in exceptional cases. In these cases, the revised forecast is presented in conjunction with the presentation of the monthly borrowing requirement outcome. The outcome is normally presented four working days after the end of each month.

The forecast for the February borrowing requirement is SEK –20 billion (budget surplus), SEK 9 billion lower than on the previous forecasting date. This is mainly due to lower supplementary tax payments and back tax payments than previously forecasted. The Riksbank's regular dividend to the central government explains the forecasted budget surplus of about SEK 8 billion in May.

Central government borrowing requirement, SEK billion

	February 2003	March 2003	April 2003	May 2003	June 2003
Primary borrowing requirement	–23.9	3.4	–2.1	–16.3	–2.1
Interest payments	3.9	3.4	2.7	8.6	1.1
Net borrowing requirement	–20.0	6.9	–0.5	–7.7	–1.0

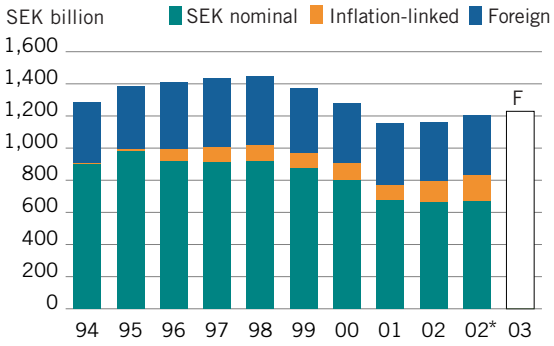
The central government debt

The Government has decided that starting in 2003, the central government debt is to be measured in a more accurate way (see *Central Government Debt 2002:3*, pages 6-7 and the press release of February 7, 2003 on the outcome of the government borrowing requirement in January). The new measure is based on an estimate of the government debt that includes derivative instruments and values all debt instruments at their nominal final values, in accordance with the same principles applied in the EU. This change does not affect the central government's actual economic position, but merely enables the Debt Office's reporting to provide a better picture of the size and structure of the central government debt.

According to the old measure, central government debt totalled SEK 1,160 billion at the close of 2002. Using the new measure, the debt totalled SEK 1,204 billion. The increase of SEK 44 billion is due to unrealised exchange rate losses associated with the valuation of derivative instruments, as well as the nominal final value of Treasury bills and inflation-linked bonds, which is larger than their acquisition value.

In 2003 there are currently no known effects influencing the debt other than the central government budget balance. The central government debt is thus projected to increase as much as the borrowing requirement, i.e. SEK 26 billion, amounting to SEK 1,230 billion at the close of 2003.

Government debt, 1994–2003



* Central government debt according to new definition

Funding

The central government's borrowing in the form of nominal Treasury bonds is projected at SEK 114 billion during 2003. Issue volumes of nominal Treasury bonds will be increased by half a billion kronor to SEK 5 billion per auction. The Debt Office estimates that there will continue to be potential to issue inflation-linked bonds at an annual pace of approximately SEK 15 billion. Foreign currency borrowing is expected to be just above SEK 20 billion, of which approximately SEK 10 billion will be funded by direct foreign currency borrowing.

Gross borrowing

As indicated in the preceding sections, the *net borrowing requirement* is expected to be SEK 26 billion in 2003. This is in principal the same as in the previous forecast. In addition, the Debt Office needs to fund maturing loans. The *gross borrowing requirement*, i.e. the Debt Office's total funding requirement, consists of the sum of the net borrowing requirement and maturing bonds, including buy-backs and exchanges of Treasury bonds to Treasury bills. This is expected to be SEK 111 billion, which is somewhat lower than in the October forecast. The funding requirement in bonds and foreign currencies is expected to increase by SEK 10 billion to SEK 140 billion.

Funding and funding requirement in 2002 (outcome) and 2003, SEK billion

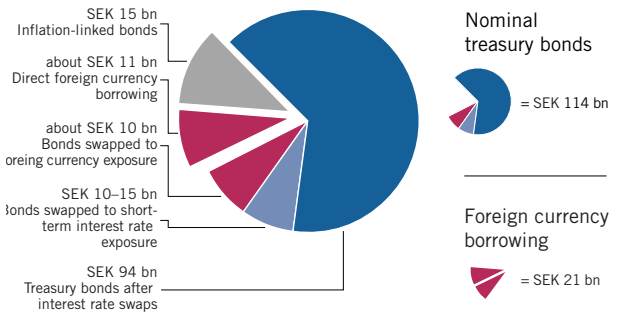
	2002	2003
Net borrowing requirement	–1	26
Maturing loans, plus exchanges and buy-backs	97	85
Maturing Treasury bonds[1]	11	10
Maturing foreign currency loans[1]	35	30
Buy-backs and exchanges of bonds to bills	51	45
Funding requirement	96	111

	2002	2003
Net short-term funding and borrowing from households[2]	16	–13
Net financing with Treasury bills[3]	–9	–16
Funding requirement, bonds and foreign currency debt	89	140
Foreign currency borrowing[1]	30	11
Inflation-linked bond issues[4]	9	15
Nominal Treasury bond issues[5]	50	114
Funding	96	111
[1] Direct foreign currency loans, spot market, valued acquisition prices		
[2] Change in outstanding deposits, liquidity bills and repos plus borrowing from households		
[3] Change in the stock of Treasury bills		
[4] Average volume of issue per auction period	1.0	1.7
[5] Average volume of issue per auction	2.3	5.0

Note. The table presents the allocation of the funding requirment by types of debt. A number of items are technical assumptions rather than forecasts of plans.

The above table presents an assessment of the allocation of the funding requirement during 2003 by types of debt – nominal Treasury bonds, inflation-linked bonds and foreign currency borrowing. In the following sections, the Debt Office's borrowing in these various types of debt is discussed in greater detail. The figure below provides an overview of funding in bonds and foreign currencies and the scale of the swaps that the Debt Office expects to use in order to achieve its targets for duration and for the pace of foreign currency debt amortisation.

Funding in bonds and foreign currency loans
Equivalent to SEK 140 billion



Nominal krona borrowing

Net borrowing in Treasury bills

The stock of Treasury bills is expected to decrease by SEK 16 billion during 2003. As a share of total central government debt, outstanding Treasury bills will thus decline slightly.[1] During 2002, their share was somewhat too large to provide the desired maturity profile.

The Debt Office may also create short-term borrowing by issuing bonds and then using interest rate swaps in order to shorten the interest rate refixing period.[2] Provided that the difference between the swap interest rate and the Treasury bond interest rate is sufficiently large, this technique provides an opportunity to lower central government borrowing costs. There is also room for the technique in 2003, given the limited need to use swaps in foreign currency

[1] The above table includes the item "Short-term funding and borrowing from households". This item includes changes in short-term funding (i.e. liquidity management instruments such as liquidity bills, overnight loans and repurchase agreements=repos), which mainly arise as a consequence of cash flows around the turn of the year. The item is included in order to achieve consistency in reporting. The net change in Treasury bill borrowing is of greatest interest when discussing longer-term funding. In this context, changes in borrowing from households are small.

[2] See box on borrowing instruments and swaps, page 7.

Borrowing instruments and swaps

Somewhat simplified, the guidelines for central government debt policy imply that the Debt Office shall achieve a given exposure in short-term and long-term borrowing, respectively, and between kronor and foreign currencies (in terms of a given pace of amortisation of foreign currency debt), respectively. These targets can be achieved by allocating government borrowing between Treasury bills, Treasury bonds and foreign currency borrowing. The Debt Office also uses derivatives (mainly interest rate and currency swaps) in order to achieve the desired exposure.

In order to create a short-term interest rate exposure via the swap market, as a first step the Debt Office issues a bond in Swedish kronor. Then it carries out an *interest rate swap* in Swedish kronor, in which the Debt Office receives fixed interest and pays floating interest (Stockholm Interbank Offered Rate, STIBOR). The gain on this transaction is that the interest rate on the bond is lower than the interest that the Debt Office receives in the interest rate swap (the difference is called swap spread). Meanwhile the Debt Office pays a somewhat higher interest rate (STIBOR) than the Treasury bill interest rate. This borrowing technique leverages the central government's relative strength as a borrower in long maturities, enabling it to reduce its borrowing costs.

Creating foreign currency exposure via the swap market involves using the domestic bond market as a source of borrowing (*krona/swap borrowing*). First the Debt Office issues a bond, which is swapped to short-term interest (see above). Then it carries out a "basis swap", which involves changing a floating interest rate in kronor for a floating interest rate in a foreign currency. Meanwhile the Debt Office buys the foreign currency in the spot market when it enters into the transaction and sells the foreign currency when closing it. The basis swap has the same maturity as the interest rate swap but interest payments are based on three- or six-month floating interest rates. In the basis swaps, the Debt Office receives floating STIBOR and pays floating interest in euro at the European Interbank Offer Rate (EURIBOR). Using this technique, the Debt Office can take advantage of the swap spread minus a small cost for implementing the swap. In principle, the borrowing cost is thus the floating EURIBOR rate minus the swap spread.

Foreign currency borrowing can thus be implemented as borrowing in a foreign currency (direct foreign currency borrowing) or via krona/swap borrowing. *Short-term borrowing* can be implemented by issuing Treasury bills or by first issuing a Treasury bond and then carrying out an interest rate swap (synthetic bills).

In practice, the room for interest rate swaps is limited by the fact that the Debt Office is a large player in this market. This room can be used to replace Treasury bills or as a part of foreign currency borrowing. In the trade-off, the costs of direct foreign currency borrowing are important.

For an extended discussion on the Debt Office's use of swaps, see Holmlund, A. [2002], "Swaps in the central government debt management", *Central Government Borrowing: Forecast and Analysis,* 2002:3, p. 17–20.

borrowing. The Debt Office expects that it will be justified from a cost standpoint to carry out SEK 10–15 billion of its short-term borrowing in this way during 2003.

The reduced volume of Treasury bills will provide correspondingly larger room for long-term borrowing, which is one of the preconditions for increasing the overall duration (maturity) of the central government debt. The duration of nominal krona debt was somewhat shorter than the 2.9 year benchmark during 2002.

Nominal Treasury bonds

Issue volume

The Debt Office expects a funding requirement in nominal bonds of SEK 114 billion during the current year.[3]

Issue volume was increased from SEK 2 billion per auction to SEK 3 billion starting on October 1, 2002 and to SEK 4.5 billion from the beginning of 2003. The issue volume will be raised by another half billion to SEK 5 billion starting with the March 12 bond issue.

The scale of borrowing in the form of bonds reflects a medium-term net borrowing requirement that is higher this year than in 2002. Meanwhile the Debt Office requires issue volumes that are compatible with the duration target for nominal krona debt. The net borrowing requirement became unexpectedly large at the end of last year. This was funded with short-term borrowing and Treasury bills which, all else being equal, shortens the maturity of nominal krona debt, so that duration became shorter than the 2.9 year target. Although the forecast for the net borrowing requirement in 2003 is unchanged, the effects on duration of the higher net borrowing requirement late last year persist. Given the borrowing that is planned, and assuming an unchanged interest rate, duration will be just above 2.9 years at the end of 2003.

[3] In the October forecast, the corresponding amount was SEK 108 billion. The increase 2003 is due to larger auction volumes in March, but limited by a reduction of the number of auctions by one.

Loans to be included in planned issues

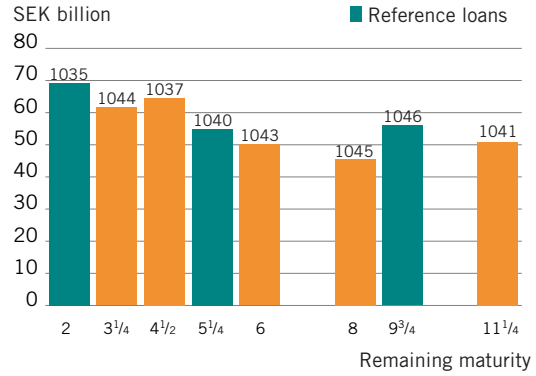
Via its bond issues, the Debt Office's policy is to contribute to the liquidity of the reference or super-benchmark loans that are traded in the electronic interbank market. This implies that bond issues will consist mainly of these loans, giving them what is usually referred to internationally as "on the run status".[4]

Loan 1046, which falls due on October 8, 2012, is still being traded as a 10-year super-benchmark. Starting on June 19, 2003, loan 1041 (6.75%, May 2014), which has an outstanding volume of SEK 51 billion, will be traded as a 10-year loan in the electronic system.[5] The loan will then have a maturity of just below 11 years. However, due to strong demand, the Debt Office has already begun issues of this loan.

New bond loans

No new bond will be introduced during the spring. The Debt Office is, however, weighing the possibility of issuing a long-term bond loan at a later date. A new 10-year loan should be issued during 2004. The Debt Office looks forward to a dialogue with investors and dealers on coming loans.

Outstanding benchmark loans



Since loan 1041 has the capacity to be a 10-year reference loan during a long period, until the end of 2004, the outstanding volume may be increased to approximately SEK 120 billion.

If a new 10-year loan maturing in September 2014 is introduced early in the spring of 2004, this will become a benchmark loan in June 2004. Under these conditions, the outstanding maximum volume in loan 1041 would be limited to approximately SEK 100 billion. Even under these conditions, however, the loan would be larger than normal. This alternative also has the disadvantage that the difference in maturity between the two loans would be only four months. This would suggest that a new 10-year loan will be introduced not earlier than autumn 2004.

When loan 1041 becomes the 10-year reference loan during the spring, the yield curve for Treasury bonds will end at this maturity. This limits the opportunities for the Debt Office to use a long-term loan to control duration with limited issue volumes. It also limits the opportunity for investors to match long-term obligations on the liability side with corresponding nominal fixed income assets.

In the immediate future, the Debt Office does not plan to issue any new bond with a longer maturity. However, this may be considered at a later date, possibly during the autumn. Such a loan would limit the need for issues of loan 1041, so that this loan will not become so large. To enable a new loan to play a pivotal role in matching and duration management, there are arguments for giving it a substantially longer maturity than 10 years. This would increase the possibility of managing duration in the event of large, unexpected borrowing requirements. On such occasions, the first adjustment is carried out using Treasury bills, which shorten duration. If there is a long-term bond, lengthening of duration can later be done more quickly.

One possible structure is to choose the same maturity date as for the inflation-linked loan 3102, that is, December 1, 2020. Such a structure would make it easier to price both loans.

This will depend, among other things, on whether there is sufficiently great interest among investors to achieve satisfactory liquidity and ensure that borrowing costs will be reasonable. A shortage of liquidity would push up borrowing costs, which would make such a loan less attractive to the Debt Office. In light of current discussion on the need for matching between assets and liabilities and efforts to enact new insurance business legislation as well as new accounting rules, chances of introducing a longer loan with good liquidity should be better than when loan 1041 was issued.

One reason to wait before deciding whether to introduce a new long-term loan is the forthcoming referendum on Swedish membership of the euro currency union. In case of a Yes vote on membership, the prerequisites for central government borrowing will change, at least in a longer perspective. This uncertainty might provide a reason for caution when it comes to increasing the number of benchmark loans with maturities further out on the yield curve.

Inflation-linked borrowing

Issue volumes

The demand for inflation-linked bonds increased during 2002. There are indications that many financial investors would like a larger share of inflation-linked bonds in their portfolios. This debt instrument offers investors a unique

[4] The electronic trading system in the Swedish interbank market focuses on three reference ("benchmark") loans that have maturities of two, five and ten years. They can thus be called "super-benchmark" loans.

[5] The loans treated as benchmark loans in electronic trading are determined by which loans are closest, in terms of maturity, to two, five and ten years. However, benchmark loans change only on IMM dates (the third Wednesday in March, June, September and December), with the criterion that in terms of maturity, the loans should be closest to two, five or ten years on the following IMM date. Given this change, an underlying loan in forward contracts will always be the same as a benchmark loan during the first three months of the contract.

protection against inflation. Since last autumn, the difference in interest rates compared to nominal bonds has been consistent with inflationary expectations and inflation targets.

As the market for inflation-linked bonds develops, there is reason to assume that the liquidity premium will decline. There should thus be room for a wider interest rate differential between nominal and inflation-linked bonds, which will make it more advantageous for the Debt Office to issue inflation-linked bonds (all else being equal).

The conditions for inflation-linked borrowing are thus favourable. In its October report, the Debt Office made the assessment that market conditions will allow inflation-linked bond issues at an annual pace of approximately SEK 15 billion, which is equivalent to about SEK 1.7 billion per issue month. Developments since then have confirmed this assessment. The Debt Office thus expects to keep its pace of inflation-linked bond issues unchanged.

The annual pace indicates only an approximate estimate of what market conditions allow. The issue volume on individual auction dates may deviate substantially. The terms of auctions are determined after proposals from dealers and investors and are based on the prevailing demand situation and the pricing picture. Both investors and dealers are welcome to pursue a continuous dialogue with the Debt Office concerning inflation-linked bonds and submit suggestions before each auction.

Loans to be included in planned issues

Loans 3101, 3105, 3102 and 3104 will continue to be issue candidates (see the chart for information on maturity years and outstanding volumes). The Debt Office mainly expects to issue bonds for the three longest-running loans.

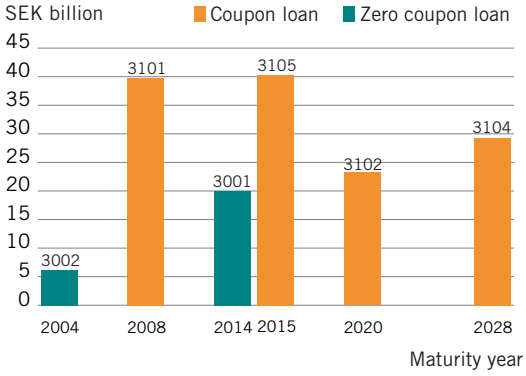
Loan 3101 already has a large outstanding volume. As this loan becomes shorter, its characteristics as a long-term inflation protection instrument will weaken. At a later date, the Debt Office will present a plan for how the loan can be phased out before it loses liquidity. This should be done in such a way that over a period of 2-3 years, the Debt Office provides opportunities to exchange the loan for longer-running inflation-linked bonds. This could be done according to a pre-announced plan indicating at what pace and during what periods the exchanges will be carried out. In the present situation, it seems reasonable to introduce maturity-extension exchanges some time next year. Investor demand will be an important factor in how the phase-out plan is formulated.

On occasions when demand is deemed strong but uncertain, the Debt Office intends to continue using flexible issue volumes. This flexibility means that in case of good but uncertain demand, the issue volume of an auction can be increased by an amount stated in advance. One precondition is that this can occur at a reasonable interest rate and without significant impact on the interest rate.

The choice of loans, issue mechanisms and volume on individual issue dates is decided in the customary way and announced one week before the auction. If the auction is implemented with a flexible volume, the volume being offered is announced as an interval.

Since the beginning of 2003, the auctions have taken place at 11.00 a.m. on a Thursday and Friday, normally during the final week of each month. Results will in the future be announced after 10 minutes, i.e. a 5-minute reduction. The results will thus be announced as quickly as those of nominal bond auctions.

Outstanding inflation-linked bonds loan



Foreign currency borrowing

The Debt Office is amortising foreign currency debt at an annual pace of SEK 25 billion. During 2002, the Debt Office abstained from amortisations of foreign currency debt in light of the weak krona exchange rate. The krona strengthened during 2002 and is now deemed to be within a range where amortisations can now be made in a way consistent with the Government's benchmark.

The borrowing requirement consists of the difference between maturing loans and the pace of amortisation. During 2003, loans including exchange rate losses equivalent to SEK 46 billion will fall due. In order to achieve the targeted pace of amortisation, the Debt Office thus needs to borrow the equivalent of SEK 21 billion in foreign currencies.

Foreign currency borrowing in 2002 (outcome) and 2003, SEK billion

	2002	2003
Gross foreign currency borrowing requirement	52	21
Benchmark for foreign currency borrowing	–2	–25
Maturing foreign currency loans[1]	35	30
Maturing currency swaps	18	10
Realised exchange rate differences	7	6
Other	–7	0
Gross foreign currency borrowing	52	21
Direct foreign currency borrowing[1]	33	12
Net short-term foreign currency borrowing[2]	–3	–1
Gross foreign currency swaps	22	10

[1] Direct foreign currency loans in the spot market, valued at current exchange rates.
[2] Commercial paper (Treasury bills in foreign currencies)

Note. The table presents the allocation between different types of debt. A number of items are technical assumptions rather than forecasts or plans.

Foreign currency loans can be funded by issuing Treasury bonds, which are swapped to foreign currency exposure (krona/swap borrowing) or by means of direct borrowing in foreign currencies. The allocation of foreign currency loans between direct foreign currency borrowing and krona/swap borrowing will depend on what interest rate conditions can be achieved. In the scenario that is sketched here, the Debt Office is expecting direct foreign currency borrowing in the capital market equivalent to SEK 12 billion. So far this year, the Debt Office has taken out foreign currency loans equivalent to about SEK 1 billion. Thus approximately SEK 10 billion would be raised by using krona/swap borrowing. The actual allocation may, however, end up deviating substantially from this scenario.

In light of the current pricing picture and market depth, the Debt Office estimates that the total scale of interest rate swaps in 2003 should again be limited to an annual pace of approximately SEK 25 billion. Early in the year, the Debt Office will not take advantage of this market at all, in order to counteract an excessively short maturity in the central government debt. If market conditions change, however, the actual scale may deviate from this estimate.

Foreign currency borrowing during the calendar year as a whole is uncertain. In the event of a Yes vote on Swedish membership of the euro currency union, there is reason to review the guidelines for central government debt policy. In case of membership, the portion of the foreign currency debt that is denominated in euro will become domestic currency on the same date that the krona is converted to euro. The foreign currency debt will thus automatically be sharply reduced. In case of a Yes vote in the referendum, there are consequently reasons for reducing the pace of foreign currency debt amortisation during the transitional period until 2006. This would imply an increased need for foreign currency loans during the period. In case of membership, the central government will have greater flexibility in changing its foreign currency exposure to the share of its total debt that can be regarded, after an in-depth analysis, as desirable in the long term.

Taking into account maturing swaps and the volume of swaps assumed here, the outstanding stock of interest rate swaps will increase by SEK 10–15 billion this year. After the pause early in the year, swaps will be carried out at a relatively uniform pace during the year. The average maturities of interest rate swaps should correspond to the duration of bond issues with a maturity not exceeding six years.

Summary

The Debt Office expects its funding requirement in bonds and foreign currencies to be SEK 140 billion, which is SEK 10 billion more than in the previous forecast.

Borrowing in the form of nominal Treasury bonds is expected to total SEK 114 billion.

Issue volumes of nominal Treasury bonds will be increased by a half billion to SEK 5 billion per auction starting on March 12.

A new bond loan with a maturity of longer than 10 years may be considered at a later date. The demand for such a loan and any changes in market conditions in case of a Yes vote on Swedish euro currency union membership are uncertainty factors.

In light of good demand, the Debt Office estimates that it can issue inflation-linked bonds at an annual pace of approximately SEK 15 billion. Its estimate is thus unchanged. The auctions will occur in the four outstanding coupon loans, and preferably in the three longest-running.

The Debt Office will amortise the foreign currency debt at an annual pace of SEK 25 billion. This implies that foreign currency borrowing will be limited to SEK 21 billion. Approximately one half of this borrowing is projected to occur in direct foreign currency borrowing.

If Sweden votes Yes to currency union membership, there are arguments for cutting back the pace of amortisation on the foreign currency debt. This implies that foreign currency borrowing would need to increase.

The Debt Office expects to carry out interest rate swaps at an annual pace of about SEK 25 billion.

The Debt Office's method for risk analysis

Summary

The Swedish National Debt Office's working method for risk management, as described here, consists of two areas: business process analysis through operational description and risk analysis.

One of the underlying purposes of the method that the Debt Office has developed is to minimise the work input from the line organisation. With this method, the Debt Office has generated descriptions of good quality, as well as strong dedication concerning the issues that have been raised. Otherwise it is common for operational description and risk analysis to be prioritised below business operations.

One innovation in the method is the clear connection between operational description and risk analysis, and the model that presented below. The Debt Office has developed a complete model for implementation. A spin-off effect is also excellent documentation of operations and the risks that have been identified.

The risk analyses have resulted in a number of changes in the Debt Office's working routines, IT systems and internal organisation.

It is unusual to report a methodical and standardised procedure for how risk analysis should be performed, although it is often mentioned as an important control instrument. For this reason, many organisations have made more or less successful attempts at analytical work without thinking especially much about methodology issues. There are international rules and standards that recommend risk analysis, and most countries have national rules that advocate such analysis as a management tool.[1] Also according to Security Standard 7799, risk analysis is one of three important sources for achieving a good security organisation.

Support for risk analysis

Auditing firms and IT security companies have introduced various products in the market designed to support risk analysis work. These products focus generally on building up scenarios, providing more or less specific checklists, or combinations of scenarios and checklists. It is often also possible both to carry out some form of self-assessment against security standards and formulate one's own evaluation criteria. The packaging of these products also varies between companies. Sometimes evaluation criteria are sold only along with consulting services from the company, but in other cases the products are stand-alone systems that the customer organisation itself may use.[2]

The Debt Office's method

The Swedish National Debt Office's model differs from traditional methods on a number of important points. The method is characterised by the use of a structured procedure for reviewing central working processes, in order to find shortcomings in them that may potentially cause incidents and administrative errors.

The risk analyses that have been carried out with the aid of the Debt Office's method have focused primarily on managing operational risks. For credit, market and other risks, there are already tried and tested methods that measure and evaluate risks, both quantitatively and qualitatively.

What is an operational risk?

The Bank for International Settlement (BIS) defines operational risks as "the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events".[3] BIS notes that it is uncertain how operational risks should be assessed and that established methods do not yet exist. One innovation at BIS, however, is that operational risks are spun off and have separate capital adequacy requirements. This may be regarded as an expression of the growing importance and attention that operational risks have received in recent years. The ability to manage operational risks more systematically has improved, although in many respects the measurement and evaluation methods cannot match the equivalent methods for determining credit and market risks, for example. In addition, access to historical data for operational risks remains poor.[4] BIS thus believes that it is important to have several different methods available for determining the capital accord. These methods range from the simplest model for measuring gross revenues, and ▶

[1] See Peter Wahlgren, *Juridisk riskanalys: Mot en säkrare juridisk metod,* Jure, Stockholm, 2003, which describes serveral examples of legal risk analysis.

[2] See for example, http://www.dfs.se/products/sbaeng/chech/

[3] See Basel Committee on Banking Supervision, *Working Paper on the Regulatory Treatment of Operational Risk*, p. 2

[4] See Basel Committee on Banking Supervision, Consultative Document, *The New Capital Accord*, January 2001, p. 94 ff.

determining capital adequacy rules on the basis of them, to the most complex model – the internal measurement model – which assumes that banks to have developed considerable skill in measuring various risk factors. Aside from incident management, risk analysis will probably fit well into such a concept when risk factors are to be measured and evaluated.

Business process analysis

As the basis for performing its risk analysis, the Debt Office carried out a thorough business process analysis. The operational description that was the outcome of the business process analysis has proved to be of value, aside from providing a basis for risk analysis. The various descriptions have been used on a number of occasions when there has been a need to discuss or convey a picture of the Debt Office's operations. In these cases, the descriptions have proved easy to understand, even by people whose main interest is not operational or risk analysis. Examples of such people are corporate or public authority executives, individual administrators, systems developers at the IT department, consultants and auditors engaged by the Debt Office etc. On occasion, all of these have had reason to obtain an overview of how the Debt Office's operations are carried out.

The Debt Office has implemented its business process analysis as a separate project, without connection to the operations to be described. If line operations themselves are assigned to produce such descriptions, a common problem is otherwise that the operations will be inadequately documented and the task of producing the descriptions will be assigned a low priority.

Execution

To begin with, the Debt Office's entire operations have been broken down into a number of main processes. Each main process has then been dealt with in a separate project. One example of such a main process is lottery bond operations. A total of about 10 main processes have been identified and described.

In the Debt Office's method, the way of describing operations (the notation) has been separated from the project model in which the description is produced. Projects have used a modern project control model based on a procedure established in advance, with set methods for assuring the quality of the descriptions as well as decision points that each project must achieve.

The basic structure of the notation that has been used has been taken from the BPR field (see box with terms above), but while BPR goes into discussions of how operations should function and be organised, the only task of the business process analysis project is to describe operations as they are and as they work. The descriptions make it possible to follow the administrative process from beginning to end (typically, from front office to back office and on to the Financial Accounting Department, with scrutiny from Risk Control), regardless of departmental boundaries. The project work is thus characterised by process-oriented thinking. The project uses the UML standard (see box) to create graphic descriptions. The purpose of creating charts and making the presentation in graphic form is to make one's thinking in a given area visible, i.e. what aspects one thinks are important to emphasise and which ones can be omitted. Drawing a picture provides a background against which one can discuss and discover unclear points and contradictions in one's reasoning. The picture stays there the whole time, which means that when one discusses concepts, structures and operational processes, it is always clear how one has thought about them to date. This facilitates the further development and refinement of the models, as well as communication of these between various individuals and groups.

Terms

UML
Unified Modelling Language. This standard was adopted by the Object Management Group (OMG) in 1997 and focused at first entirely on systems development, where it is undoubtedly the leading standard today. In recent years, however, UML has begun to be used very successfully for business modelling.[5)]

BPR
Business Process Reengineering often aims at analysing and streamlining business processes in a company or corporate group.

SS 62 77 99
Information security management system according to the Swedish Standards Institute (SIS). It includes an extensive set of control instruments and is based on good information security practices. It is a translation of the British standard BS 7799.

BIS
The Bank for International Settlement. (BIS) is an international organisation which fosters co-operation among central banks and other agencies in pursuit of monetary and financial stability.

5) Eriksson and Penker, *Business Modeling with UML, Business Patterns at Work*, p. xv. OMG Press 2000.

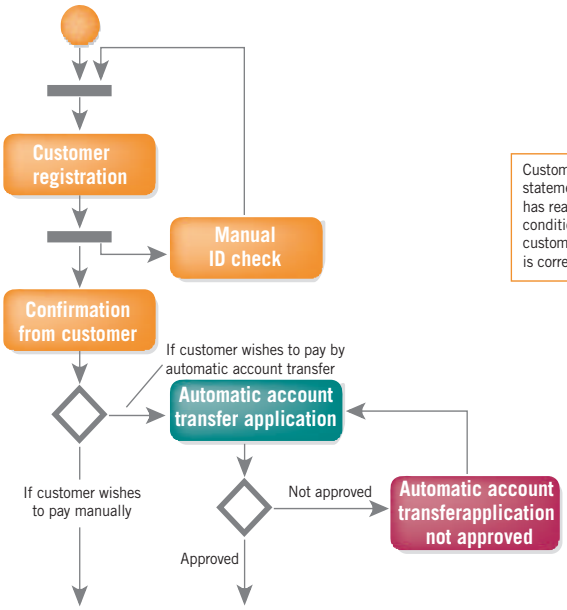
From risk analysis to risk management

As a result of risk analyses, risks eventually disappear or at least diminish and can be controlled. This can be achieved by changing routines, systems and the organisation. Risks that the organisation is not aware of are also brought up and can thus be managed.

Like the above business process analysis project, there are advantages to separating the risk analysis project's project control model from the outcome. An activity chart of the risk analysis project is shown earlier in this article.

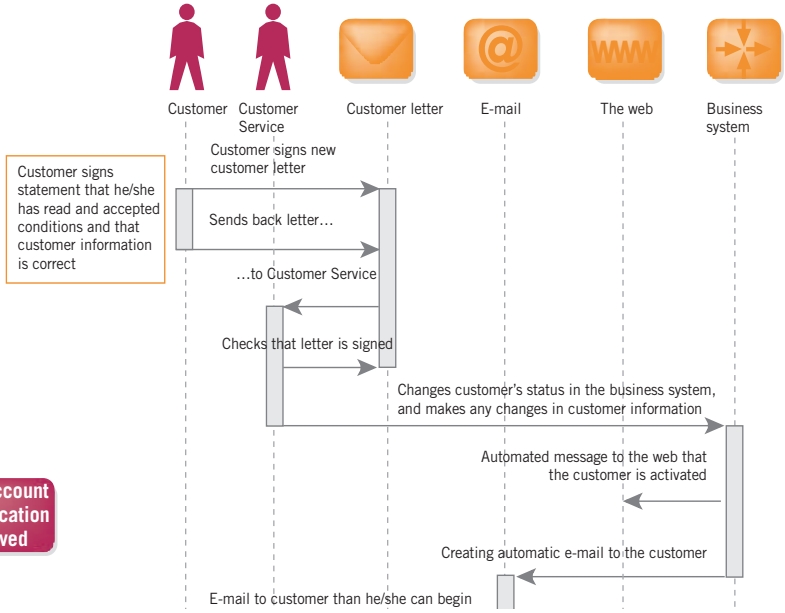
In its initial risk identification, the project team tries to identify relevant risks in operational processes. The charts that have been produced, as shown on page 13, are

Activity chart of customer registration



The projects have primarily used activity and sequence charts. The activity chart provides an overview of a business process without providing any details. Each activity (box) in the chart can then be broken down and specified in additional activity or sequence charts.

Sequence chart of customer registration



This sequence chart provides a detailed picture of a process and reports the interaction of the various players, documents and systems.

used as the basis for the analysis. An "ordinary" business process – for example the previously mentioned lottery bond operations – may consist of about 50 charts. The risk identification task also tries to identify what type of risk is involved (for example, operational risk because one person administers a transaction alone throughout processing chain, market risk due to failure to check a counterparty's rating etc). In the risk analysis, security standards are established and, as necessary, risks can be evaluated and quantified. If the risk has been identified as relevant enough for action, an action plan is produced. Actions are finally implemented through risk management.

In risk analysis work, it is important to be consistent. For this reason, the Debt Office has developed a number of templates designed to support the process of analysis. In a scenario-based risk analysis, which this case fundamentally deals with, it is often a problem that the focus of the analysis shifts from one occasion to another. One time, the focus may be on organisational issues, while another time the work is focused entirely on what user rights exist in the various systems. The focus may shift depending on how the charts are drawn, what is currently topical at the workplace or what mood the project team is in. A consistent working method must ensure that certain general issues are always covered during risk analyses.

A general, well-documented method also makes it easier for new employees to familiarise themselves with how risk analyses should be carried out, and it is also possible to keep this knowledge at the authority or company, since the work will become independent of individuals.

Finally, the method makes it possible to obtain comparable results of risks analyses over time. A risk analysis carried out one or two years later can be directly compared to an earlier risk analysis.

The Debt Office's method differs somewhat from traditional methods, since the operations being analysed do not need to be involved in the initial risk identification work. At the Debt Office, for example, this work is carried out by the Risk Control Department. Since the action plan and implementation involve organisational and work-related changes, the project should enjoy a certain organisational weight and be clearly sanctioned by top management. It is also important to understand that the project team carries out the risk analysis work, while all the changes are implemented by the line organisation. Practical experience at the Debt Office has also shown that the task of risk analysis requires considerable longer time than operational analysis.

Johan Palm, Information Security Manager

Analysis of foreign currency debt structure

Foreign currency debt today accounts for one third of Sweden's total central government debt. This debt consists of five currencies. In a floating exchange rate regime, the structure of the debt is not given. This article presents the analytical work of the Swedish National Debt Office regarding how foreign currency debt should be structured. Its conclusion is that today's structure is well balanced and that in the present situation there is no reason to change it.

In its choice of foreign currency structure, the Debt Office has focused on risk minimisation rather than cost minimisation. The primary reason is that historical costs tend to constitute an uncertain forecast of future costs, whereas risk is more stable over time. The foreign currency structure is such that the variation in cost, measured in Swedish kronor, is minimised.

The choice of foreign currency structure was easy as long as the Swedish krona was pegged to a currency basket during the 1980s and later to the ECU currencies. To reduce risk, the Debt Office chose to include a certain share of Japanese yen and US dollars in its foreign currency debt when the krona exchange rate was set free in late 1992.

In 1997, for the first time the Debt Office used the "mean variance" method to identify the optimal foreign currency structure. Two years later, the Debt Office decided to increase the share of Swiss francs in the foreign currency debt, in order to reduce expected future costs. Since then, the Debt Office has repeated its mean variance analysis on one occasion. Two years have now passed since then, and another two years of data are available. The Debt Office thus carried out another analysis late in 2002. As earlier, the mean variance method was used in order to identify the desired currency structure.

As previously, the analysis emphasised risk minimisation. However, a portfolio with higher risk might be permitted if it has been found likely that this portfolio will have future cost advantages. The desired portfolio should thus lie close to, but not necessarily on, the efficient frontier.

Presented below are the outcomes of various calculations in which the risk and cost characteristics of various foreign currency structures are compared. We will begin by comparing today's foreign currency structure with a risk-minimising structure and by discussing whether Norwegian kroner should be included in the portfolio or not. Then we will examine some extreme structures and examining the importance of diversification. Following that, we present calculations for various time periods to see how robust the outcomes of the model are. Finally we will discuss whether the Swiss franc should be part of the portfolio or not, and what the model would imply in case of possible Swedish EMU (euro zone) accession.

Risk-minimising structure

In cost and risk terms, today's foreign currency benchmark is close to a risk-minimising currency structure for the period studied. The risk-minimising portfolio has a high NOK share (36 per cent). This outcome is driven by

The mean variance method, cost and risk definition

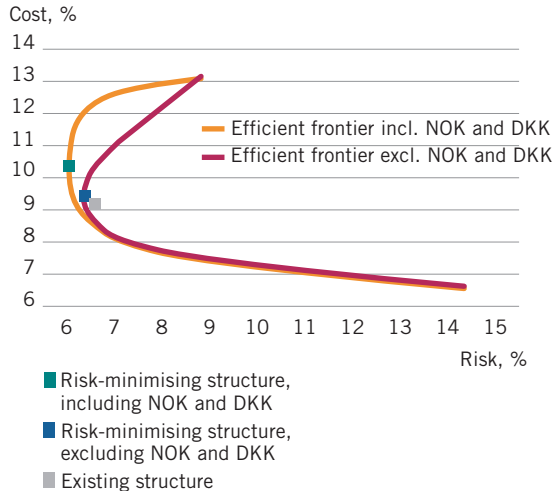
The Swedish National Debt Office uses the mean variance method to look for optimal portfolio structures. This method is based on modern portfolio theory and is common in financial problem-solving of this kind. The method is based on using historical data to identify those portfolios that are clearly better than other portfolios in terms of expected cost and risk. These portfolios are labelled efficient and together comprise the efficient frontier.

Costs are measured as the change in the market value of foreign currency debt plus on-going interest costs. Costs thus consist of interest payments, exchange rate effects and interest rate effects. Risk is measured in the form of standard deviation for costs.

Costs and risk are calculated on the basis of monthly data, but are presented after being recalculated to an annual rate. Monthly market data from January 1993 to October 2002 are used. The currencies included in the analysis are those included today in the Debt Office's foreign currency benchmark (euro, US dollars, yen, British pounds, Swiss francs and Norwegian and Danish kroner). The D-mark is used as an approximation of the euro during the period before the introduction of the euro.

For an exact definition of costs, see the Debt Office's memo of December 4, 2002, *Analys av valutariktmärkets sammansättning* (Analysis of the Structure of the Foreign Currency Benchmark).

Efficient frontiers



the fact that the Swedish krona has varied less against the Norwegian krone than against the other currencies in the study. Risk measured in Swedish kronor is therefore low.

Re-weighting the portfolio so that 36 per cent of foreign currency debt is in Norwegian kroner is not a realistic alternative. First, it would imply forward contract sales of NOK 120 billion against other portfolio currencies. This would be very difficult from a liquidity standpoint and put heavy pressure on the Norwegian krone, in the judgement of the Debt Office. Furthermore, short-term interest rates in Norway today are about 6.5 per cent. Having a large NOK share in the foreign currency debt portfolio would thus be costly. Nor is there anything in the present situation to indicate that high domestic demand in Norway will cool and that the country's high interest rates will thus fall.

Given that the risk minimisation advantage is negligible, while there are many indications that the cost of NOK debt will remain high, the Debt Office chose to exclude the Norwegian krone from the continued analysis.

For the same reason, the Danish krone was also excluded. In reality, Denmark has a fixed exchange rate policy against the euro and there is no reason to believe that this will end. Interest rates in Denmark are somewhat above those in the euro zone. Borrowing in DKK will thus be more expensive without providing any positive diversification effects.

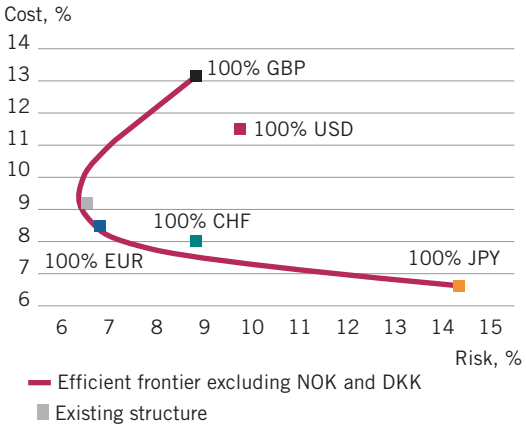
If we re-optimise the portfolio without NOK and DKK, the risk-minimising portfolio has a high share of euro (77 per cent). The dollar and pound are also represented in that portfolio. The chart below shows the existing and the risk-minimising portfolios in relation to two "efficient frontiers": one including NOK and DKK and one excluding these currencies. The existing portfolio is close to both these frontiers.

Extreme structures and diversification gains

By looking at portfolios that contain only one currency, we can obtain some idea of the magnitude of the diversification gains we can achieve by spreading the risk across several currencies. The chart below makes it clear that dollars and yen have been risky, while yen, Swiss francs and euro have historically reduced costs. It is worth noting that the portfolio that minimises costs is the one containing 100 per cent yen, but that the risk in this portfolio is high.

From a risk standpoint, the euro has clearly been the single most advantageous currency. This is because during this period, EUR has been the currency that has varied the least against the Swedish krona (aside from NOK). In terms of cost, the euro has also been advantageous during the period studied. Above all, this is because the euro has weakened against the other portfolio currencies.

Efficient frontiers and extreme portfolios



Existing, risk-minimising and cost-minimising foreign currency structure, per cent

	EUR	USD	GBP	JPY	CHF	NOK	DKK	Risk	Cost
Existing	65	14	8	4	9	–	–	6.8	9.1
Risk-minimising	46	3	15	–	–	36	–	6.4	10.4
Risk-minimising excl. NOK and DKK	77	9	14	–	–	–	–	6.7	9.4
Cost-minimising	–	–	–	100	–	–	–	14.3	6.7

Optimal portfolio structures over time

The risk-minimising portfolio is not constant over time. This becomes evident if we resolve the portfolio optimisation problem during rolling five-year periods, from January 1993 to October 2002. Generally, however, the share of euro in the risk-minimising portfolio is at a high level, between 70 and 80 percent. The euro should therefore be the dominant currency in the portfolio. The analysis also indicates that the dollar should have the second highest share in the portfolio.

Risk-minimising structure during different time periods, per cent

	EUR	USD	GBP	JPY	CHF	Risk	Cost
Jan 1993–Oct 1998	83	3	13	–	1	6.8	9.1
Jan 1994–Oct 1999	78	20	2	–	–	6.4	10.4
Jan 1995–Oct 2000	73	27	–	–	–	6.7	9.4
Jan 1996–Oct 2001	71	18	4	7	–	14.3	6.7
Jan 1997–Oct 2002	75	17	1	6	–	5.9	8.6

Swiss francs in the portfolio

An earlier analysis by the Debt Office pointed to the advantages of shifting a portion of the euro debt to Swiss franc debt, since in the long term the Swiss franc can be viewed as a cheaper euro. See the Debt Office's memo of December 9, 1999, *Operativa konsekvenser av regeringens riktlinjebeslut för statsskuldens förvaltning* (Operative Consequences of the Government's Guideline Decision for the Management of the Central Government Debt). The Debt Office believes that this analysis remains valid. The existing CHF portfolio share, 9 per cent, should therefore remain.

If we re-optimise given the existing CHF share, the risk does not increase in comparison to the risk-minimising portfolio. The optimal shares of the various currencies also end up rather close to today's portfolio. The difference in risk terms between the existing portfolio and a risk-minimising portfolio with a fixed CHF share of 9 per cent is negligible.

Existing and risk-minimising structure, and a portfolio with a fixed Swiss franc share, per cent

	EUR	USD	GBP	JPY	CHF	Risk	Cost
Existing	65	14	8	4	9	6.8	9.1
Risk-minimising	77	9	14	–	–	6.7	9.4
9 per cent, CHF	66	17	2	5	9	6.7	9.4

EMU aspects

In case of Swedish accession to the EMU, euro debt would become domestic debt. The remaining foreign currency debt would then have a new structure. The risk characteristics of this structure differ significantly from that of the risk-minimising portfolio in that situation.

Existing and risk-minimising structure in case of EMU membership where euro is base currency, per cent

	USD	GBP	JPY	CHF	Risk	Cost
Exisiting	40	23	11	26	5.5	9.6
Risk-minimising	12	21	0	67	3.9	8.6

Compared to analyses with the Swedish krona as the base currency, the share of Swiss francs should be increased, the share of dollars and yen be decreased and the share of pounds be unchanged. Generally, the risk in the foreign currency debt declines if the euro is the base currency. This is because the euro has been more stable than the krona against other currencies.

However, it is not necessarily true that the same method that is being used today to identify the optimal foreign currency structure would be used in case of possible EMU accession. At that time, there would be far greater opportunity to choose the extent to which Sweden's central government debt should consist of foreign currencies. It is thus possible to argue that cost minimisation should weigh more heavily than risk minimisation.

It is also conceivable that risk should be defined as the risk for the entire portfolio. Foreign currency debt may of course have positive diversification effects, if its cost is low while the cost of domestic debt is high, and vice versa. This differs from the approach of earlier analyses, since the foreign currency debt has been analysed as a free-standing unit.

Summary

Late in 2002 the Debt Office performed an analysis to decide a new foreign currency benchmark. This analysis showed that a high share of euro in the foreign currency debt portfolio is preferable from a risk standpoint. Dollars and pounds should also account for relatively large shares of the portfolio. In an earlier analysis, however, the Debt Office found that there may be cost advantages to having debt denominated in Swiss francs instead of euro. The Debt Office still believes in this analysis. Comparisons between today's foreign currency debt structure and a risk-minimising portfolio also show that the differences in risk are negligible.

Taken together, based on this analysis there is no reason to change the existing structure of the foreign currency benchmark. Today's foreign currency debt portfolio structure is well-diversified, with a large share of euro, which is in line with the above results.

Magnus Andersson, Analyst
Lars Andrén, Portfolio Manager

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The Debt Office memorandum of December 4, 2002, *Analys av valutariktmärkets sammansättning.*

Borrowing and funding during 2002

During 2002, the central government budget surplus was slightly above SEK 1 billion. Interest payments amounted to SEK 65 billion. Bond issues in foreign currencies and Swedish kronor rose by about SEK 15 billion. Demand for inflation-linked bonds also rose. Due to the weak Swedish krona exchange rate, the Debt Office decided not to amortise the foreign currency debt.

Central government borrowing requirement

During 2002, growth slowed in the world economy and most stock markets fell. Many central banks lowered their key interest rates. Long-term interest rates fell as a consequence of diminished concern about inflation and an increased demand for safe financial investments. Increasingly weak world economic conditions led to smaller budget surpluses in most countries. In Sweden, too, the budget surplus shrank. In 2002, the surplus was only SEK 1.2 billion, which was SEK 37.5 billion less than in 2001. Adjusted for nonrecurring payments, the change was about SEK 45 billion from 2001 to 2002.

By definition, a budget surplus is the same thing as a negative borrowing requirement. It is affected by many factors, for example tax revenues, transfer payments, the Debt Office's net lending and interest payments on the central government debt. During 2002, tax revenues declined somewhat compared to 2001. This was because central government income taxes were cut, while revenues from capital gains and corporate taxation decreased.

Meanwhile disbursements of pensions and sickness benefit rose. In addition, there was an increase in state disbursements to local governments, for example to cover costs of the new ceiling on monthly fees for public child care. A number of government agencies, for example the Armed Forces, the National Police Board and the National Road Administration, also increased their disbursements.

The Debt Office's net lending to government agencies, state enterprises and state-owned companies fell by half compared to 2001. The most important explanation for this decrease was that the central government's loan to the state-owned forest company Sveaskog was repaid early in 2002.

Interest payments on the central government debt totalled SEK 65 billion, a decrease of SEK 16 billion compared to 2001. Among the reasons for this downturn were that a loan with a high coupon interest rate matured during the year and was replaced with loans carrying lower coupon rates. In addition, interest rates were lower and central government debt has decreased for a number of years. In addition, realised exchange rate losses were halved, among other things because on average, the krona was stronger in 2002 than during 2001.

Central government borrowing requirement and debt, SEK billion

	2001	2002
Primary borrowing requirement	–120	–66
Interest payments on debt	81	65
Net borrowing requirement	–39	–1
Debt adjustments	–73	7
Of which transfer from National Pension (AP) Funds	–69	–
Riksbank transfer	–18	–
Deposit Guarantee Board, Nuclear Waster Fund and Premium Pension Authority	–	39
Revaluation, foreign currency loans etc.	14	–32
Short-term investments	–11	–2
Change in central government debt	–122	3
Debt at year-end	1,157	1,160
Debt as percentage of GDP	51	50

Central government debt

At the close of 2002, Sweden's central government debt amounted to SEK 1,160 billion. This was equivalent to about 50 per cent of Gross Domestic Product (GDP). The government debt rose by a total of SEK 3.5 billion during the year. This figure conceals large gross changes. On the one hand, on July 1 the debt rose by nearly SEK 40 billion when the account balances of certain government agencies at the Debt Office were transformed into government bonds. On the other hand, the foreign currency debt declined by around SEK 25 billion because the krona strengthened. The favourable effect of the krona's appreciation is thus concealed by a technical adjustment in the Debt Office's accounting.

New measures of central government debt

The Government has decided that beginning in 2003, the central government debt will be measured in a more correct way. This new measure is based on calculating the debt inclusive of derivative instruments and on valuing all debt instruments at their nominal final value according to the same principles that are applied in the EU. The change does not affect the central government's actual financial position, but it provides a better picture of the size and structure of the debt.

Central government debt in the Debt Office's accounts, SEK billion

	2001	2002
Previous measure	1,156.8	1,160.3
New measure	1,211.8	1,204.3
Change	+ 55.0	+ 44.0

SEK funding

During 2002, the Debt Office issued nominal Treasury bonds totalling SEK 50 billion. This is a decrease compared to 2001, when the issued volume was SEK 63 billion.

In recent years, the Debt Office has used a portion of its nominal Treasury bonds to create foreign currency debt via swap agreements (krona/foreign currency swaps). The effect has been to increase the liquidity of the Treasury bond market, while lowering the cost of foreign currency loans. During 2002 it became somewhat less advantageous to carry out krona/foreign currency swaps.

For the first time since 1999, the Debt Office chose to borrow directly in foreign currencies. This decreased the issue volume of nominal SEK Treasury bonds.

The outstanding stock of Treasury bills decreased somewhat during 2002. At year-end, the stock of Treasury bills totalled about SEK 240 billion (including liquidity bills). During the year, the Debt Office began to issue Treasury bills according to a new pattern. This issue pattern means that the Debt Office always has six Treasury bills outstanding, of which four mature on IMM dates (the third Wednesday in March, June, September and December). This strengthens the link between the Treasury bill market and other markets for short-term instruments.

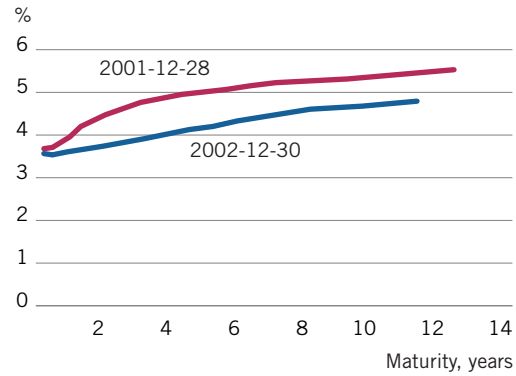
Funding and funding requirement in 2001 and 2002, SEK billion

	2001	2002
Net borrowing requirement	–39	–1
Maturing loans, plus exchanges and buy-backs	94	97
Maturing Treasury bonds[1]	14	11
Maturing foreign currency loans[1]	30	35
Buy-backs and exchanges of bonds to bills	50	51
Funding requirement	55	96

	2001	2002
Net short-term funding and borrowing from households[2]	15	16
Net financing with Treasury bills[3]	–30	–9
Funding requirement, bonds and foreign currency debt	70	89
Foreign currency borrowing[1]	4	30
Inflation-linked bond issues[4]	3	9
Nominal Treasury bond issues[5]	63	50
Funding	55	96

[1] Direct foreign currency loans, spot market, vlued acquisition prices
[2] Change in outstanding deposits, liquidity bills and repos plus borrowing from households
[3] Change in the stock of Treasury bills
[4] Average volume of issue per auction period 0.3 1.0
[5] Average volume of issue per auction 2.9 2.3

Yield curves for nominal Treasury bonds

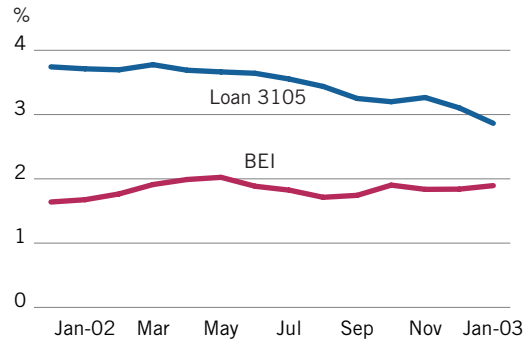


Inflation-linked bonds

During 2002, the Debt Office increased the total outstanding stock of inflation-linked bonds.

This is mainly because somewhat more than SEK 30 billion of some public agencies' account receivables at the Debt Office was transformed into direct holdings of inflation-linked bonds at the mid-year turn. Also, the issued volume increased as a result of stronger demand in the market. The real interest rate fell and break-even inflation – the difference between the nominal and the real interest rate – established at the level of expected inflation and the Riksbank's inflation target. This made it more advantageous for the Riksbank's Debt Office to issue inflation-linked bonds.

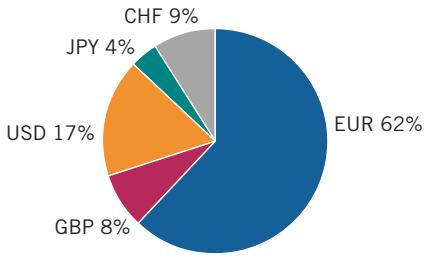
Real interest rate (loan 3105) and break-even inflation (BEI)



Foreign currency loans

Due to the weak krona exchange rate, the Debt Office chose not to amortise its foreign currency debt during 2002. During the year, about SEK 54 billion in foreign currency loans and swaps fell due for payment. In order to refinance this, for the first time since 1999 the Debt Office borrowed the equivalent of SEK 30 billion directly in foreign currencies, mainly in US dollars. The rest was funded by krona/foreign currency swaps. About 45 percent of nominal Treasury bonds were used in order to create foreign currency debt in 2002. The Debt Office received an award from the *International Financing Review* for the best international dollar loan during 2002.

Foreign currency debt, benchmark
December 31, 2002



Result of foreign currency debt management

Late in 2000, the Debt Office increased its US dollar debt and decreased its debt in euro. Its motive was that the dollar was considered overvalued. The intention was to restore the earlier allocation among currencies once the dollar had weakened. During the second half of 2002, the Debt Office began switching back part of its dollar-denominated debt into euro. By early February 2003, one third of its strategic dollar position had been sold, with a realised profit of SEK 1.2 billion. The unrealised profit was about SEK 3 billion.

Within certain well-defined limits, the Debt Office has the opportunity to pursue active management of a portion of its foreign currency debt. The saving due to this active management during 2002 was about SEK 400 million.

Currency exchanges

Since July 1, 2002, the Debt Office is allowed to carry out currency exchanges directly in the market. These exchanges were previously performed by the Riksbank (Swedish central bank). This means that the Debt Office now handles all transactions connected to its foreign currency debt management.

Retail market borrowing

At the close of 2002, private individuals, small companies and organisations had invested SEK 57 billion with the Debt Office, mainly in lottery bonds and National Debt Savings. This means that around 5 per cent of central government debt is borrowed directly from small investors. The Debt Office's share of the savings market for interest-bearing securities is 8 per cent.

During 2002, the Debt Office launched on-line sales of Government securities. This made it possible also for small investors to participate directly in the Debt Office's nominal Treasury bond auctions. Transactions are carried out only via the Internet, and the investors may buy T-bonds at the auction's average interest rate. During 2003, Treasury bills and inflation-linked bonds will also be sold in this way.

The National Debt Savings system remained successful. A total of nearly SEK 16 billion was invested in National Debt Savings at year-end 2002, an increase of SEK 4 billion since 2001. The number of customers rose by 25,000. The single most popular form of savings during the year was National Debt Savings with floating interest rate, which rose by SEK 3 billion. The average balance on each account in this form of savings was SEK 146,000 at year-end. The interest rate was 3.5 per cent.

During 2002, the Debt Office issued two new lottery bond loans. Lottery bond sales totalled SEK 6 billion. Meanwhile SEK 9 billion in lottery bonds matured, which meant that the outstanding volume of lottery bonds fell.

By borrowing from households and small investors, the Debt Office lowered the cost to the central government by SEK 327 million, compared to borrowing from institutional investors. At the same time, savers gained a competitive alternative to ordinary bank savings.

Market information

Source: The Swedish National Debt Office, unless otherwise stated

Swedish government debt

Treasury bonds, outstanding volumes, January 31, 2003

Nominal bonds

Maturity bonds	Coupon %	Loan no.	Nominal amount SEK M
2004-01-15	5.00	1042	63,620
2005-02-09	6.00	1035	69,294
2006-04-20	3.50	1044	61,595
2007-08-15	8.00	1037	64,717
2008-05-05	6.50	1040	54,783
2009-01-28	5.00	1043	50,138
2011-03-15	5.25	1045	45,532
2012-10-08	5.50	1046	55,967
2014-05-05	6.75	1041	46,726
Total benchmarks			**512,372**
Non-benchmarks			**12,857**

Inflation-linked bonds

Maturity date	Coupon %	Loan no.	Outstanding amount SEK M
2004-04-01	–	3002	6,174
2008-12-01	4.00	3101	39,788
2014-04-01	–	3001	20,018
2015-12-01	3.50	3105	40,277
2020-12-01	4.00	3102	23,223
2028-12-01	3.50	3103	3
2028-12-01	3.50	3104	29,260
Total inflation-linked bonds			**158,743**
Total Treasury bonds (nominal and inflation-linked)			***683,972***

Treasury bills, outstanding volumes, January 31, 2003

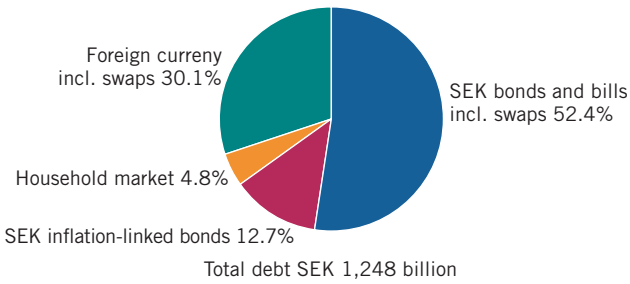
Maturity date	Nominal amount SEK M
2003-02-19	19,091
2003-03-19	65,082
2003-04-16	17,848
2003-06-18	62,581
2003-09-17	53,379
2003-12-17	22,486
2004-03-17	4,998
Total Treasury bills	**245,465**

Rating

	Debt in SEK	Foreign currency debt
Moody's	Aaa	Aaa
Standard & Poors	AAA	AA+

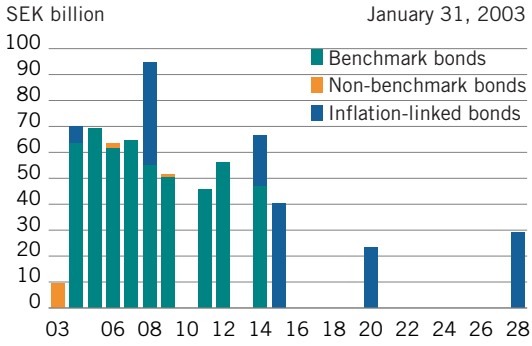
Debt structure

January 31, 2003

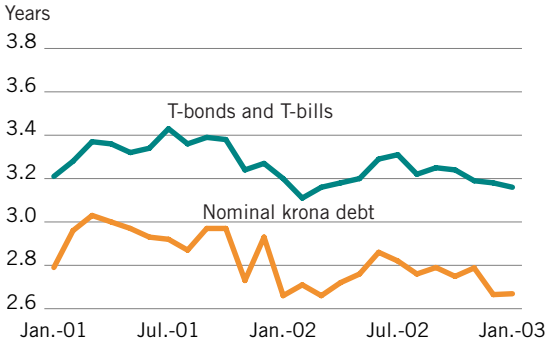


Total debt SEK 1,248 billion

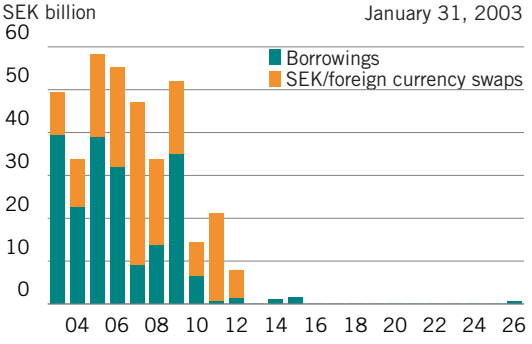
Maturity profile, SEK nominal and inflation-linked bonds



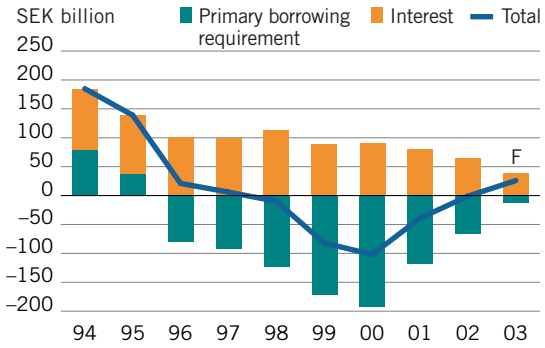
Duration of nominal debt



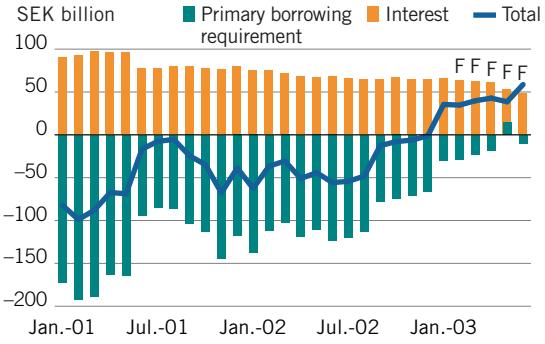
Maturity profile, foreign currency loans excl. callable bonds



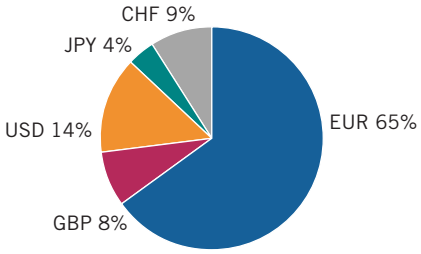
Central government borrowing requirement, 1994–2003



Swedish government borrowing requirement, 12 months

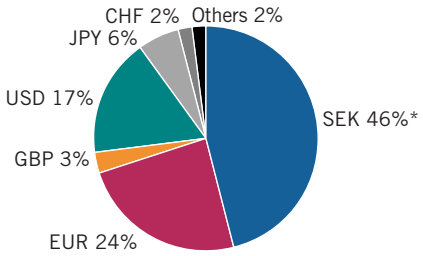


Foreign currency debt, benchmark



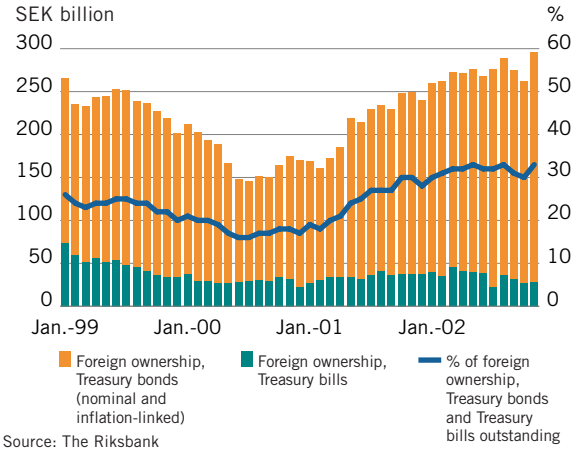
Funding in foreign currencies

January 31, 2003



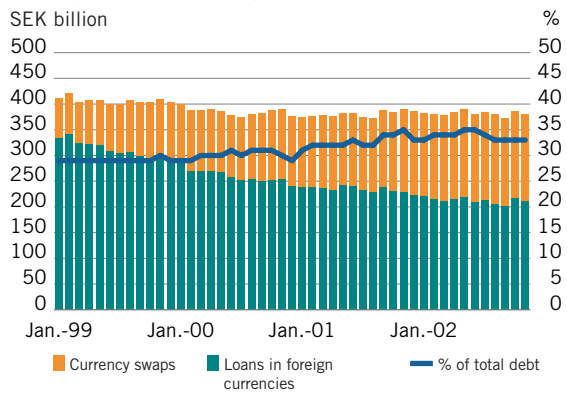
*SEK/foreign currency swaps

Foreign ownership of Treasury bonds and Treasury bills



Source: The Riksbank

Central government debt exposure in foreign currencies

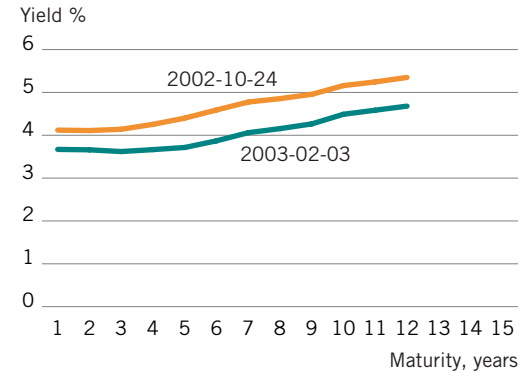


Source: The Riksbank

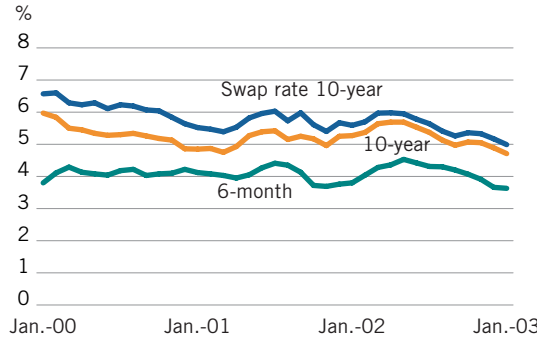
Financial markets

All values up to January 31, 2003

Swedish government yield curve

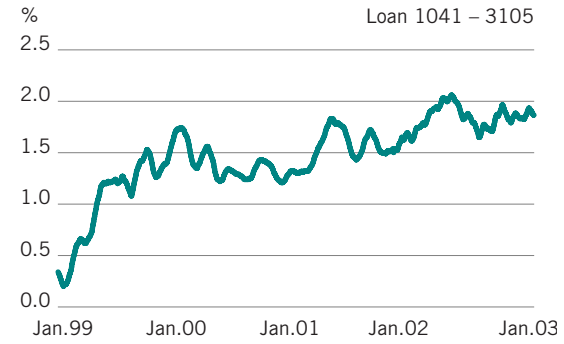


Interest rate developments



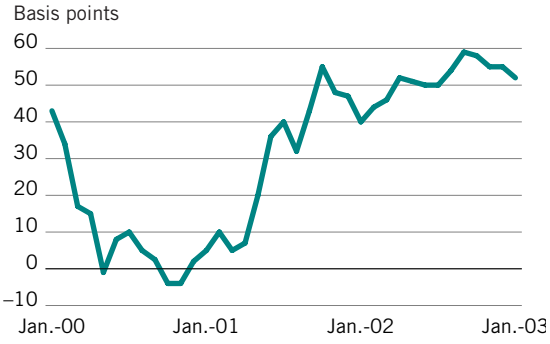
Source: Ecowin

Break-even inflation



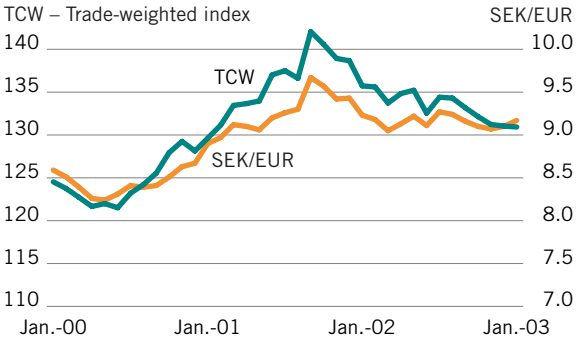
Source: Ecowin

Interest rate spread vs Germany – 10-year



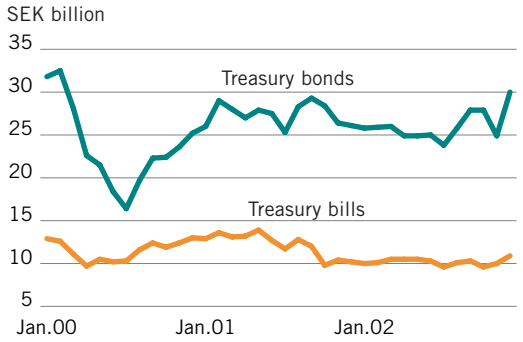
Source: Ecowin

Historical exchange rates



Source: Ecowin

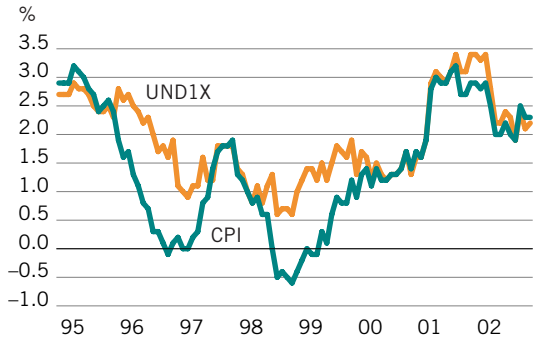
Trading volume, Swedish government securities



Source: The Riksbank

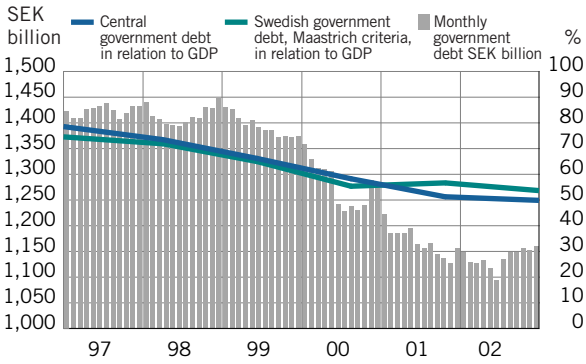
Swedish economy

Inflation indexes: UND1X and CPI in Sweden



Source: Statistics Sweden

Government debt, 1997–2002



Source: Debt Office, National Institute of Economic Research

National accounts

Percentage change Supply and demand	2001	2002	2003	2004
Gross domestic product[1)]	0.8	1.6	1.8	2.7
Imports	–3.5	–3.1	3.9	7.4
Household consumption expenditure	0.2	1.2	2.3	2.6
Government consumption expenditure	0.9	1.6	0.9	0.6
Gross fixed capital formation	0.8	–3.5	1.5	4.8
Stock building	–0.5	–0.3	0.2	0.2
Exports	–1.4	0.7	3.1	6.9

Selected statistics	Nov-02	Dec-02	2001	2002	2003	2004
CPI, year-on-year		2.3	2.6	2.4	2.1	2.0
Unemployment rate		4.1	4.0	4.0	4.4	4.3
Current account	4.2		4.0	4.5	4.3	4.6

[1)] 2,260 billion (current prices 2001).

Source: Statistics Sweden, The Riksbank; forecast: National Institute of Economic Research

Dealers

Primary dealers	Telephone	Reuter-page
ABN Amro Bank NV	+46-8-506 155 00	PMAA
Danske Consensus	+46-8-568 808 44	PMCO
E Öhman J:or Fondkommission AB	+46-8-679 22 00	PMOR
Nordea	+45-33-33 17 58	PMUB
SEB	+46-8-506 23 151	PMSE
Swedbank (FöreningsSparbanken)	+46-8-700 99 00	PMBF
Svenska Handelsbanken AB Publ.	+46-8-463 46 50	PMHD

The next issue of *Central Government Borrowing: Forecast and Analysis* will be published on Wednesday, June 18, 2003, at 9.30 am.

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Articles published earlier	**Author**	**Issue**
How central government debt is funded	*Thomas Olofsson*	2002:3
Swaps in central government debt management	*Anders Holmlund*	2002:3
Electronic trading in the fixed income market	*Tord Arvidsson*	2002:3
Inflation-linked bonds in theory and practice	*Sara Lindberg and Joy Sundberg*	2002:2
Foreign currency exchanges in the market		2002:2
The Debt Office's simulation model	*Anders Holmlund and Sara Lindberg*	2002:1
Real return on equities and inflation-linked bonds	*Magnus Andersson*	2002:1
Borrowing and funding during 2001		2002:1
Proposed guidelines in brief		2001:3
Account balances exchanged for bonds		2001:3
New Treasury bill policy – a proposal		2001:3

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