RIKSGÄLDS KONTORET
THE SWEDISH NATIONAL DEBT OFFICE

Central Government Borrowing:

Forecast and Analysis

2002:3

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Mandate of the Swedish National Debt Office

The Swedish National Debt Office is the central government's financial manager. It is a state agency under the jurisdiction of the Ministry of Finance, with three main areas of responsibility:

Debt management and borrowing

The Debt Office manages and finances the central government debt by borrowing in the Swedish and international fixed income market. Its goal is to minimise the long-term cost of this debt. Meanwhile the Debt Office shall take into account risk, so that costs do not rise too much if anything unexpected occurs.

Central government guarantees and lending

The Debt Office issues and manages guarantees and loans approved by the Riksdag (Swedish Parliament). Its goal is to ensure transparency and, in the long term, to cover the costs of guarantees and loans that involve credit risks. The Debt Office shall therefore assess the risks of the central government's commitments and set fees for guarantees and interest rates for loans that correspond to the expected cost.

The central government's internal bank

The Debt Office provides loans to state agencies and public enterprises. The agencies must also invest their cash surplus with the Debt Office. The goal is to keep down the central government's interest costs. Because the loans and investments of state agencies are managed within the central government, costs will be lower.

The central government borrowing requirement

The Swedish National Debt office's revised forecast of the borrowing requirement for 2002 indicates a surplus in central government payments of SEK 20 billion, a surplus SEK 5 billion lower than projected in June. The forecast for 2003 shows a deficit – a positive borrowing requirement – of SEK 25 billion. This is SEK 13 billion more than in the June forecast.

The conditions behind the forecast

The economic cycle is important to the borrowing requirement, since it affects both revenues and expenditures. Above all, tax revenues are affected by growth in the economy, especially growth measured in nominal terms. For example, there is a close association between household income developments and tax revenues based on wages and salaries. The central government's value-added tax revenues are mainly affected by household consumption. Corporate taxes are affected by the profit trend in the business sector. Capital-based tax revenues, such as the capital gains tax on the sale of shares, are also affected by how the economy performs, although the association is not equally clear. The economy may grow while stock market capitalisation declines, giving rise to a situation where wage- and salary-based tax revenues climb while capital-based tax revenues fall.

As for the central government's outgoing payments, economic developments do not have as great an impact as on the incoming payment side, at least in the short term. Here price changes play the main role. Higher inflation means that the "base amount" is adjusted, which in turn leads to higher index-related expenditures for pensions and other government benefits.

The Debt Office normally bases its assessment of the borrowing requirement on the forecast of the Swedish National Institute of Economic Research (NIER) on the economic trend, presented in its publication *The Swedish Economy*. However, the present forecast takes into account the revised economic assessment that the NIER presented late in October[1)]. This indicates comparatively weak growth during 2002, followed by a significant upturn in 2003.

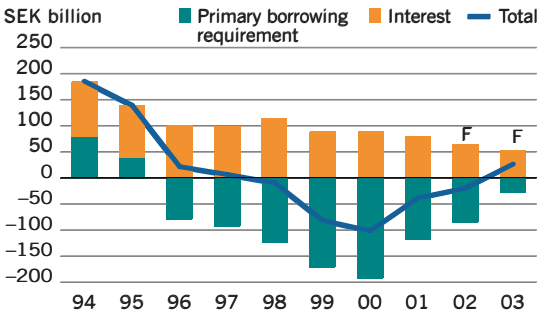
Aside from the economic picture, actual outcomes of the central government borrowing requirement are an important factor in the Debt Office's assessments. The Debt Office monitors the government's incoming and outgoing payments on a daily basis and can therefore evaluate its forecasts continuously. The outcomes until October 23 have been weighed into the current assessment.

[1)] The growth forecast in the NIER's latest economic assessment from August 2002 was revised downward for the current year and next year on October 23, 2002.

The Debt Office has also taken into account the proposals that the Swedish Government presented in its recently published Budget Bill for 2003. Most of the reforms were included in the Debt Office's June forecast. However, the Budget Bill contains a number of other changes that affect the forecast of the borrowing requirement, for example accelerations of outgoing payments and certain limitations on expenditures in 2003. It should, however, be pointed out that the Debt Office does not always make the same assessments as the Government. On this forecast date, for example, the Debt Office's view differs from that of the Government as regards the costs of sickness benefit and early retirement pensions.

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 date. The cut-off date for this forecast is October 23, 2002.

Central government borrowing requirement, 1994–2003



Forecast for 2002

The Debt Office's revised forecast for 2002 indicates a budget surplus of SEK 20 billion. In June, the forecast indicated a surplus of SEK 25 billion. The forecast´s effect on central government debt are summarised in the table below, which also presents the outcome for 2001. The chart above shows developments over the past decade.

Central government borrowing requirement and debt, 2001–2003, SEK billion

	2001	2002 (forecast)	2003 (forecast)
Primary borrowing requirement	–120	–85	–28
Interest payments on debt	81	65	53
Net borrowing requirement	–39	–20	25
Debt adjustments	–73	18	0
Of which transfer from National Pension (AP) funds	–69	–	–
Riksbank transfer	–18	–	–
Deposit Guarantee Board, Nuclear Waste Fund and Premium Pension Authority	–	39	–
Revaluation, foreign currency loans, etc	14	–21	0
Short-term investments	–11	–2	0
Change in central government debt	–122	–4	25
Debt at year-end	1,157	1,153	1,178

The primary surplus is estimated at SEK 85 billion. This is SEK 1 billion larger than in the June forecast. The outcomes during the summer have resulted in a larger surplus, equivalent to SEK 7 billion in the central government's day-to-day incoming and outgoing payments, excluding interest payments on the central government debt and the Debt Office's net lending. Tax revenues were larger and disbursements smaller than expected. Sickness benefits costs rose at the same pace as the Debt Office had anticipated earlier. On the other hand, the surplus is being reduced by the Government's decision to accelerate disbursements of "area aid" to farmers, equivalent to SEK 4 billion. This decision was taken in order to make room under the central government's budget expenditure ceiling next year. A similar decision was taken almost exactly one year ago.

As earlier, the Debt Office does not anticipate any revenues from divestments of Swedish state assets. The stock market downturn has continued, which has not exactly strengthened the motive for privatisations. Nor has the Government presented any concrete plans for such divestments.

Net lending by the Debt Office is expected to total about SEK 4 billion this year. This is SEK 2 billion more than in the June forecast.

Interest payments on the central government debt are estimated at SEK 65 billion in 2002. This is SEK 6 billion larger than in the June forecast. This upward adjustment is explained virtually in its entirety by the fact the outcomes during the summer and autumn have been larger than forecasted, mainly on loans in foreign currencies.

Forecast for 2003

The Debt Office's revised forecast for 2003 indicates that there will be a deficit of SEK 25 billion in central government payments. The projected deficit will thus be SEK 13 billion larger than in the June forecast. Even though the recovery in the economy can be said to have been postponed, growth prospects are better during 2003 than in 2002. In spite of this, the budget balance will thus deteriorate by SEK 45 billion between these years.

The primary surplus is estimated at SEK 28 billion. This is SEK 57 billion less than in 2002. Compared to the June forecast, the primary surplus is now projected at SEK 19 billion less. About SEK 13 billion is explained by the fact that by mistake, the central government's disbursements of the church membership fees collected by the tax authorities were omitted from the June forecast.

The largest revision of payments concerns supplementary tax payments. Supplementary tax payments are difficult to foresee, both in terms of size and distribution over time. Perhaps the most important factor behind the size of supplementary payments is capital gains on shares and real estate. The weak stock market performance of recent years is likely to mean lower supplementary payments than previously forecasted. Supplementary payments and back tax payments from households and companies are thus assumed to be SEK 15 billion lower than in the June forecast.

On the expenditure side the biggest difference, aside from the disbursement of church membership fees that was omitted from the June forecast, is that the Debt Office has chosen to add an item, SEK 5 billion in unspecified reductions in cash expenditures. These reductions are assumed to be related to measures aimed at keeping the budget from exceeding the expenditure ceiling during 2003 (see the box on page 7). Furthermore, the acceleration of area aid payments to farmers means that the primary surplus will increase by SEK 4 billion in 2003.

When it comes to revenues from divestments of state-owned property, the Debt Office assumes that 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.

Net lending is projected to total SEK 13 billion, which is unchanged since the June forecast.

Interest payments on the central government debt will amount to an estimated SEK 53 billion in 2003, which is SEK 6 billion lower than the last estimate and a full SEK 12 billion lower than in 2002. One reason for the lower interest payments is that a bond loan with high coupon interest is falling due during 2002 and is being replaced by loans with lower interest rates. Another factor that affects interest payments on the central government debt from one year to another is large payments of zero coupon interest rates on inflation-linked bonds during 2002. Furthermore, interest rates both in Sweden and internationally are lower than on the previous forecast date.

Sensitivity analysis

All forecasts normally 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 of the borrowing requirement, but presents a partial analysis of the impact on the borrowing requirement that changes in some important macro variables, roughly estimated and each taken separately, 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.

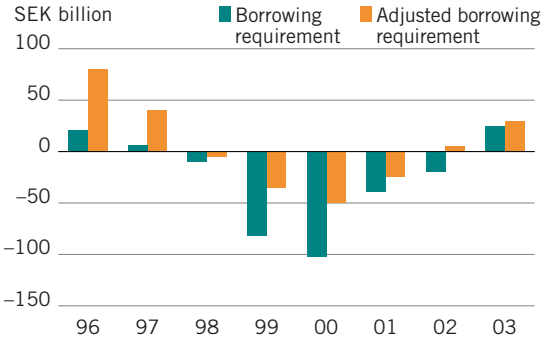
One per cent/percentage point increase	Effect on borrowing requirement (SEK billion)
Total wages and salaries[5)]	–6
Household consumption, current prices	–2
Registered unemployment	4
Swedish interest rates	3
International interest rates	1
Exchange rate	0.5

[5)] 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

Nonrecurring payments are important to the borrowing requirement.[2)] In 2002, calculations indicate that Sweden's central government finances will move from a SEK 20 billion surplus to a borrowing requirement, a deficit, equivalent to about SEK 5 billion after adjusting for nonrecurring payments. The two most important items out of total nonrecurring payments of some SEK 25 billion are about SEK 7 billion in maturing mortgage bonds that were transferred from the AP Funds and an extra transfer of SEK 20 billion from the Riksbank.

Reported and adjusted borrowing requirement



[2)] For a more detailed description of the Debt Office's definition of nonrecurring – or temporary – payments, see the forecast report of January 31, 2001, on www.rgk.se

In 2003, nonrecurring payments are estimated at about SEK 10 billion. The adjusted borrowing requirement is thus projected to total about SEK 35 billion. The most important incoming payments will be maturing mortgage bonds totalling SEK 13 billion, revenues from divestments totalling SEK 5 billion and the acceleration of area aid payments. During 2003, the Debt Office's net lending will total an estimated SEK 13 billion. Since the loans will eventually be repaid, most of the Debt Office's net lending is regarded as a nonrecurring outgoing payment, which offsets the nonrecurring incoming payments. The net effect will thus be about SEK 10 billion.

Monthly forecasts

Three times per year, the Debt Office presents detailed forecasts. Meanwhile it publishes monthly forecasts for the intervening months. The current forecast presents monthly projects for October 2002 up to and including February 2003, when the next report will be published. If the forecasts need to be adjusted between the regular forecasting dates due to final outcomes or other new information, this will be reported in conjunction with the presentation of the borrowing requirement outcome. The outcome is normally presented four working days after the end of each month.

The forecast for the October borrowing requirement is largely unchanged since the previous forecasting date. Its composition differs, however, since the primary borrowing requirement is now projected to be smaller while interest payments on the government debt are projected to be larger.

Central government borrowing requirement, SEK billion

	Oct. 2002	Nov. 2002	Dec. 2002	Jan. 2003	Feb. 2003
Primary borrowing	–1.1	–5.6	14.6	28.0	–33.4
Interest on government debt	1.9	0.4	9.8	4.8	4.3
Net borrowing requirement	0.9	–5.2	24.4	32.7	–29.2

Comparisons with other forecasts of the borrowing requirement

The NIER published its most recent forecasts of the central government borrowing requirement in August, the Government in October and the Swedish National Financial Management Authority (ESV) in September.

The Debt Office's forecast indicates a surplus of SEK 20 billion in 2002. This is about twice as large a surplus as projected by the other forecasters. Adjustment for known differences in interest rate assumptions and for the acceleration of area aid payments to farmers does not explain the differences in borrowing requirement.[3] The main reason for the larger surplus in the Debt Office's forecast is believed to be that the outcomes of the central government's incoming and outgoing payments so far during the year have been captured in a better way by the Debt Office's forecast than by the projections of the other forecasters.

The Debt Office's forecast for 2003 indicates a borrowing requirement of SEK 25 billion. This is lower than the NIER and ESV, but higher than the Government. Adjusted for known differences in divestment and interest rate assumptions as well as for the acceleration of area aid disbursements, the Debt Office's forecast is SEK 7 billion lower than ESV and the NIER, but SEK 4 billion higher than the Government.[4]

[3] The Debt Office and the Government include accelerations of area aid equivalent to about SEK 4 billion in their forecasts. This reduces the surplus 2002, as well as the borrowing requirement 2003 by a corresponding amount.

[4] Like the other forecasters, the Debt Office assumes no revenues from divestments during 2002. In 2003, the Debt Office assumes SEK 5 billion in divestment revenues, which 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

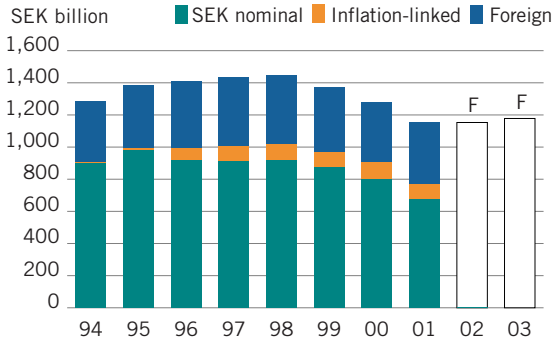
	Debt Office		Government		NIER		ESV	
	2002	2003	2002	2003	2002	2003	2002	2003
Primary borrowing requirement	–85	–28	–76	–41	–76	–21	–75	–11
Interest payments	65	53	67	55	65	55	67	54
Net borrowing requirement	–20	25	–9	14	–11	34	–8	43

The central government debt

The central government debt was SEK 1,157 billion at the end of 2001. During 2002, the debt is projected to decrease to SEK 1,153 billion (se table on page 4 and chart below). The debt is thus expected to decrease less than the forecasted budget surplus of SEK 20 billion. Part of the reason is that most of the account balances of the Swedish Nuclear Waste Fund, the Premium Pension Authority and the Deposit Guarantee Board were transformed into Treasury bonds on July 1, 2002. This increases the reported government debt by SEK 39 billion. Mean while, the re-evaluation of foreign currency loans, according to exchange rates from October, reduces the government debt by SEK 21 billion.

In 2003 there are no other known debt-influencing effects other than the change in the central government budget balance. The central government debt will thus increase by an estimated SEK 25 billion and will amount to SEK 1,178 billion at the end of 2003.

Government debt, 1994–2003



New measures of central government debt

In its Budget Bill for 2003, the Government announces that starting in 2003, the central government debt will be measured in a simpler, clearer way than to date. This simplification will occur by adapting the principles for valuation of individual debt instruments and the limits defining which instruments are included in the debt measure to the principles applied in EU contexts. This means that the debt will be measured including debt management instruments and that debt instruments will consistently be valued at their nominal final values. These changes are based on a proposal that the Debt Office submitted to the Government in August.

Since earlier, the Debt Office has reported both the official debt measure found into above chart and debt measured including debt management measures. The latter provides a better picture of the composition of the debt, since a large proportion of the foreign currency debt is created with the aid of derivatives, for example swap agreements and currency futures. In the new measure, all instruments will also be

reported at nominal final value. This primarily affects the valuation of Treasury bills and inflation-linked zero coupon bonds. These have previously been reported at acquisition value, without taking into account accrued interest or inflation compensation.

Measured in the new way, the debt is somewhat large than the old debt. One reason is that it takes into account the market value of debt management instruments. Another is that the nominal final value of Treasury bills and inflation-linked bonds is larger than their acquisition value. Based on the composition of the central government debt on September 30, 2002, debt measured in the new way amounted to SEK 1,197.5 billion. This can be compared to the official measure, which was SEK 1,148.1 billion and debt including debt management activities, which amounted to SEK 1,160.8 billion. In all essential respects, the increase is a nonrecurring effect, i.e. future changes in the central government debt will not be materially affected by the changed definition. The Debt Office will apply the new measure starting on January 1, 2003.

The expenditure ceiling

The Debt Office does not make forecasts on the expenditure ceiling. The forecasts of the borrowing requirement are based on some fifty major payment flows to and from the central government. Forecasts of the borrowing requirement are intended to provide a basis for planning central government borrowing. For this purpose, it is important that the final forecast figure is correct, while the exact allocation between payment flows is of secondary importance. The Debt Office therefore has no need to assess developments related to the expenditure ceiling. For 2003, however, there are indications that measures will be required to keep expenditures below the ceiling. The Debt Office must therefore decide to what extent such measures will affect the borrowing requirement.

The NIER and the ESV have published forecasts stating that the expenditure ceiling will be exceeded by SEK 20 and 18 billion, respectively. In its Budget Bill for 2003, the Government announces that it is shifting area aid disbursements, equivalent to SEK 4 billion, from 2003 to 2002. The Bill also proposes expenditure limitations equivalent to some SEK 2 billion in the Defence, Communications and Education areas. Adjusted for these steps, the NIER and ESV forecasts would indicate that in 2003, there is a risk of the expenditure ceiling being exceeded by SEK 14 and 12 billion, respectively. The differences between these forecasts and the calculation of the Government, where expenditures fall somewhat below the expenditure ceiling, are mainly due to different opinions on the trend of sickness-related expenditures.

The system of expenditure ceilings was introduced when the budget process was reformed in 1997. The central government has stayed below the ceiling every year with the help of certain expenditure-limiting measures. In the judgement of the Debt Office, the government will stay below the expenditure ceiling in 2002 as well.

In order to stay below the expenditure ceiling in 2003, however, measures not announced in the budget will probably be required. In the judgement of the Debt Office, the Government will take the necessary measures. However, it is not certain that all measures will affect the borrowing requirement. This is because the expenditure ceiling is determined by the budget accounting system, while the borrowing requirement is strictly on a cash basis. To the extent that the measures include non-cash-based savings or reallocations from expenditures to reduced revenues, the borrowing requirement will be unaffected. It is uncertain what measures will be carried out. However, the Debt Office assumes that savings will be made to some extent using funds that will affect the borrowing requirement. In order to take this into account, the Debt Office has chosen to add a new item to its forecast consisting of unspecified cash-basis reductions in expenditures totalling SEK 5 billion.

Public finances

Even though the central government's finances are expected to be in deficit in 2003, total public sector finances will show a surplus. According to the NIER forecast, this surplus is estimated at SEK 31 billion or 1.3 per cent of GDP. The main explanation is that savings are being built up in the pension system, more than offsetting the budget deficit. The savings in the pension system will act as a buffer against future demographic changes, which are expected to lead to increased pension disbursements. The municipalities and county councils are also expected to contribute to the 2003 surplus in public finances, since they altogether are projected to report a surplus.

Another factor is that the central government budget balance is on a cash basis, while the calculations of public finances are made in terms of financial savings. This is a measure that is taken from the National Accounts and is not cash-based. The central government's financial savings thus do not coincide with the budget balance.

Funding

Next year, the central government's borrowing in the form of bonds is expected to increase to about SEK 108 billion. This is SEK 61 billion more than in 2002. The most important reason is the larger net borrowing requirement. Under these conditions, issue volumes of nominal Treasury bonds will need to increase to SEK 4.5 billion per auction from the beginning of 2003. The Debt Office estimates that there is potential to issue inflation-linked bonds at an annual pace in the range of SEK 15 billion. Provided that amortisations of foreign currency debt are resumed next year, foreign currency borrowing will decline to just above SEK 20 billion, of which less than SEK 10 billion will be funded by direct foreign currency borrowing.

Gross borrowing

The Swedish National Debt Office presents below its forecast for the funding requirement during the rest of 2002 and in 2003. The funding strategy for 2003 is based on the Debt Office's proposed overall guidelines, while waiting for the Government to issue its guideline decision in mid-November 2002.

As indicated in the preceding sections, the net borrowing requirement is expected to be about SEK –20 billion in 2002, which is somewhat lower than in the previous forecast. Next year, the budget is projected to show a deficit of SEK 25 billion, which represents a positive borrowing requirement. This implies an increase in the deficit of SEK 13 billion compared to the June forecast and SEK 45 billion compared to 2002.

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.

Gross funding requirement, SEK billion

	2002	2003
Net borrowing requirement	–20	25
Maturing loans, plus exchanges and buy-backs	98	89
Maturing Treasury bonds	11	9
Maturing foreign currency loans[1)]	35	30
Buy-backs and exchanges of bonds to bills	51	50
Funding requirement	78	115
Net short-term funding and borrowing from households[2)]	–6	–4
Net financing with Treasury bills[3)]	–1	–11
Funding requirement, bonds and foreign currency debt	85	130
Foreign currency borrowing[1)]	29	7
Inflation-linked bond issues[4)]	9	15
Nominal Treasury bond issues[5)]	47	108
[1)] Direct foreign currency loans, spot market, valued at 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	2.1	4.5

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

Funding in bonds and foreign currencies during the current year is expected to be about SEK 85 billion, which is SEK 17 billion more than in the previous forecast. The main reason is that direct foreign currency borrowing will be larger than stated in the June forecast.

The funding requirement in bonds and foreign currencies is expected to increase to SEK 130 billion next year, i.e. SEK 45 billion more than during the current year. The increase is equivalent to the budget deterioration.

The above table presents an estimate of the allocation of the funding requirement by types of debt – nominal Treasury bonds, inflation-linked bonds and foreign currency borrowing. The following sections present the Debt Office's borrowing in these various types of debt.

Nominal krona borrowing

Net borrowing in Treasury bills

The stock of Treasury bills is expected to be largely unchanged during 2002 but to decrease by SEK 11 billion during 2003. As a share of total central government debt, outstanding Treasury bills will thus decline slightly.[1)]

The Debt Office may also create short-term borrowing by issuing bonds and by using interest rate swaps in order to obtain short-term interest exposure.[2)] Provided that the difference between the swap interest rate and the Treasury bond interest rate is sufficiently large, this method can lower central government borrowing costs. Since the need to use interest rate swaps as an element of foreign currency borrowing will decrease next year, there will be greater room to use swaps in order to create short-term borrowing. The Debt Office expects to arrange approximately SEK 10 billion of its short-term borrowing in this way during 2003.

[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 the box about swaps on page 9.

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. RGK 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 th 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 the 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 the 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.

See also article on swaps on page 17.

In net terms, the Debt Office thus anticipates that short-term borrowing, i.e. net funding in Treasury bills and interest rate swaps, will not make any contribution to funding during 2003. The increased funding requirement will thus be met by larger bond issues. This is one of the preconditions for preventing a decline in the overall duration (maturity) of central government debt.

Nominal Treasury bonds

Issue volume

The Debt Office expects a funding requirement in nominal bonds of about SEK 47 billion during the current year, which is the same as in the June forecast. In 2003, the issue requirement in the form of bonds is expected to rise to SEK 108 billion. This represents an increase of SEK 61 billion.

Issue volume was raised from SEK 2 billion per auction to SEK 3 billion starting on October 1, 2002. The Debt Office projects a need to increase issue volume to SEK 4.5 billion per issue date from the beginning of 2003. In June, the Debt Office anticipated a need to increase issue volume to SEK 4 billion per auction. The revision follows from a larger estimated budget deficit. However, the volume increase is being limited by the fact that issues of inflation-linked bonds and direct foreign currency borrowing are somewhat larger than assumed in the June forecast.

Treasury bond issues will nevertheless rise more than an amount equivalent to the budget deterioration. Reduced direct borrowing in foreign currencies next year is the most important explanation. Another contributing factor is that the maturity of nominal central government debt tends to shorten, since no new bond is expected to be introduced next year. In addition, the calculation presupposes that a portion of short-term borrowing will be carried out in the form of bonds, which will then be swapped to short-term interest rate exposure. [3)]

[3)] As indicated below, more than SEK 15 billion in foreign currency borrowing will be covered by Treasury bonds that are swapped for exposure to foreign currencies (krona/swap borrowing) next year. Given a total issue volume of SEK 108 billion in Treasury bonds during 2003, this means that about 25 per cent of borrowing in the form of bonds will be swapped to foreign currency or to short-term interest rate exposure, compared to about 50 per cent in 2002.

Loans to be included in planned issues

The Debt Office's policy is to maintain good liquidity in all benchmark loans. At the same time, there is reason to allow borrowing policy to contribute to the liquidity of the reference or super-benchmark loans that are traded in the electronic interbank market.[4] This implies that bond issues will consist mainly of these loans, giving them what is usually referred to internationally as "on the run status".

Loan 1046, which falls due on October 8, 2012, is now being traded as a 10-year super-benchmark. The loan had reached a volume of SEK 41 billion as of September 30, 2002. Starting on June 19, 2003, loan 1041 (6.75%, May 2014) will be traded as a 10-year loan.[5] The loan will then have a maturity of just below 11 years. Outstanding volume is already SEK 47 billion today. The Debt Office will probably begin issuing loan 1041 somewhat before it turns into a super-benchmark. The loan will have a maturity of 9.5 years only by late 2004. There is thus no strong reason to introduce a new 10-year loan during 2003.

When loan 1041 becomes the 10-year benchmark loan next year, the yield curve for Treasury bonds will end at 10 years. In the current situation, the Debt Office does not plan to issue any new bond with a longer maturity. However, this may considered at a later date. This will depend, among other things, on whether there is sufficiently great interest among investors to enable the loan to achieve satisfactory liquidity and ensure that borrowing costs will be reasonable. The Debt Office welcomes suggestions and opinions from dealers and investors.

The shortest-running bond issue with benchmark status, loan 1042, will be exchanged for Treasury bills during the period February 3-7, 2003. The terms of the exchange will be announced on January 8, 2003.

Earlier auction times

From the beginning of 2003, the Debt Office's auctions are being moved from 12.30 to 11.00 a.m. The change was suggested by dealers and investors and represents an adjustment to common international practice. As earlier, the auction day will be Wednesday for Treasury bonds and Treasury bills, and Thursday and Friday for inflation-linked bonds. The outcome of the nominal bond and bill auctions will be announced after 10 minutes, which is shorter than the current 15 minutes.

Inflation-linked borrowing

Issue volumes

During the autumn of 2002, the demand for inflation-linked bonds continued to increase. The difference in interest rates compared to nominal bonds was consistent with inflationary expectations and inflationary targets.

Inflation-linked bonds offer investors a unique protection against inflation. As the market develops, there is reason to assume an establishment of clearer pricing of the inflation premium. There is thus a potential for lower real interest rates and a larger interest differential between nominal and inflation-linked bonds.

The conditions for inflation-linked borrowing are thus favourable. The Debt Office's policy is to make changes in issue volumes with caution, since the inflation-linked bond market does not have the same depth as the nominal bond market, and pricing may be sensitive to major changes in supply.

In the judgement of the Debt Office, market conditions will continue to allow inflation-linked bond issues at an annual pace in the range of SEK 15 billion, in light of the strong demand during the past six months. This is equivalent to about SEK 1.5 billion per issue month.

[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 final three months of the contract.

Treasury bonds for everyone

To date, government securities have in practice been available for purchase only by large investors. Since September, small investors and private individuals have been given the opportunity to participate in the Debt Office's auctions of nominal Treasury bonds via the Internet. In addition to the volume offered at the regular auction, a maximum of SEK 200 million has been set aside for bidding via the Internet. Allocation occurs at the average interest rate in the regular auction. No fee is payable. The smallest bid volume is SEK 25,000 and the largest SEK 5 million. During the spring of 2003, there will also be an opportunity to participate in Treasury bill and inflation-linked bond auctions.

The investor pool is becoming broader. In the long term, more efficient distribution via the Internet may lower the Debt Office's costs for selling government securities. At the same time, it opens up a new market to small investors.

Information in Swedish is available on www.rgk.se

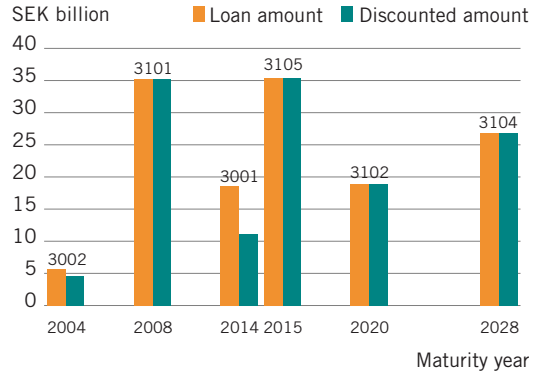
In its June report, the Debt Office projected an annual pace of SEK 10 billion. The annual pace indicates only an approximate estimate of what market conditions allow. The issue volume on individual auction dates may deviate substantially. The terms of auctions are decided after proposals from dealers 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 date.

Loans to be included in planned issues

The Debt Office's policy has been to narrow down the outstanding stock of inflation-linked bonds for the purpose of building up volume and liquidity in fewer loans, with a focus on coupon loans. This process was completed during the spring.

The Deposit Guarantee Board, the Swedish Nuclear Waste Fund and the Premium Pension Authority have had assets invested in accounts at the Debt Office. On July 1, 2002, these assets were converted to Treasury bonds in accordance with a decision of the Riksdag (Swedish Parliament) and the Government. In a press release on July 1, 2002, the Debt Office explained the effects of this step on the outstanding stocks of bonds. The outstanding inflation-linked bond portfolio increased by about SEK 34 billion, while its duration increased by about 0.6 years. Loan 3001 increased somewhat more than the Debt Office had estimated. The outstanding stocks are presented in the adjacent chart, both as outstanding nominal amounts and as discounted amounts.

Inflation-linked bonds



Loans 3101, 3105, 3102 and 3104 will be issue candidates at coming auctions. The Debt Office mainly expects to issue bonds for the three longest-running loans. Within a couple of years, there will be reason to introduce regular exchanges of loan 3101 for longer-running loans. Until further notice, however, this loan will remain as an issue candidate.

Issue terms

The Debt Office normally issues a fixed volume at its auctions. In *Central Government Borrowing: Forecast and Analysis, 2002:2*, the Debt Office presented an alternative procedure that will provide a degree of flexibility in terms of issue volume. The Debt Office has now tested flexible issue volumes for inflation-linked bonds on two occasions during the autumn. 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.

So far, the Debt Office's experiences are good. This flexibility was fully utilised during the first issue round, since demand was strong. The interest rate would also have been nearly identical if this flexibility had not been utilized. On the second issue date, full utilization would have resulted in higher interest expenses. The Debt Office thus chose to issue somewhat less than was possible as a maximum.

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

An earlier auction hour is also being applied to issues of inflation-linked bonds. The auctions will take place at 11.00 a.m. on a Thursday and Friday each month, normally during the final week of the month. For now, the results will continue to be announced after 15 minutes, as bids may be somewhat more difficult to assess in the inflation-linked bond market than in the nominal bond market.

Foreign currency borrowing

At present, the Debt Office is not amortising foreign currency loans. This decision implies that the Debt Office will deviate by nearly SEK 15 billion from the Government's amortisation benchmark of SEK 15 billion for 2002. In the judgement of the Debt Office, the krona is undervalued and may be expected to strengthen in the future. At present, there are no plans to resume amortisations during this year. The performance of the krona will be an important factor in a decision to change the pace of amortisation.

The Debt Office has proposed to the Government that the benchmark for amortisations during 2003 should be SEK 25 billion. This forecast assumes no deviations from this strategy. In December, the Board of the Debt Office will adopt a position on the pace of amortisations for 2003 on the basis of the Government's guideline decision in November 2002.

Foreign currency borrowing requirement and foreign currency borrowing, SEK billion

	2002	2003
Gross foreign currency borrowing requirement	52	22
Benchmark for foreign currency borrowing	–2	–25
Maturing foreign currency loans[1)]	35	30
Maturing currency swaps	18	11
Realised exchange rate differences	6	6
Other	–5	0
Gross foreign currency borrowing	52	22
Direct foreign currency borrowing[1)]	32	8
Net short-term foreign currency borrowing[2)]	–3	–1
Gross foreign currency swaps	23	15

[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.

During 2002, foreign currency loans and currency swaps equivalent to more than SEK 53 billion fall due. In order to achieve a pace of amortisation near zero, the Debt Office must borrow the equivalent of SEK 52 billion in foreign currencies.

Foreign currency loans can funded by issuing Treasury bonds, which are swapped to foreign currency exposure (krona/swap borrowing) or by means of direct borrowing in foreign currencies. Taking into account the pricing and depth of the swap market, the Debt Office will reduce krona/swap borrowing from SEK 35 billion, as announced in the June-report, to about SEK 25 billion in 2002, while the scale of direct foreign currency loans will be increased from SEK 20 billion to the equivalent of about SEK 30 billion. So far this year, the Debt Office has taken out foreign currency loans equivalent to nearly SEK 25 billion. Most of this has been borrowed in US dollars, with maturities of 3 and 7 years.

During 2003, foreign currency loans and currency swaps equivalent to SEK 41 billion will fall due. This is SEK 12 billion less than in 2002. Assuming a pace of amortisation of SEK 25 billion, foreign currency borrowing will be SEK 22 billion next year, i.e. SEK 30 billion less than in 2002.

In light of the current pricing picture and market depth, the Debt Office believes that the total room for interest rate swaps should be limited again next year to approximately SEK 25 billion. The actual scale may deviate from this estimate, however, if market conditions change.

The allocation of foreign currency borrowing between direct foreign currency borrowing and krona/swap borrowing will depend on what interest rate terms can be achieved. In the scenario sketched here, approximately SEK 14 billion will be funded by krona/swap borrowing and the remainder by direct foreign currency borrowing. However, the actual allocation may end up deviating significantly from this scenario.

Given total room for interest rate swaps in the range of SEK 25 billion, interest rate swaps equivalent to about SEK 10 billion can be utilised to create short-term borrowing from bond issues (see the section on net borrowing, page 8).

Taking into account maturing swaps and the assumed loan volume, the outstanding stock of interest rate swaps will increase by SEK 5 billion this year and by SEK 14 billion next year. The Debt Office carries out swaps at a relatively uniform pace during the year. The average maturities of interest rate swaps should have the same duration as bond issues.

Summary

Next year the Debt Office expects its funding requirement in bonds and foreign currencies to grow from SEK 85 billion to SEK 130 billion. This increase is equivalent to the deterioration in the budget balance, i.e. the net borrowing requirement.

Issue volumes of nominal Treasury bonds will increase to SEK 4.5 billion per auction from the beginning of 2003. Bond issues will rise by a total SEK 61 billion to SEK 108 billion, i.e. more than the amount justified by the budget deterioration. This is mainly because direct borrowing in foreign currencies will decrease.

From the beginning of 2003, at the suggestion of dealers, the Debt Office will move its auctions from 12.30 to 11.00 a.m. The results of nominal auctions will be announced 10 minutes after the closure, instead of 15 minutes, as previous.

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

The Debt Office assumes that amortisations of foreign currency debt can be resumed next year. This implies that foreign currency borrowing will be limited to SEK 22 billion. Approximately one third of this borrowing is projected to occur in direct foreign currency borrowing. Based on the Government´s decision on amortisations of foreign currency loans, which will be announced November 15 at the latest, the Debt Office´s board will decide more specifically on the amortisations in mid December.

The Debt Office's presence in the interest rate swap market this year has been limited to SEK 25 billion. Under current market conditions, the scale is expected to be approximately the same next year as well.

How central government debt is funded

The goal of central government debt policy is to minimise the long-term costs of borrowing and debt management while taking into account risk. In practice, costs and risks depend on how the Swedish National Debt Office allocates government debt among different maturities, Swedish or foreign currency and nominal or inflation-linked borrowing. This article provides an overview of how the funding of the government budget deficit and maturing loans is allocated among various loan instruments.

Net borrowing requirement and funding

Three times a year, the Debt Office publishes forecasts of the scale and allocation by loan instruments of its funding requirement. The forecast of the Debt Office´s funding requirement is based on a forecast of the central government's *net borrowing requirement*. According to the Budget Act, by definition the net borrowing requirement equals the budget deficit, i.e. the net amount of the government's cash expenditures and revenues. In the Debt Office's accounting of the budget deficit, the balance is divided up into interest payments and the net amount of other cash flows (primary balance). In addition, there is a net amount of the Debt Office's deposits from and lending to central government agencies and others.

When a loan matures, the central government disburses the borrowed amount to the lender. This disbursement must also be funded. The *funding requirement* or gross borrowing requirement is thus the sum of the net borrowing requirement and maturing loans, (the refinancing requirement). The funding requirement thus depends on the budget deficit and how often outstanding debt needs to be refinanced. The shorter the maturity, the more frequently the debt must be refinanced and the larger the refinancing requirement will be.

Funding (gross borrowing requirement) =
Net borrowing requirement + Maturing bond loans

The Debt Office usually publishes the net and gross borrowing requirement for a calendar year. Given this periodicity, it is justified to include only loans with longer maturities than one year. The funding requirement for one calendar year thus does not refer to short-term funding that is rolled over during the year. In principle, it only takes into account Treasury bonds and foreign currency loans that are falling due, with initial maturities exceeding one year.[1)]

[1)] Exchanges of Treasury bonds with short remaining maturities for Treasury bills imply that the outstanding stock of bonds diminishes, while in practice the payment is made the following year, when the Treasury bill falls due. To simplify this presentation, such exchanges are reported in the same way as maturities, i.e. as a bond refinancing requirement the same way as maturities, i.e. as a bond refinancing requirement.

Borrowing

The Debt Office funds budget deficits and maturing loans by issuing interest-bearing securities (government securities) denominated in Swedish kronor (SEK) or foreign currencies. The most common government securities are *Treasury bonds,* with maturities exceeding 1 year, and *Treasury bills,* ordinarily with maturities shorter than one year. Most borrowing is done in kronor. However, the Debt Office can also issue government securities in other currencies. In addition, the central government borrows in the overnight market with the aid of bank loans (deposits) or with repurchase agreements (repos) as well as directly from households with the aid of lottery bonds and National Debt Savings (savings accounts).Treasury bonds are issued both in the traditional nominal version and with protection against inflation: *inflation-linked*.

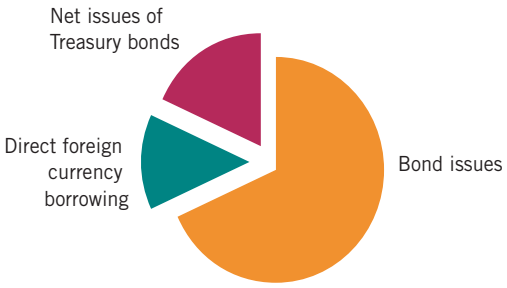
Loan instruments and exposure

To describe the main features of Debt Office borrowing, somewhat simplified, let us assume three sources of funding: *Treasury bonds* (inflation-linked and nominal), *Treasury bills* and *foreign currency borrowing.* The contributions from funding with Treasury bills and foreign currency borrowing with short maturities are regarded as changes in the outstanding debt stock, i.e. net funding. Otherwise the rolling refinancing of such instruments as Treasury bills during the year would be included.

The guidelines for central government debt policy approved by the Government and concretised by the Board of the Debt Office concern such matters as the allocation of the government's exposure between various types of debt – foreign currency borrowing indicated by the pace of amortisation, inflation-linked bond borrowing strategy and nominal krona borrowing - as well as the maturity of nominal debt (stated as a duration). However, the guidelines need not be achieved through a given allocation of borrowing between types of debt. This can in addition be achieved by using derivatives.

Instead of issuing a Treasury bill, the Debt Office can issue bonds and shorten their maturity in exposure terms with an interest rate swap. With an interest rate swap,

Loan instruments



fixed interest is exchanged for short-term interest. This creates a "synthetic floating rate note" (FRN).

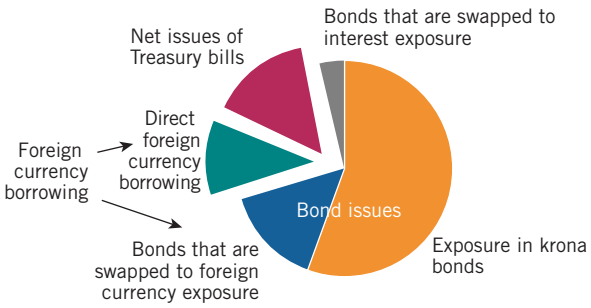
In principle, foreign currency borrowing can take place in any currency at all, since it is subsequently possible to exchange the exposure currency by using a currency swap (initial purchase of foreign currency and purchase of kronor when the swap expires). For example, extensive borrowing in Japanese yen has been swapped to exposure to e.g. euro. In the same way, the Debt Office can borrow in kronor (by issuing a Treasury bond) and then swap the currency exposure to euro. The original loan remains, but the exposure will be in a foreign currency. This method of borrowing in foreign currencies is called krona/swap borrowing.

The principle is illustrated in the adjacent chart. A portion of the bond issues is swapped to foreign currencies and, together with direct borrowing in foreign currencies, constitutes the Debt Office's total foreign currency borrowing. A portion of the bond issues can be swapped to short-term risk exposure, and together with net issues of Treasury bills, constitutes the total borrowing with short-term interest exposure. The benchmarks for average maturity and foreign currency borrowing (a consequence of the amortisation decision) can thus be achieved via derivative transactions (for example, interest rate and currency swaps). The outstanding stock, for example of Treasury bonds, will thus be larger than the central government's krona exposure with long-term maturities if swaps are used.

Foreign currency borrowing

The size of *foreign currency borrowing* is determined by the Government's annual benchmark for the pace of amortisation (foreign currency borrowing in net terms). Within the framework of the flexibility that the Government gives the Debt Office, the Board decides how much will be amortised, expressed as an annual pace. In recent years, maturing foreign currency loans have been larger than the amortisation target. This means that a portion of the maturing foreign currency debt must be refinanced. This refinancing during one year constitutes the Debt Office's foreign currency borrowing (in gross terms).

The desired exposure can be achieved with derivatives



Foreign currency borrowing =
Maturing foreign currency loans – Amortisations

One important step in preparing a forecast of the funding requirement is to determine how foreign currency borrowing is to be allocated between direct foreign currency borrowing and krona/swap borrowing. Krona/swap borrowing implies that, as a first step, the Debt Office issues Treasury bonds. The larger the Debt Office's direct foreign currency borrowing, the *smaller* the finding requirement in kronor will be. The larger the Debt Office's krona/swap borrowing, the *larger* the funding requirement in kronor (bonds) will be.

Since the Debt Office is a large player in the swap market, there is reason to assess what total volume the Debt Office should swap during one year. This volume depends, among other things, on the difference between the interest rate on Treasury bonds and the swap interest rate on the same maturity, the swap spread, as well as the depth of the market. If the market is thin, there is a risk that the Debt Office will drive down the swap interest rate.

Given a certain total swap volume, the use of interest rate swaps is allocated between foreign currency borrowing and as substitution for Treasury bills. The allocation of foreign currency borrowing between direct foreign currency borrowing and krona/swap borrowing is thus not only a function of the relative costs of these two forms of borrowing, but also of any gains from using swaps to achieve short-term interest rate exposure. For example, if the terms of direct foreign currency borrowing are good, there may be reason to use interest rate swaps for short-term borrowing instead of as an element of foreign currency borrowing.

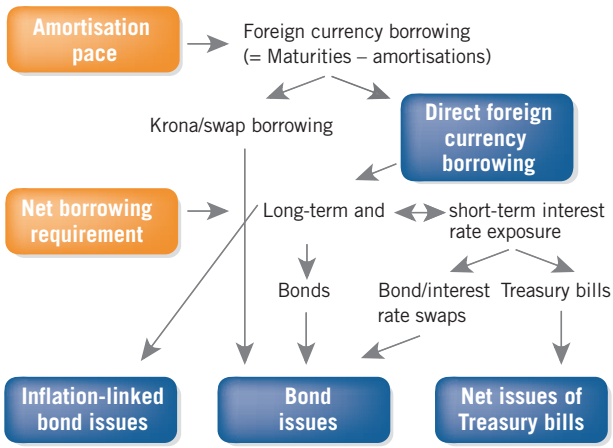
The Debt Office's foreign currency debt is allocated among the currencies included in its benchmark for foreign currency exposure.[2)] However, foreign currency benchmarks do not control the allocation of borrowing by currency. After the loans have been taken out, exposure can be adjusted by means of subsequent derivative transactions. The same is true of maturities. In principle, loans can be taken out with any maturity at all and adjusted afterward by using derivatives. This means that the Debt

[2)] The structure of the foreign currency is 60 % euro, 19 % USD, 9 % CHF, 8 % GBP and 4 % JPY.

Office can borrow in the currencies and maturities that yield the lowest costs (including the derivative transactions required to achieve the exposure specified by the foreign currency allocation benchmark).

Forms of loans can be divided into *capital market borrowing*, which includes public loans and private placements, and Treasury bills in foreign currencies, actually *Commercial Paper* (CP). Just like borrowing in Swedish kronor, funding plans are stated in terms of capital market borrowing requirements and net changes in the CP borrowing stock. Commercial Paper provides flexibility in foreign currency borrowing, since the stock of debt can be rolled over for a period and then be replaced by capital market borrowing at favourable terms.

Funding



Krona borrowing

The need for krona borrowing depends on the net borrowing requirement and how much of the total funding requirement is covered by direct foreign currency borrowing. Total krona borrowing will equal the gross borrowing requirement not satisfied by direct borrowing in foreign currencies. The remaining foreign currency borrowing, i.e. krona/ swap borrowing, constitutes part of Treasury bond borrowing, as the first step in such a transaction is to issue bonds denominated in krona.

Inflation-linked bonds are an important element of krona borrowing. The Debt Office's strategy is to increase the percentage of inflation-linked borrowing in total central government debt. However, the pace of the increase depends on market developments and not primarily on the funding requirement. In this report, the Debt Office provides an estimate of the annual pace. Inflation-linked borrowing lies outside the duration (maturity) target. The size of inflation-linked borrowing and the scale of direct foreign currency borrowing can thus be said to precede the calculation of how much will be funded with the aid of Treasury bonds and Treasury bills.

Given the scale of krona/swap borrowing, which involves the issuance of Treasury bonds as a first step, and the volume of inflation-linked bonds, the remaining krona borrowing is allocated between Treasury bills and nominal Treasury bonds.

Allocation by different maturities

The current duration target of 2.7 years is allocated between a target of 2.3 years for foreign currency debt and 2.9 years for nominal krona debt. The allocation of nominal krona borrowing by different maturities is thus controlled by the duration target of 2.9 years. Note that inflation-linked bonds are not included in the duration target. Duration is a measure of the lifespan of the debt, i.e. after how many years the debt must be refinanced on average. The measure takes into account the timing of cash flows and interest rates.

The duration target for nominal krona debt controls

The decision making process

The overall central government debt policy decisions are made by the Government in the form of annual guidelines for the coming year. These guidelines, which are approved by November 15 at the latest, also contain a strategy for the subsequent two years. The Government's decision is based on proposed guidelines from the Debt Office, which are also sent for official comment to the Riksbank. The Debt Office's proposed guidelines are published by October 1 at the latest.

The guidelines deal with such matters as the allocation among the most important loan instruments: nominal krona debt, inflation-linked krona debt and foreign currency debt. The decision on foreign currency debt is in the form of a benchmark for amortisations of the foreign currency debt during one calendar year, with a surrounding interval that the Debt Office can take advantage of in order lower its debt management costs. The Government also states a target for the duration (maturity) of nominal debt. This target represents a trade-off between borrowing costs, which are normally lower in the case of short maturities, and interest rate refixing risk, which is larger in case of short maturities.

Within the framework of the Government's guidelines, the Board of the Debt Office then approves the operative guidelines that will apply to its work. Examples of these are the annual pace of foreign currency debt amortisations, the duration of nominal krona and foreign currency debt, respectively, benchmarks for the allocation of foreign currency debt and limits on the active management of foreign currency debt.

the allocation of borrowing between Treasury bills and Treasury bonds, in such a way that the forecasted trend of debt duration fluctuates around 2.9 years over time.

The short-term borrowing can be achieved by increasing the outstanding stock of Treasury bills or by issuing Treasury bonds and using interest rate swaps to obtain short-term interest rate exposure. Interest rate swaps affect duration regardless of whether they are carried out in order to replace Treasury bills or as an element in the creation of foreign currency exposure (part of foreign currency borrowing). Duration is calculated on the basis of all Treasury bonds, regardless of whether they are swapped.

The actual duration outcome will then vary, depending on cash flows arising as a consequence of major payments received and disbursed, seasonal variations in the funding requirement and the accompanying variations in issues of Treasury bills and fluctuations in interest rates. In order to cope with such variations, duration is allowed to fluctuate upward and downward by a maximum of 0.3 years. The Debt Office thus takes no steps to adjust duration in the short term in accordance with the target. However, loan planning is formulated in such a way that the target is always achieved over time. Since duration is allowed to fluctuate around 2.9 years, it is possible to let the stock of bond loans correspond to the borrowing requirement over a somewhat longer period, at least a year or so ahead in time. In this way, the Debt Office avoids rapid changes in issue volumes.

Duration shortens over time unless it is adjusted by means of borrowing. This means that outstanding bond loans over the yield curve need to be supplemented by loans with longer maturities. New loans are normally issued with 10-year maturities. In this way, the duration target will also be met.

A simplified calculation of this effect shows that the duration of nominal krona debt decreases by about 0.4 years after one year if the outstanding stock of Treasury bonds is unchanged and the short-term debt portfolio (mainly Treasury bills) is continuously refinanced. In that case, the duration of outstanding bonds must be so long that the duration of the entire krona debt lengthens by 0.4 years. For example, in case of a bond issue of SEK 100 billion, this means that the loans that are issued should have a maturity of about 7 years.

Funding and central government debt

The central government borrowing requirement increases the government debt by the same amount. However, differences often arise between the change in government debt and the borrowing requirement. Two important examples are provided below.

The exchange rate of the krona affects the foreign currency debt, measured in kronor. However, the borrowing requirement is affected by a movement in the exchange rate only when realised exchange rate gains or losses arise. Yet unrealised fluctuations in the market value of the foreign currency debt do not affect the allocation of borrowing among different instruments, since management of foreign currency borrowing does not depend on what percentage of total debt it represents, but instead on the Government's guidelines for the pace of amortisation, expressed in krona terms.

Changes in the central government debt due to transfers of government securities affect the central government debt. During 2001, SEK 69 billion worth of Treasury bonds were transferred from the National Pension (AP) Funds and SEK 20 billion worth from the Riksbank, Sweden's central bank. The outstanding stock of Treasury bonds diminished by the same amounts, which shortened duration, all else being equal. This shortening of duration was offset by increasing the percentage of Treasury bonds in the total borrowing mix.

Liquidity management

The Debt Office's short-term funding by means of overnight loans, deposits and repos has not been discussed here, since the topic has been funding of the annual deficit. However, cash flows around year-end affect the scale of short-term funding (including the change in the Treasury bill stock) during a calendar year in a sometimes rather arbitrary manner.

Loan planning is arranged in such a way that an average of about SEK 15-20 billion of the total debt is financed in the overnight loan market. Refinancing of this portion is not included in the funding requirement on an annual basis. On December 31, the scale of short-term funding may nevertheless deviate from the assumed SEK 15 billion, due to temporary cash movements. For example, if the central government happens to have a financial investment requirement of SEK 10 billion during a given year and a deficit of SEK 30 billion in the overnight loan market the following year, a difference in financial position of SEK –40 billion arises between the two years. The amount is then recorded as increased short-term funding on an annual basis. In practice, short-term funding becomes something of a residual item, rather than a portion of the funding forecast.

Thomas Olofsson, Head of Funding

Swaps in central government debt management

The Swedish National Debt Office has been using interest rate and currency swaps in Swedish kronor since 1996. Half of Sweden's present foreign currency debt is financed with Swedish Treasury bonds that have been swapped to foreign currencies. This has lowered the costs of government debt and increased the liquidity of the Swedish Treasury bonds market. In recent years it has become increasingly common for sovereign borrowers to use interest rate swaps in their domestic currency.

Today the Debt Office has an outstanding stock of krona-denominated interest rate swaps of around SEK 170 billion (nominal amount). To date, these swaps have been used exclusively to create foreign currency exposure. What has primarily driven the Debt Office's swap activities is cost savings. For a number of years, it has been more cost-effective to create foreign currency exposure via the swap market than through direct capital market borrowing. This is especially true since for administrative and risk reasons, the Debt Office has wanted to minimise the use of more complex loan structures, which have often been the cheapest form of capital market borrowing. Furthermore, the use of swaps has enabled the Debt Office to maintain debt issuance volumes in the Swedish government bond market when the borrowing requirement has been low.

Foreign currency exposure via swaps

Creating foreign currency exposure via the swap market involves using the domestic bond market as a source of funding. The Debt Office creates foreign currency exposure in three steps. The first step is to issue a bond in Swedish kronor. Then the Debt Office carries out an interest rate swap in Swedish kronor, in which it receives fixed interest rate and pays floating interest rate (Stibor). The maturity of the interest rate swap is usually close to the maturity of the bond that was issued. The last stage is a "basis swap". This basis swap involves changing a floating interest rate in one currency for a floating interest rate in another currency. 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 swap, the Debt Office receives Stibor and pays floating interest rate in euro, Euribor.

Transactions to create foreign currency exposure via swaps

Transaction	Pay	Receive
1. Issue government bond	Bond interest rate	
2. Interest rate swap, SEK	STIBOR	Swap rate
3. Basis swap	Euribor	STIBOR
Total	Euribor	Swap spread

The swap rate the Debt Office receives is higher than the bond interest rate it pays. The difference is the "swap spread". By creating foreign currency exposure in this way, the Debt Office benefits from the cost advantage that sovereign issuers enjoy, mainly on long-term maturities, in their own market.

Also note that the two floating interest flows in Swedish kronor exactly offset each other. This is important, since it, in this case, means that the interest rate swap in kronor does not increase the exposure to Swedish short-term interest rates.

Volumes and cost savings

The Debt Office has been carrying out interest rate swaps amounting to between SEK 20-40 billion per year since 1996. Measured in percentage of total foreign currency borrowing, swaps gradually increased as the cost advantages and liquidity of the swap market grew. During 2000 and 2001, the Debt Office carried out all its long-term foreign currency borrowing via swaps. Altogether, this means that nearly half of the outstanding foreign currency debt is funded in the Swedish market.

The cost of foreign currency borrowing is measured in relation to Euribor and is expressed as the number of basis points below this interest rate. When the Debt Office creates foreign currency exposure via swaps, the cost is Euribor *minus the swap spread*. On average, the cost of swap-based borrowing since 1996 has thus been Euribor minus about 50 basis points. This should be compared to the cost of capital market borrowing.

Volumes and costs of capital market and swap-based borrowing

	1996	1997	1998	1999	2000	2001
Volymes (SEK bn)						
Capital market	71	50	36	22		
Swap-based	21	21	31	40	24	35
Cost in relation to euribor (bps)						
Capital market	–13	–22	–8	–3		
Swap-based	–31	–32	–52	–60	–66	–47

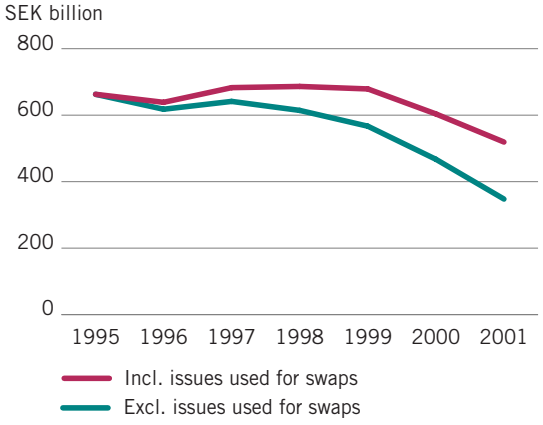
The relative advantages of swap-based foreign currency borrowing were greatest during the period 1998-2000. In present value terms, the Debt Office estimates that

foreign currency borrowing via swaps has meant a total saving of more than SEK 3 billion compared to capital market borrowing. However, one should remember that foreign currency borrowing via swaps leads to credit risks. How these risks are managed is described later in this article.

Increased volume of Treasury bonds

The Debt Office's swap activities have enabled it to issue larger volumes of Swedish Treasury bonds. Without these swaps, issue activity would periodically have been very low, which would probably have been negative for liquidity in the bond market. During some years, more than half of bond issues have been carried out in order to create foreign currency debt. In other words, if the Debt Office had not created foreign currency exposure via swaps, the outstanding volume of Swedish Treasury bonds would have been considerably smaller.

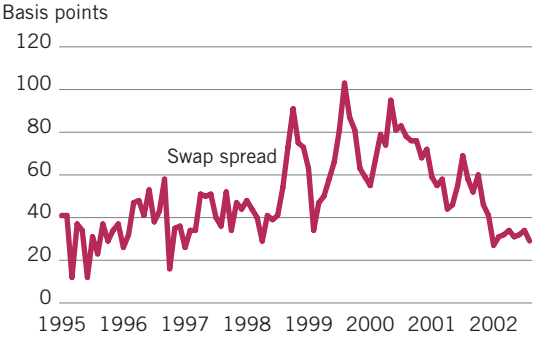
Outstanding volume of nominal bonds with and without swaps



Changes in the swap spread

How beneficial swap-based foreign currency borrowing will be is directly dependent on the level of the swap spread. The ten-year swap spread in SEK has varied sharply in recent years. After having moved mostly within the 20 to 50 basis point interval from 1995 until the first half of 1998, the spread widened sharply on three occasions: during the Asian financial crisis of 1998, in the run-up to the turn of the millennium late in 1999 and around the stock market peak early in 2000. Since then, the swap spread has gradually fallen to its present levels of around 30 basis points.

Swap spread in SEK, 1995–2002 (10-year maturity)



Source: Ecowin

Reasons for tighter swap spreads

One relevant question is whether the Debt Office's swap activities in themselves are an explanation for the reduced swap spread. Such an impact cannot be ruled out, although it is difficult to see any direct association between the volumes that the Debt Office has swapped in different years and the level of the swap spread in SEK. Nor are lower swap spreads an isolated Swedish phenomenon; in the euro zone and the United States, swap spreads have also become considerably tighter.

Swap spreads in different currencies are affected by many factors. Among the factors that are often mentioned are interest rates, the slope of the yield curve, the relative supply of central government and private debt issues, and the attitude of market players towards credit risk. When swap spreads were at their highest, another common explanation was that the market players that had previously been trading that type of spreads, for example hedge funds, had more or less disappeared from the market after the Long-Term Capital Management crash of 1998. The fact that these players have now returned to the market may be one reason behind the lower swap spreads.

There are also structural explanations for lower swap spreads. Demands for higher credit ratings among participants in the swap market, combined with increased use of Credit Support Annex or CSA agreements (see "Credit risk" on page 20) have led to reduced systemic risk in the entire swap market. This means that that the differential to risk-free government securities interest rates should be lower. Finally, one must also weigh in the fact that a number of European countries announced swap programmes in their domestic currency (euro) during 2001, which has affected the relationship between supply and demand. Taken together, the activities of Sweden and other sovereign borrowers are among several structural explanations why swap spreads have diminished over the past two years.

Swaps instead of Treasury bills

Interest rate swaps can also be used to create funding with short interest-fixing periods. Issuing long-term bonds and carrying out swaps in which the Debt Office receives fixed interest and pays floating interest (Stibor) achieves the same interest rate exposure as for three- or six-month Treasury bills. In this way, the Debt Office could replace some of its Treasury bill issues. The Debt Office would still benefit from the differential between the swap rate and bond yield, i.e. the swap spread. But a portion of the saving would disappear, since the floating rate the Debt

Office would pay on the swap would be higher than the interest rate on Treasury bills. The differential between Stibor and the Treasury bill rate for the same maturity is called the TED spread[1]. If the swaps are used to create short-term domestic borrowing, the debt office earns the swap spread and pays the TED spread. In recent years, the TED spread has mostly been between 5 and 40 basis points, averaging just below 20 basis points. Given a normal swap spread, this way of using interest rate swaps would thus also imply lower costs for central government debt. The fact that the swap spread is locked in when the transaction occurs, while the TED spread varies, nevertheless means that the total saving from using synthetic Treasury bills will be known only afterwards and is thus uncertain.

Transactions to create synthetic Treasury bills

Transaction	Pay	Receive
1. Issue government bond	Bond yield	
2. Interest rate swap, SEK	STIBOR	Swap rate
3. Reduce T-bill issues		T-bill rate
Total	TED spread (floating)	Swap spread (fixed)

Foreign currency debt or synthetic T-bills

For a given volume of interest rate swaps, the Debt Office thus has two alternatives. Either it follows current practice and uses the entire volume to create foreign currency exposure, earning the swap spread on the entire volume. Or interest rate swaps may replace a portion of the Debt Office's Treasury bill borrowing. The saving will then be the swap spread minus the TED spread. In the second alternative, the foreign currency borrowing requirement is met through capital market borrowing. Capital market borrowing can also be evaluated in terms of a certain spread against Euribor. The total saving in alternative two will therefore be the swap spread *minus* the TED spread, *plus* the spread to capital market borrowing.

What determines which of the two alternatives is more beneficial from a cost standpoint is the relationship between the TED spread and the spread to capital market borrowing. If the TED spread is larger than the spread to Euribor on capital market borrowing, it is better *from a strict cost standpoint* to use the entire swap volume to create foreign currency exposure. If the opposite is true, swaps should be used to partly replace Treasury bill borrowing.

[1] TED spread means "Treasury – Euro Dollar spread" and originally refers to the difference in price between futures contracts on U.S. T-bills and futures contracts on dollar deposits at banks outside the U.S. The abbreviation is often used for the difference between deposit and T-bill interest rates.

Practical management

Annual mandate

The Debt Office's traders have an annual mandate to carry out a certain volume of interest rate swaps in Swedish kronor. The volume is set on the basis of the gross borrowing requirement in foreign currencies, the cost compared to other forms of borrowing and an assessment of how large a volume the Debt Office can swap without affecting the pricing in the swap market to an excessive degree. The assessment of market depth is based on earlier experience and information from the market. The mandate also states roughly how the total volume should be allocated over the year and in different maturities.

Proximity to bond issues

The Debt Office's swaps in Swedish kronor have always been carried out in more or less close proximity to its bond issues. During the early years, the rule was that the average time to maturity of the swaps should be about the same as for the bonds that were being issued during the same year. In 2001, the Debt Office had a very close connection to its bond issues. The swaps should then have the exact same maturity date as the bonds issued. In addition, the interest rate swap had to be carried out within a two-week period around the issue date. However, this connection was too rigid and made it difficult to employ good market timing. The Debt Office has therefore reverted to having approximately the same time to maturity on its swaps and bonds *on average* over the year.

One relevant question is whether close proximity to issue dates is appropriate. Other countries that work with interest rate swaps in their *domestic currency* have generally not had this proximity. The difference partly depends on what the swaps are used for. To date, the Debt Office has been rather unique in using swaps to create foreign currency exposure. There should thus be close proximity in order to ensure the saving in the form of the swap spread. Other countries have instead used swaps to reduce the duration of domestic debt, which leads to lower costs due to the positive slope of the yield curve. In those cases, the swap spread is not the most important saving, and proximity to bond issues with the same maturity is therefore not especially interesting. In that case, the method of

Cost comparison, swap alternatives

Alternatives	Income		Cost
1. Synthetic T-bills plus capital market borrowing	Swap spread (fixed) + Capital market spread (fixed)	⟷	TED spread (floating)
2. Swap-based for currency borrowing + ordinary T-bills	Swap spread (fixed)		

using swaps to reduce duration should instead be weighed against other alternatives, such as issuing a larger volume of securities in short-term maturities.

Credit risks

When foreign currency borrowing is created via swaps, credit risks arise. This is because the fixed rate the Debt Office will receive in the interest rate swap is paid by a private company. If interest rates fall, the market value of the swap will rise, leading to a claim on the counterparty. If the counterparty goes bankrupt, this may lead to a credit loss.

The Debt Office manages this type of credit risks by means of CSA agreements, [2]) which are a supplement to the standard agreement in the swap market, the International Swaps and Derivatives Association (ISDA) agreement. CSA agreements imply that the counterparties transfer collateral in the form of cash or securities when the market value of the swap changes. As the volume of swaps has increased, the Debt Office has been working actively to establish CSA agreements with its largest counterparties. To date, it has signed CSA agreements with 12 counterparties. CSA agreements are required of new counterparties. For existing counterparties without CSA agreements, the ambition is to put such agreements in place as soon as possible.

The Debt Office uses bilateral CSA agreements, which means that the Debt Office also provides collateral if the counterparty should have a claim on us. Other countries, such as Denmark, have chosen to use one-sided agreements, referring to the fact that sovereign borrowers do not normally entail any credit risk. The reason why the Debt Office has nevertheless used bilateral agreements is its desire to conform as much as possible to market practices.

Even with CSA agreements, the Debt Office's ambition is to allocate the total volume of swaps among a number of counterparties. Since 1999, the annual volume has been divided among 14-15 different counterparties.

International outlook and questions for the future

In recent years, it has become common for sovereign borrowers, especially in Europe, to use interest rate swaps in their domestic currency. Among the countries that carry out interest rate swaps are Denmark, the Netherlands, France, Portugal and Canada. One of the reasons behind the increased use of interest rate swaps is that debt management issues, for example what structure and average maturity the debt should have, have received greater focus in many countries. Another expression of this trend is that more and more countries are shifting their central government debt management from central banks and finance ministries to independent debt offices (for example, the United Kingdom and Germany).

[2]) Credit Support Annex

Internationally speaking, the most common motive for using interest rate swaps in the domestic currency is that this makes it possible to separate borrowing and debt management. By using interest rate swaps, long-term bonds can be given priority in government securities issues, while the borrower can achieve a different desired duration with the aid of swaps. A number of countries believe that the method of using long-term bonds combined with swaps is a better way of creating short duration than decreasing the proportion of long-term bonds and increasing the proportion of Treasury bills in the total debt portfolio. The advantages of the former variant are that it strengthens the liquidity and benchmark status of the bond market, which can be assumed to lower the overall level of interest rates, while the borrower often enjoys a measurable cost saving, since the swap spread is generally higher than the TED spread. In addition, the Treasury bill market is less developed than the bond market in many countries, making the more direct method for reducing duration difficult to implement in practice.

It is thus possible to foresee increased use of interest rate swaps, especially in the euro zone. However, this trend will be slowed by the fact that an ever-larger demand for receiving fixed swap rates will put pressure on swap spreads. The less favourable market conditions of recent months have caused a number of countries to cut back on their activity. In September 2002, for example, France declared that it would temporarily halt its previously announced EUR 80 billion swap programme during 2002. Also, one reason for Sweden's recently announced decision to maintain a more even allocation between swap-based foreign currency borrowing and capital market borrowing is that the cost argument for swap-based borrowing is no longer as strong.

Central counterparty clearing

The use of swaps leads to increased credit risks. As discussed above, this risk can be effectively reduced by CSA agreements. However, establishing and maintaining CSA agreements with many counterparties often takes a great deal of time and requires major input by internal and external legal counsel. CSA management is a weighty administrative process. In recent months, discussion has thus begun on central counterparty clearing in the swap market. This would imply allowing all transactions to go through a central counterparty, so that each market player would only have exposure to this counterparty. Such a system is already in place for banks involved in the swap market.

Anders Holmlund, Head of Analysis

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Agency France Tresor, web site: http://www.francetresor.gouv.fr/

Electronic trading in the fixed income market

In recent years, electronic trading has changed the world's fixed income markets. The fastest development has occurred in derivative markets, on exchanges such as LIFFE and EUREX. Generally speaking, development has been fastest in the United States. But the euro has speeded up development in Europe. In Sweden, things have moved somewhat more slowly. In a short period, however, the Swedish fixed income market has managed to establish a smoothly functioning system of electronic interbank trading in Treasury bonds. The Swedish National Debt Office also provides direct sales of government securities to small investors via the Internet.

The first electronic systems for bond trading in the secondary market were closed systems for interbank trading. These systems enabled more effective risk adjustment between banks. Investors and issuers were unaffected, however. The next step was electronic fixed income trading between banks and their customers. First each bank offered a proprietary system aimed at its own customers. The systems that are growing fastest are those in which a number of banks offer fixed income trading to customers in the same system: multi-bank to customer platforms.

In the primary market, various issuers – especially sovereign borrowers – were early in launching systems for electronic bidding in securities auctions. This has considerably shortened the time needed to carry out an auction. These systems are usually open only to a limited number of banks. In recent years, a number of non-sovereign issuers have also carried out auctions using Internet-based systems. The number of participants in these auctions is generally larger.

Although electronic trading has developed rapidly, there is still a demand for traditional trading by telephone. The advantages of a telephone-based brokerage market are mainly found when large blocks of securities are to be traded.

Systems overview

Interbank trading	Bank – Client	Exchange trading
Euro MTS	Bondvision	Eurex
Lokala MTS	Tradeweb	Liffe
Saxess	MarketAxess	
E-speed		
Broker Tec		

Electronic interbank trading in Sweden

In Sweden, the stock exchange system Saxess is used for electronic interbank trading in Treasury bonds. The system was developed by OM, owner of Stockholmsbörsen (the Stockholm Stock Exchange) and was launched in May 2001. In an introductory phase, only the 10-year benchmark bond was traded in the system, but during the autumn of 2001 the 2-year and 5-year benchmark bonds were also introduced. Thus three Treasury bonds are currently traded electronically.

Trading between banks has focused on loans that are electronically traded. Compared to one year ago, the market share of the three loans that are traded electronically has increased from about 65 per cent to about 85 per cent. Since interbank trading volume comprised a small portion of total spot trading, the electronic portion is small, about 10 per cent of the total.

Important issues for the future are improving transparency and accessibility, a development that has already occurred internationally. In the international trading platforms, a portion of the order book is shown in real time to investors and other market players. Others besides market makers may also participate. In the further development of the Swedish system, the Debt Office will advocate increased transparency and an opportunity for new market players to participate.

Electronic interbank trading in Europe

In the EU, the leading player for spot trading in Treasury bonds between banks is MTS. MTS is a group of companies with local marketplaces in each country and a central marketplace, EuroMTS. The division of labour between EuroMTS and the local MTS offices is that EuroMTS trades the largest and most liquid bonds. To be traded on EuroMTS, the outstanding volume must be at least EUR 5 billion. Local MTS offices trade bonds from their respective domestic markets and those that do not meet the requirements for trading on EuroMTS.

One difference compared to Sweden's Saxess system is that several different types of market players have access to the system. "European primary dealers" must make markets in at least French, Italian and German bonds. "Single market dealers" are market makers in bonds from one country, and "dealers" has no obligation to make markets at all. In other words, a dealer has to accept the market

price, but still has access to the same information as all the other participants.

The other main electronic systems for interbank trading banks in Europe are Broker Tec and E-speed. In the spot market, they have a weaker position than MTS. Broker Tec and E-speed have focused on other portions of the market. One probable reason why they have been successful is that they apply central counterparty clearing, via the London Clearing House or Clearnet, in 8 out of the 14 European markets where they are represented. The other area where Broker Tec is big is in "basis trading"[1]. In this market, E-speed also has a strong position. Unlike Broker Tec, E-speed has both electronic broking and voice broking. E-speed is the largest electronic broker in the US. Broker Tec was started by a number of banks in order to create an alternative to E-speed.

Central counterparty clearing

Central counterparty clearing and anonymity in trading are important driving factors behind the development of electronic trading, at least in repos and derivative products. Central counterparty clearing is not as important in spot trading, since the counterparty risks are smaller. In the MTS spot market, the procedures for clearing and unwinding are different depending on what country issues the bond. Although the procedures are different, and this is not only at MTS, there is a trend towards an increasing degree of straight through processing (STP) in the systems. Above all, back office procedures can be made more efficient. However, given the many different procedures that exist in Europe, it may take time before it becomes fully possible to benefit from the economies of scale that should exist in clearing and unwinding. Some studies indicate that the cost of clearing and unwinding in Europe is up to ten times higher than in the US. Electronic trading combined with efficient unwinding will make it possible for trading to occur on an STP basis to a far greater extent than today.

Improved transparency

Increased use of electronic systems has greatly increased market transparency. The major marketplaces are essentially order-driven, with large interests on both the buy and sell side. The large banks have advanced "price engines" that continuously calculate prices on all products, given the prices of the most liquid instruments. At brokerages, prices from the various marketplaces are linked together into a single page that shows the best buying and selling prices. The broker does not have to bother about what marketplace the price comes from. The broker monitors the market, assesses in what direction it is moving and changes any settings on the bank's price engine. Otherwise trading takes care of itself. Risk adjustment can usually be done using futures on German government securities, which also occurs automatically.

Good price information has become a matter of course. Customers can see prices in the banks' own customer systems. The prices there are set by the same price engines as for the interbank systems, possibly with a somewhat wider spread. Customers who use multi-bank to customer systems such as Tradeweb or Bondvision thereby have access to real-time prices. Price information from MTS can be seen in real time via Reuters, for example. Tradeweb sells price data on euro-denominated Treasury bonds via Telerate. Broker Tec also has plans to start selling price data on euro-denominated Treasury bonds.

Trading between bank and customer

Electronic trading between bank and customer can be divided into systems where the bank itself runs the marketplace and trades with its own customer base and systems where a number of banks own a joint marketplace and are open to all customers: multi-bank to customer platforms.

During the IT bubble, numerous marketplaces opened on the Internet. Banks did not want to miss the train and therefore spread their risks by joining many different projects. Since then, there has been massive dot-com death. The number of systems in the market has shrunk from about 70 to a handful. The multi-bank to customer platforms that have gained large market share are Tradeweb, Bondvision and MarketAxess. Of the banks' proprietary systems for customers, many are based on Bloomberg.

Simplified trading

Multi-bank to customer systems provide simplified trading between banks and end-customers. Each transaction is a kind of auction, with the customer sending a price query for a given volume to several different banks simultaneously. The customer can then freely choose the most favourable bid. The customer no longer has to phone each bank, but can quickly obtain binding prices in electronic form from several banks and automatically complete the trade.

The most successful in this field to date is Tradeweb, which began in the US but has established significant operations in Europe as well. It offers a wide product range and has the largest trading volume of the systems. Bondvision originated from a trading platform previously called Bondclick and was bought up by MTS. Through Bondvision, MTS wants to take advantage of its position in interbank trading for euro-denominated Treasury bonds and also reach out to end-customers. MarketAxess focuses mainly on corporate bonds.

One marketplace that focuses on a single product,

[1] Basis trading means simultaneously trading a derivative contract and the underlying asset, for example a futures contract and a bond.

Futures experiment

Before the beginning of electronic interbank trading, the Swedish fixed interest market had largely had the same structure since the 1980s. Market makers quoted firm two-way prices to each other in order to manage their risk diversification. The market makers, in turn, quote two-way prices by telephone to end-investors. Normally speaking, the market makers have also been dealers for the Debt Office, which among other things has given them exclusive bidding rights at it's the Debt Office's auctions.

The Swedish fixed income market experimented with electronic trading as early as 1998, but at the time this only involved two derivatives – a two-year and a ten-year futures contract intended to function as a main instrument for handling interest rate risk. The idea was that both market makers and end-investors would meet in one instrument and that liquidity would thereby be concentrated. However, there was too little interest. In practice, the contracts stopped functioning after less than a year. Instead the old system of firm two-way prices by telephone reappeared. There was a consensus among market players that the market needed to become more efficient, which resulted in the initiation of efforts to create an electronic trading platform for Treasury bonds.

short-term Commercial Papers (CP) and is big in the US is Cp-market. The system was established in June 2000 and focuses mainly on the dollar market. CP issues occur via the Internet – directly from borrowers to investors. The borrowers are some of the world's largest companies and the investors consist of about 500 institutions. Average volume is about USD 1 billion per day. One important difference compared to other systems in that investment banks – the intermediaries – are not directly involved; the system was instead developed jointly by the largest borrowers and a number of investors. In the CP market, Tradeweb also has a large market share but trading then occurs via the banks. Similar automated systems also exist for American municipal bond auctions.

Conclusion

Electronic trading has simplified and streamlined trading in fixed income securities. Recently, trading has become concentrated in a small number of systems, while the trend towards heavier trading in these systems is clear. There is great potential ahead for simplified clearing and settlement procedures.

Electronic systems make it possible to add users at low cost, which benefits already established systems. Starting a competitive new system today would require major investments. In the current economic situation, it is not especially likely that anyone is prepared to do this. Most indications are thus that the systems that are well-established today will also continue to dominate electronic trading in fixed income securities.

Tord Arvidsson, Analyst

Market information

Source: The Swedish National Debt Office, unless otherwise stated

Swedish government debt

Treasury bonds, outstanding volumes, September 30, 2002

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	63,289
2006-04-20	3.50	1044	61,595
2007-08-15	8.00	1037	58,653
2008-05-05	6.50	1040	54,783
2009-01-28	5.00	1043	50,133
2011-03-15	5.25	1045	45,532
2012-10-08	5.50	1046	40,967
2014-05-05	6.75	1041	46,726
Total benchmarks			**485,298**
Non-benchmarks			**13,171**

Inflation-linked bonds

Maturity date	Coupon %	Loan no.	Outstanding amount SEK M
2004-04-01	–	3002	5,658
2008-12-01	4.00	3101	35,195
2014-04-01	–	3001	18,566
2015-12-01	3.50	3105	35,366
2020-12-01	4.00	3102	18,972
2028-12-01	3.50	3103	3
2028-12-01	3.50	3104	26,813
Total inflation-linked bonds			**140,573**
Total Treasury bonds (nominal and inflation-linked)			***639,042***

Treasury bills, outstanding volumes, September 30, 2002

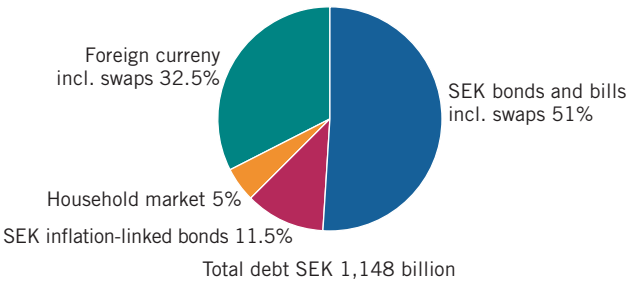
Maturity date	Nominal amount SEK M
2002-10-16	17,734
2002-11-20	17,998
2002-12-18	62,479
2003-03-19	57,480
2002-06-18	42,483
2003-09-17	40,852
Total Treasury bills	**239,026**

Rating

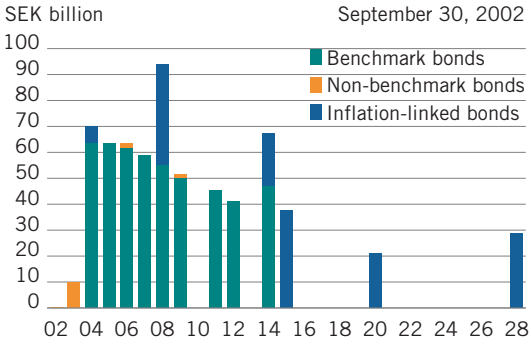
	Debt in SEK	Foreign currency debt
Moody's	Aaa	Aaa
Standard & Poors	AAA	AA+

Debt structure

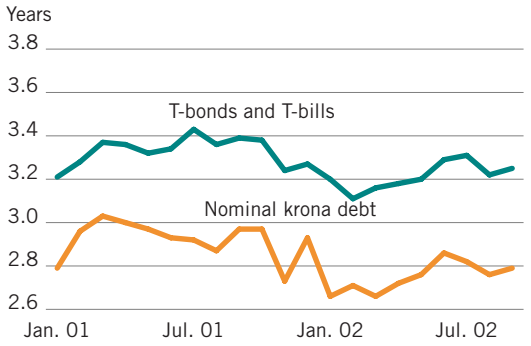
September 30, 2002



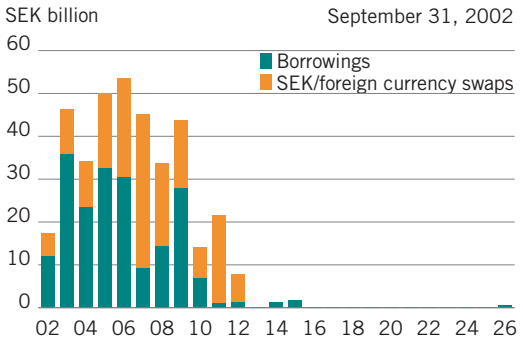
Maturity profile, SEK nominal and inflation-linked bonds



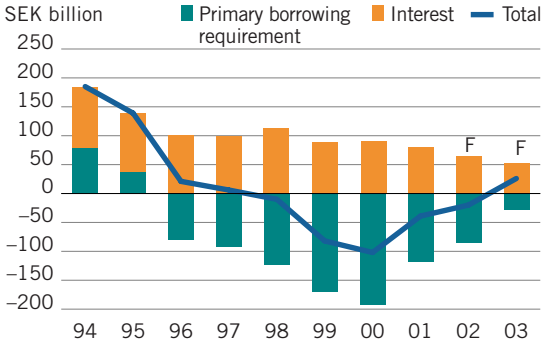
Duration of nominal debt



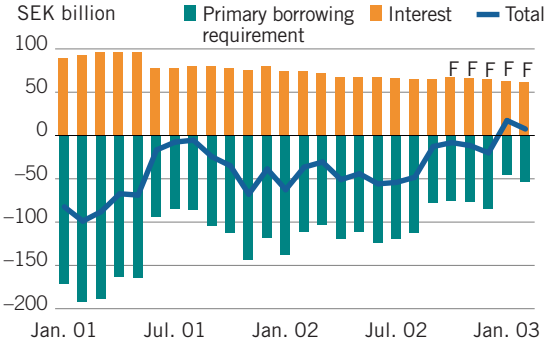
Maturity profile, foreign currency loans excl. callable bonds



Central government borrowing requirement, 1994–2003

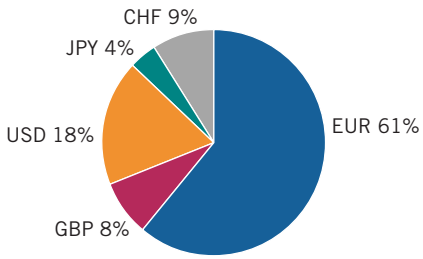


Swedish government borrowing requirement, 12 months



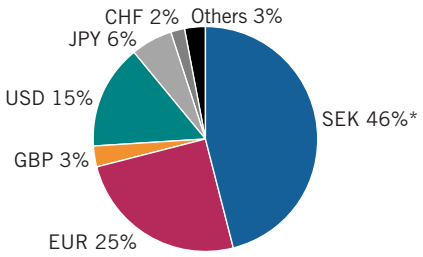
Foreign currency, benchmark

September 30, 2002



Funding in foreign currencies

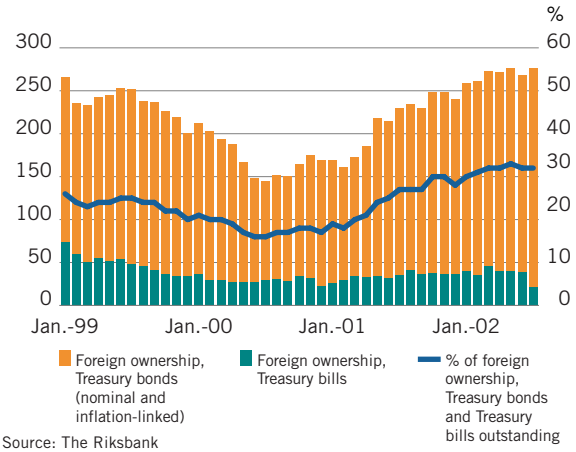
September 30, 2002



*SEK/foreign currency swaps

Foreign ownership of Treasury bonds and Treasury bills

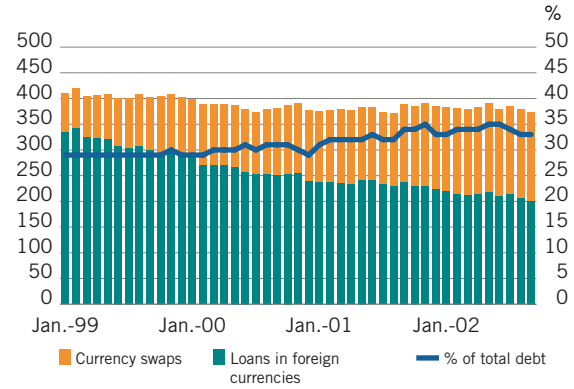
SEK billion



Source: The Riksbank

Central government debt exposure in foreign currencies

SEK billion

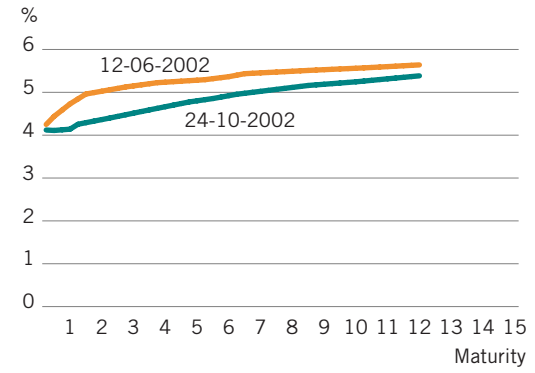


Source: The Riksbank

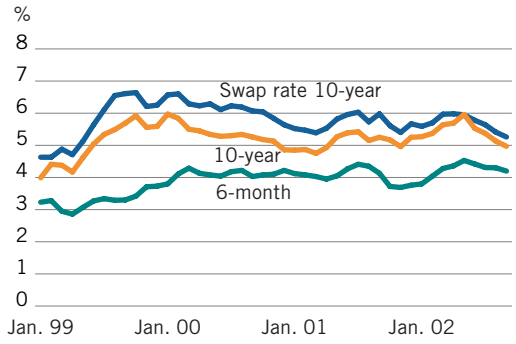
Financial markets

All values up to September 30, 2002

Swedish government yield curve

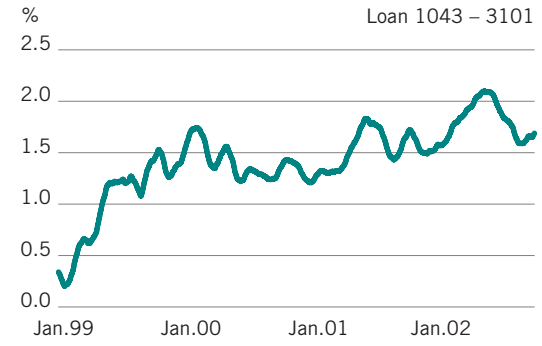


Interest rate developments



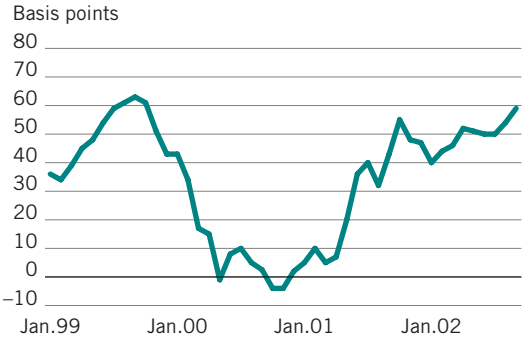
Source: Ecowin

Break-even inflation



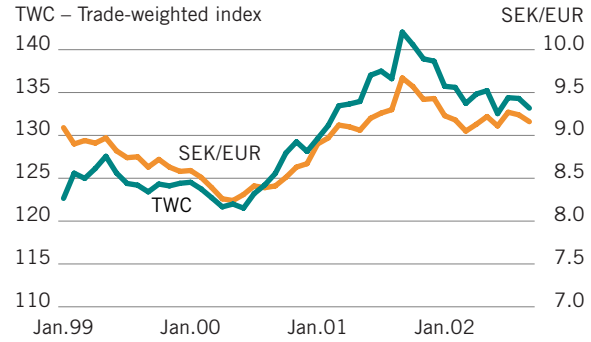
Source: Ecowin

Interest rate spread vs Germany – 10-year



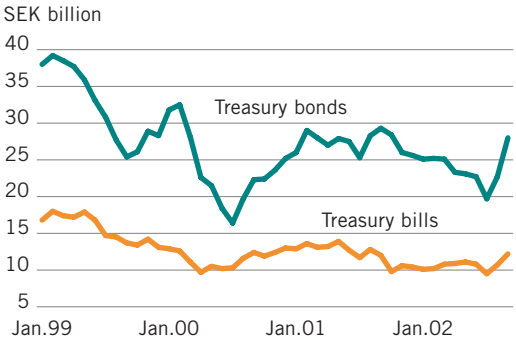
Source: Ecowin

Historical exchange rates



Source: Ecowin

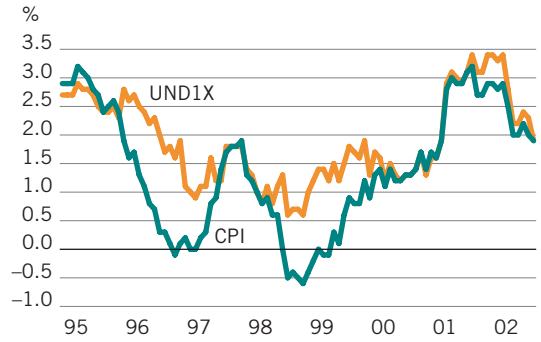
Trading volume, Swedish government securities



Source: The Riksbank

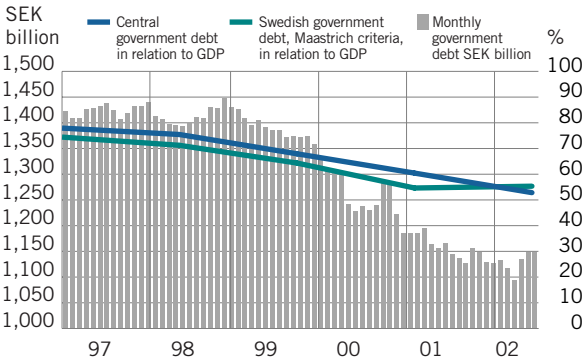
Swedish economy

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)]	1.2	1.9	2.7	2.4
Imports	–3.9	0.3	8.6	6.8
Household consumption expenditure	0.2	2.4	2.8	2.4
Government consumption expenditure	1.4	1.7	0.8	0.6
Gross fixed capital formation	1.5	–2.8	5.2	3.6
Stock building	–0.5	–0.4	0.4	0.1
Exports	–1.4	2.5	6.9	6.7

Selected statistics	Aug-02	Sep-02	2001	2002	2003	2004
CPI, year-on-year		1.9	2.6	2.4	2.0	2.2
Unemployment rate		4.2	4.0	4.0	4.1	4.1
Current account	3.6		3.0	3.6	3.2	3.3

[1)] SEK 2,098 billion (current prices 2000).

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

Dealers

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SEB	+46-8-506 23 151	PMSE
Svenska Handelsbanken	+46-8-463 46 50	PMHD
Swedbank (Föreningssparbanken)	+46-8-700 99 00	PMBF
Nordea	+45-33-33 17 58	PMUB
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