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RIKSGÄLDS KONTORET
THE SWEDISH NATIONAL DEBT OFFICE

Contents

Central Government Debt Management

Proposed Guidelines 2007–2009

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Summary

In this memorandum the Swedish National Debt Office presents its proposals to the Government for the management of central government debt. This proposal is based on the statutory aim of central government debt management, which provides that central government debt shall be managed in such a way as to minimise the long-term cost of debt while taking into account the risks inherent in such management. In addition, management shall take place within the constraints imposed by monetary policy.

The main issues in central government debt management concern the allocation of debt between nominal krona debt, inflation-linked debt and foreign currency debt, and the maturity of the debt. Costs are also affected by how these decisions are put into practice, i.e. how control takes place. In last year's Guideline Decision, the Government instructed the Debt Office to complete the analysis of percentage control and how a comprehensive maturity measure for the whole of central government debt should be defined and handled. The analysis in this year's guideline proposals is therefore concentrated on matters relating to control of central government debt.

We are proposing a system of percentage control (section 2) and that maturity control is to be based on a maturity measure that covers the whole debt (section 3). The analysis of these questions has brought to the fore a review of the Debt Office's active position-taking. We are therefore also presenting a proposal for a new control system for this position-taking (section 4). Finally, we are presenting proposed guidelines for the period 2007–2009, based on the new control systems (section 5).

The main points of this year's analyses and proposals are:

The composition of the debt

The Government should as before specify benchmarks for debt percentages. Furthermore, the Government should instruct the Debt Office to set a fixed interval around the benchmarks for foreign currency debt and inflation-linked debt. Accordingly, an interval will also be indirectly defined for the nominal krona debt, since the percentages always add up to one.

Depending on the different characteristics of types of debt, it is proposed that the intervals should have a different character and function. For *inflation-linked debt*, it is proposed that the Government instruct the Debt Office to specify a *deviation interval*. An interval is necessary since it is difficult, or even impossible, to control the size of inflation-linked debt in detail. Partly because we do not have any short-term inflation-linked borrowing and the derivative markets are extremely limited. And partly because the primary market for inflation-linked bonds is thin, which means that we cannot count on always being able to issue the volumes we have planned. The interval limits should be set on the basis of what is needed to enable cost-effective management of inflation-linked debt (preliminary estimates show that a deviation interval of 2–3 percentage points should be sufficient). In the operational control of the inflation-linked percentage, the Debt Office shall have the benchmark specified by the Government as a point of reference although the percentage will in practice vary around this as a result of predictable factors such as maturities and coupon payments but also owing to unexpected events such as unforeseen changes in the borrowing requirement.

We propose that the Government instruct the Debt Office to specify a *control interval* for the *foreign currency debt*. Within this interval, the currency percentage shall be permitted to vary as a result of exchange rate movements without the Debt Office taking any measures. This is justified by there being reasons to assume that the value of the krona will vary over time around a long-term relatively stable average. Too strict a control of the currency percentage could therefore result in the Debt Office borrowing and amortising respectively when it is expensive, i.e. buying SEK when the krona is strong and buying foreign currency when the krona is weak. By abstaining from action as long as the currency percentage moves within the control interval, the Debt Office can thus avoid carrying out systematically poor transactions. However, adjustments are made for other deviations, for instance, those as a result of maturing loans, coupon payments and borrowing requirement in connection with planning of borrowing (at present, three times a year). If the currency percentage is above or below the interval, the percentage shall be gradually restored to the *interval limit* by changes in the borrowing plan.

In the guideline decision, the Government should confirm that the differing prerequisites for control of the inflation-linked and currency percentage respectively mean that the Debt Office's management of the two types of debt should be based on different principles.

The size of the deviations resulting from exchange rate movements that should be allowed involves a trade-off although a limit must be set to maintain control over the composition of the debt and thus its risk characteristics. We consider an interval of ±2 percentage points to be appropriate.

Since the debt percentages always add up to one, there is no scope for specifying special guidelines for the percentage of the *nominal krona debt* but this is a residual item.

We further propose that percentages are to be calculated with the aid of the measure *the central government debt's aggregate cash flows* (CCF). This measure includes, in addition to the nominal face value of the debt, also the future coupon payments and future inflation compensation. In this way, we obtain a measure that includes all obligations associated with central government debt and therefore provides a better picture of the central government debt's risk exposure than the ordinary measure, unconsolidated central government debt. This also provides better comparability between the different types of debt. For instance, a better picture is obtained of the size of the inflation-linked debt in relation to the nominal debt since consideration is also given to the future inflation compensation. This is also the same measure that is used according to current guidelines to calculate the interest rate refixing period[1].

The percentages change when they are measured on the basis of the CCF measure instead of the unconsolidated central government debt. The effect is largest on the inflation-linked percentage, which increases by almost 7 percentage points. The currency percentage decreases by over 2 percentage points. This is mainly caused by our including future inflation compensation in inflation-linked debt and that the main part of it is due when the loan matures, and that inflation-linked debt is so much longer than other types of debt and therefore includes more coupon payments.

The change of measure does not, of course, change the real risk exposure of the state. One starting point can therefore be to make a direct translation from one measure to the other. Rounding off to the nearest multiple of five the Debt Office therefore proposes that the benchmark for inflation-linked debt be set at *25 per cent* and the benchmark for the nominal krona debt at *60 per cent*. The benchmark for the currency percentage is unchanged at 15 per cent.

The variations in percentages shall not be subject to quantitative evaluation. The Debt Office's decision on the size of the interval and handling of situations where the currency percentage ends up outside the interval shall, however, be described and justified in our reports to enable qualitative evaluation by the Government and the Riksdag.

It is proposed that the new control system come into effect on 1 January 2007 *for inflation-linked debt*. For *foreign currency debt*, we propose, however, that the existing control system with an annual amortisation mandate continue until further notice. The reason is that the currency percentage is still a fair distance from the long-term goal (approximately 20 per cent compared with the goal of 15), so that it would be difficult to include foreign currency debt in the new control system from the turn of the year.

We thus propose that the guidelines for currency amortisation for 2007 and 2008 be retained unchanged, i.e. benchmark should be SEK 25 billion and the deviation interval SEK ±15 billion. Given present forecasts and assessments, it should be possible to apply the new control system for the foreign currency percentage from 2009. Exactly when and how a transition to percentage control of the foreign currency debt should take place should be taken up in a future guideline decision.

The maturity of the debt

The Debt Office proposes that the maturity of central government debt is to be controlled by a common maturity measure which includes the whole debt, i.e. inflation-linked debt should also be included in the maturity measure in the future. The maturity should as before be measured in terms of the interest rate refixing period and the interest rate refixing period in different types of debt should be weighed together in a one-for-one relationship. To calculate the interest rate refixing period in the inflation-linked debt, we must make an assumption about future inflation targets. It is then reasonable to assume the Riksbank's inflation target of 2 per cent. Measured in this way, the average interest rate refixing period is 5.1 years on 31 July 2006.

The Debt Office makes the assessment that there is scope both from principal and practical reasons to undertake some further shortening of the maturity of central government debt. Central government finances are relatively strong, illustrated by the falling debt ratio, now and in the immediate years to come. Moreover, the level of risk in the debt portfolio gradually decreases as a result of the decrease in the foreign currency percentage. Arguments of principle indicate that a shortening of the maturity provides reduced expected costs and our model-based analyses indicate that some shortening can take place without significant effects on the financial level of risk.

It is proposed that *the benchmark* for the comprehensive maturity of the debt be set by the Government at 4.7 years in 2007. For 2008 and 2009, we propose additional shortenings to 4.6 and 4.4 years respectively. According to current practice, we propose that the Government should not specify any interval limits for the maturity. These shall be set by the Debt Office separately for the respective type of debt, taking into consideration the operational prerequisites that control the maturity. It is thus proposed that *the control system* for maturity function as *before*.

The difficulties of controlling the maturity of the inflation-linked debt and the nominal debt mean that the proposals on comprehensive maturity are based on specific

[1] *It is important to point out that we are not proposing a change in the central government debt measure. The official measure of central government debt, "unconsolidated central government debt" is to continue to be used when calculating the amount of central government debt.*

assumptions on the maturity of the debt components. The explanation for the proposal that maturity should be reduced in 2008 and 2009 is that the maturity of the inflation-linked debt is gradually decreasing. This is in turn due to the present loan policy in the inflation-linked market, where we for reasons of cost do not borrow in as long maturities as before. Consequently, we cannot either maintain the average interest rate refixing period in inflation-linked debt.

Another explanation is that we – if the Government adopts the above proposal – intend to shorten the foreign currency debt markedly from 2007. By ceasing to make the derivative transactions which we presently use to extend the maturity of the foreign currency debt to the benchmark of 2.1 years, we can reduce the maturity to on average one and a half month, equivalent to 0.125 years. We consider that it is appropriate to shorten the maturity of foreign currency debt, among other reasons because foreign currency debt consists of several currencies and the impact of short-term interest changes is therefore limited. This change does not affect the Debt Office's refinancing risk and decreases our costs as the need for derivative transactions decreases.

The proposal is based furthermore on the maturity of the nominal krona debt being left unchanged at 3.5 years throughout the whole period.

Positions and scope for risk

The Government should as before give the Debt Office a mandate, within specified limits, to take strategic and tactical positions to reduce the state's interest costs through reallocations between types of debt and changes of the maturity. We propose that the risk mandate in future be stated in terms of daily *Value-at-Risk* (VaR), according to the model that has been applied in the Debt Office for several years for control of the active management in foreign currency.

The advantage of a uniform risk measure is that all types of positions can be included. The Government thus obtains a better grasp of the risks that the Debt Office is able to take (apart from what follows from the central government debt having the characteristics set in other guidelines). A natural consequence of this is also that the risk mandate for active management in foreign currency decided upon by the board should also be included in the general risk mandate adopted by the Government. This risk taking now takes place within the limits which are not set in guidelines but based on the Government and the Riksdag having approved the Debt Office's management.

Positions should be taken through *derivatives*. These derivative positions should be accounted for a in a separate portfolio and continuously valued at market value. This provides a clear distinction between the Debt Office's management of central government debt according to the Government's guidelines and the Debt Office's position-taking. A consequence of this is that the concept of letting expectations on interest rate movements have an impact on the issue amount of long-term nominal or inflation-linked krona bonds by the Debt Office should be omitted. The ability of the Debt Office to take positions in krona interest rates through derivatives should also be terminated, partly because we have such a dominant position in the market that we risk causing concern to other market participants that we would use information about our own future conduct for position-taking.

The risk mandate should be set at *SEK 600 million* measured as daily VaR at 95 per cent probability. This means that if the whole risk mandate is used, there is a 95 per cent probability that the Debt Office will not lose more than SEK 600 million in a day. This also means that there is a 5 per cent probability that the loss will be greater than SEK 600 million.

It is proposed that the new system for position-taking will *come into force* on 1 January 2007. Taking into consideration that we propose that foreign currency debt shall be controlled for at least another year by an amortisation mandate, the decisions that concern the krona's exchange rate should be left outside. These should be regulated as before in the deviation interval for the amortisation rate.

1. Introduction

In this memorandum, the Swedish National Debt Office presents its proposals for the overarching guidelines for the management of central government debt as provided for in the Instruction for the National Debt Office (1996:311). The proposal is based on section 5 of the Act (1988:1387) on Central Government Borrowing and Debt Management, which provides that the central government debt is to be managed in such a way as to minimise the long-term cost of the debt while taking into account the risks inherent in such management. In addition, management shall take place within the constraints imposed by monetary policy.

The wording of the law as such provides little concrete guidance. However, the Government has gradually established basis principles since the adoption of the legislation, including how the concepts of cost and risk are to be understood. The Government has thus decided that the cost shall primarily be measured as average auction yield (also called running yield). The risk should be measured as the variation of the running yield. The Government has moreover decided that the guideline decision shall also take into consideration the contribution of the debt portfolio to variations in the budget balance and central government debt. This means that a portfolio which normally has low costs when central government finances are under strain is to be regarded as less risky.

The costs and risks of central government debt are – for a given size of debt – a complex function of interest rates, exchange rates and inflation. How these factors affect costs and risks depends ultimately on the allocation of the debt between debt in nominal kronor, inflation-linked debt and the foreign currency debt, and on the maturity of the debt. The allocation and maturity of the debt are therefore the two most central decisions in central government debt management. How these decisions are translated into practice, i.e. the design of control, also affects costs, however. In last year's guideline decision, the Government instructed the Debt Office to continue the analysis of percentage control and how a comprehensive maturity measure for the whole of central government debt should be defined and managed. The analysis in this year's guideline proposals therefore concentrates on matters relating to the control of the central government debt.

The Government has decided that the central government debt should in the long run consist of 20 per cent of inflation-linked debt, 15 per cent of foreign currency debt and 65 per cent of nominal krona debt. These percentages have not yet been achieved and are therefore regarded as long-term goals. However, the percentages are approaching their benchmarks and it is therefore important to see how control of the percentages of central government debt shall be designed when they reach their benchmarks. In *section 2* of this year's guideline proposals, proposals are discussed and made for a control system for percentages of this kind.

The maturity of central government debt has to date been controlled through the Government's decision on the average interest rate refixing period of the nominal debt. Previously, this was complemented by guidelines for the maturity in borrowing in inflation-linked bonds, but these were removed in 2005, partly as a result of the weak demand for long-term inflation-linked bonds. However, there is reason to view the maturity of the whole debt in one context, and in *section 3* we therefore propose a comprehensive maturity measure for control of the average maturity of central government debt.

Decisions on the overall composition and comprehensive maturity of the debt are clearly the most important for the costs and risks of central government debt. The current guidelines provide some additional scope for the Debt Office to deviate from the benchmarks that control composition and maturity in order to further reduce costs. However, there is no uniform control system for, or an integrated picture, of the scope for positions and the risks combined with this. Proposals relating to percentage and maturity control also bring to the fore an overview of position-taking by the Debt Office.

In *section 4* we propose that the Government shall give the Debt Office a comprehensive risk mandate which shall in the long term include all types of positions, regardless of the markets in which they are taken. The proposal means that the basic composition of the debt and control of position-taking are clearly separated. This facilitates governance and control in both areas. It also makes it easier to follow up risks and the result of the Debt Office's position-taking.

Finally, in *section 5* we present our proposals for guidelines for central government debt management in 2007–2009 on the basis of the analyses and consideration we have made in this year's work on the guidelines.

2. Percentage control

The Government has decided that the central government debt is to consist of 20 per cent inflation-linked debt, 15 per cent foreign currency debt and 65 per cent nominal krona debt. These percentages have not yet been achieved and control of debt percentages has therefore been designed to date with a view to gradually bring the debt percentages to their benchmarks. It has then been sufficient to indicate the direction of movement and/or rate of adaptation. However, within the near future, the benchmarks will be achieved and the control system must be modified to instead keep the percentages under control. This raises issues of both an overarching and operational type.

This section is therefore intended to discuss and make proposals on the design of the percentage control system. The section takes up how the Government's guidelines should be designed. We have also decided to take up certain other matters of an operational nature, where the Government does not need to take a position but where the Debt Office is responsible. This is because overarching and operational issues must be viewed in a single context. In certain cases, it is also difficult to overview the consequences of the guidelines proposed for adoption by the Government without taking into consideration how they will applied by the Debt Office.

It should be pointed out that this year's work does not include another in-depth analysis of the size of the debt percentages. We consider that earlier analyses and reasoning, including the proposed guidelines for 2005–2007 (dnr 2004/2020, 30 September 2004), are still valid.

2.1 Principles for the design of the control system

The control of central government debt takes place on several levels and with a varying degree of detail. The Government decides on the overall direction based on the Riksdag's goals for central government debt management. The Debt Office then breaks down the Government's decision into more detailed guidelines, decided upon by the board. Finally, there is the day-to-day management of the debt. On this basis, the percentage control system shall be based on an appropriate distribution of responsibility which clearly defines who decides about what.

The control system must also balance the need of risk control against the effect of the control measures on costs. The endeavour to achieve a good control system indicates a system of exact benchmarks. Ideally, the debt percentages would always be at their benchmarks. However, cost considerations point in the other direction, since it is impossible to keep debt percentages constant without considerable transaction charges. In particular, it should be noted that unexpected changes in the borrowing requirement and thus in the size of the central government debt, shift the debt percentages. This is because the state has all of its short-term borrowing in nominal kronor and a forecasting deviation will therefore only initially affect the nominal krona debt. The greater the uncertainty about the borrowing requirement is, the broader intervals will be required to avoid expensive transactions.

Too strict percentage control also conflicts with the overall goal for other reasons, since it can lead to measures that are expensive without any corresponding benefits from the point of view of risk. This is most clearly shown for the foreign currency debt. If the krona falls in value, the percentage of foreign currency debt increases. With an exact benchmark in per cent of the debt, the Debt Office would have to sell Swedish kronor to neutralise the effect during periods when the krona is at a low value and it is expensive to buy foreign currency. (When we sell kronor, we purchase foreign currency, which means that the net debt in foreign currency decreases). Conversely, we would sell foreign currency and buy kronor when the krona is strong, since the foreign currency percentage would then decrease and we would need to increase the foreign currency debt. Since there are reasons to assume that exchange rate fluctuations are temporary in many cases and that the exchange rate will tend towards an average – a phenomenon referred to as "mean reversion" – a principle on keeping the percentage of foreign currency debt constant would mean that the state systematically amortises and borrows in foreign currency when it is expensive do so. This increases the costs for central government debt without decreasing the risks to a corresponding extent.

An exact percentage control is unsuitable in the case of inflation-linked debt as well, or rather impracticable. Since there is neither a sufficiently developed derivative market for inflation-linked instruments nor inflation-linked loans with short maturities, the inflation-linked percentage can only be controlled by issues, buybacks and exchanges. For considerations of costs and risk, issues should be made in relatively small portions at many auctions. However, maturities are concentrated to a few dates, since the Debt Office, taking into consideration liquidity in the market,

works with a small number of loans. This leads to the inflation-linked percentage varying over time.

The challenge is to produce a control system which, in the best possible way, balances the need for control of the risks in central government debt with the disadvantages that arise if control becomes too rigid. How large the permitted variations should be, the role that intervals around the benchmarks should have, etc. are assessments that must be based on a balance being struck between these opposing interests. A further aspect is that the design of the control system should not lead to deterioration in the predictability and transparency of the Debt Office's borrowing in the krona market.

On this basis, we make proposals in the next sections for a system of percentage control. This proposal entails a separation between overarching and long-term decisions taken by the Government and operational decisions made by the Debt Office. Moreover, it is made possible at the operational level to make decisions based on current operational and business assessments. The special characteristics of the types of debt entail that the percentages should be controlled in partly differing ways. This makes the control system more complicated although it is a complexity that has to be accepted in order to achieve the goal of minimising risks while taking risks into account.

A closely-related question is how the Debt Office's current mandate to take krona/currency positions is to be handled when percentage control is introduced. We will come back to this issue in section 4, where we make a broader overview of how the Debt Office's mandate for taking positions should be formulated.

2.2 Control of the allocation of the debt among types of debt

The Government's guidelines decision is to be based on overarching and long-term assessments of costs and risks. Costs and risks are affected by the composition of the debt. The Government should therefore establish benchmarks for how the debt should be allocated between the three types of debt. As shown by the discussion in the previous section, the control system must leave scope for variations around these benchmarks, however. The special characteristics of the foreign currency debt – in particular, the risk that too strict a control of percentages would lead to additional costs – also justify certain departures from the simplest control model, where control is made in relation to the Government's benchmark. Since foreign currency debt is associated with more complicated considerations, we start with the control of the inflation-linked percentage. See Figure 1 in section 2.2.5 for an illustration of the control system and its various parts.

2.2.1 Inflation-linked debt

The Government decides on the benchmark and the Debt Office on the deviation interval

In the case of inflation-linked debt, control focused on keeping the percentage around a benchmark specified by the Government should work well. The inflation-linked percentage must be allowed to vary, but for practical reasons, we regard it as unsuitable that the Government sets the interval limits.

The inflation-linked bond market is characterised by the primary market being thin and there being neither short-term inflation-linked loans nor a sufficiently developed market for inflation-linked derivative instruments. This means that the Debt Office is not able to control the inflation-linked percentage in any other way than by a rough approximation even in the medium to long-term (see section 2.1). There is therefore a risk that the inflation-linked percentage will end up outside even relatively broad intervals. The Debt Office may be compelled to undertake expensive adjustments if the limits were set by the Government and thereby strictly binding. Instead the interval limits should be set by the board of the Debt Office on the basis of what is operationally justified. The handling of inflation-linked debt can then be monitored in the ongoing report to the board. An overall view of this administration can then be submitted to the Government in the annual report.

It is thus proposed that the Government should decide that the Debt Office be permitted to deviate from the benchmark for the inflation-linked percentage. Since the deviations are related to operations, the Government should not take a position on the size of the deviation interval, but allow the Debt Office to set this interval. A system of this type, where the Government specifies a benchmark without setting interval limits, corresponds to the control of the maturity of the debt in the current guideline decision. Variations in inflation-linked percentages should be subject to quantitative evaluation as little as fluctuations in the maturity. In both cases, it involves variations due to operational limitations on the ability to control the debt, not the taking of positions based on assessments of the future.

Preliminary assessment of the size of the deviation interval

As discussed in the above section, it is proposed that the Government instruct the Debt Office to set an operational

Table 1. Effect of different factors on inflation-linked percentage, percentage points

	Redemptions	Coupon payment	Exchange rate shock	Inflation shock	Borrowing requirement shock
Change in inflation-linked percentage	2.0	0.3	0.6	0.4	0.4

deviation interval around the benchmark for inflation-linked percentages. Without encroaching on this decision, we have made some calculations to obtain an idea of the size of the interval that may be required.

In brief, it can be said that there are five main factors that cause debt percentages to vary. These are redemptions, maturing loans, coupon payments, exchange rate changes, deviations from the Riksbank's inflation target and forecast deviations in the borrowing requirement.

The analyses show that the inflation-linked percentage is mainly affected when inflation-linked loans mature. If no early refinancing takes place of bond 3101 (for instance, through exchanges), the inflation-linked percentage would fall by around 2 percentage points when the bond matures in December 2008 (see Table 1). We normally do not have any problems to deal with maturing loans since we know when this takes place and can adapt our borrowing in good time, for instance, by gradually carrying out exchanges of short-term for longer-term loans. However, we can have problems if market conditions suddenly change so that we do not succeed in buying back or selling the desired volume. Our room for manoeuvre is also limited by there not being any short inflation-linked loans or inflation-linked derivative instruments.

Coupon payments also affect the development of the inflation-linked percentage. This is because coupon payments are concentrated to one occasion per year (in December). The cash flow effects of coupon payments will therefore be greater than for the other types of debt where coupon payments are evenly spread over the year. Coupon payments cause the inflation-linked percentage to drop by around 0.3 percentage points.

The inflation-linked percentage is affected relatively little by a temporary inflation shock. In the calculations, we assume that inflation increases to 4 per cent during a year, compared with 2 per cent in the base scenario. This increases the inflation-linked percentage in stages by 0.4 percentage points.

An exchange rate shock where we assume that the krona weakens by 12 per cent against the currency benchmark[2] increases foreign currency debt so that the inflation-linked percentage falls by around 0.6 percentage points. Correspondingly, a forecast deviation in the borrowing requirement, where the borrowing requirement is SEK 30 billion less than the forecast during a quarter, causes the inflation-linked percentage to increase by 0.4 percentage points. This is because the whole of the forecast deviation is included in the nominal krona debt through a decrease in the short-tern borrowing.

In the light of these analyses, we consider that the operational deviation interval for inflation-linked percentage should be set at ±2–3 percentage points. This provides scope for relatively sharp but still conceivable market disruptions, without our having to undertake excessively drastic measures to bring back the inflation-linked percentage to the benchmark which the Government had decided on.

Section 2.2.4 contains a more detailed discussion on how control of the inflation-linked percentage should be carried out in practice, i.e. in the operational management.

2.2.2 The foreign currency debt

The Government decides on the benchmark and the Debt Office on the control interval

The currency debt involves other complications than inflation-linked debt. The problem here is that it is not *appropriate* to control the percentage in detail, despite there being the means to do this with the aid of derivatives (see the discussion of principles in section 2.1). Consequently, we are proposing a rather different model for control of the currency percentage compared with the inflation-linked percentage. The idea underlying the model is that we should avoid making adjustments of the currency percentage due to temporary exchange rate fluctuations. At the same time, the control system is to ensure that major fluctuations in the foreign currency percentage are detected and lead to counteracting measures to adjust the composition of the debt.

The system is based on the Government, besides setting a benchmark for the currency percentage, also instructing the Debt Office to establish a special *control interval.* Within this interval, the currency percentage is to be permitted to vary due to exchange rate changes without the Debt Office undertaking control measures. Counteracting measures should only be undertaken when the exchange rate movements are so substantial that the percentage is below or above the interval limits.

The reason that it is reasonable to allow the foreign currency percentage to vary within the control interval is that we wish to avoid making adjustments which – given mean reversion of the exchange rate – can be expected to be expensive (see section 2.1). Another implication of the mean reversion hypothesis is that measures to control the foreign currency percentage are not either necessary, since the foreign currency percentage none the less tends to return to the benchmark by itself as a result of future exchange rate movements. It is moreover not self-evident that a 15 per cent foreign currency share is clearly preferable from the point of view of cost and risk than, for instance, 13 or 17 per cent. The degree of exactness of the underlying assessments is far too little for that to be the case.

The motivation for it being reasonable none the less to restrict the variation of the foreign currency percentage to a particular interval is that the present percentage benchmark of 15 per cent must be perceived as expressing the

[2] *65% EUR, 16% CHF, 10% USD, 5% GBP and 4% JPY.*

assessment that a percentage of, for instance, 10 per cent or 20 per cent is *not* appropriate for the purpose. Otherwise, the idea of controlling expected costs and risks through guidelines for the composition of the debt is mistaken. The quantitative analyses in previous guideline proposals also indicate that a foreign currency percentage of around 15 per cent provides diversification gains without the impact of exchange rate movements on costs being excessively great.

In principle, the control system means that as long as the currency percentage moves within the control interval, the maturing foreign currency loans are to be re-funded, and 15 per cent of the net borrowing requirement is to be covered by foreign currency loans in the long-term. The remaining fluctuations in the foreign currency percentage will thus mainly derive from exchange rate variations, which shall not affect borrowing.

If the foreign currency percentage moves outside the interval limits, the Debt Office shall undertake measures to bring back the percentage to the interval limit. In principle, it is conceivable that the Debt Office controls the foreign currency percentage with the aid of derivatives so that it is never outside the interval other than for a day or so. However, this leads to transaction costs and is inconsistent with the requirement that our foreign currency exchanges are to be typified by predictability and clarity; cf section 13 a of the Ordinance (1996:311) containing instructions for the Debt Office. The aim should therefore be limited to gradually bringing back the percentage to within the interval. However, this must be done over a reasonable time horizon, suitably adapted to our ordinary planning of borrowing, to avoid the foreign currency percentage drifting away without control. We will come back to internal control in section 2.2.4.

The consequence of an adaptation rule of this type is that the currency percentage can at times be outside the interval. The Government's guideline decision should make clear that this is acceptable. It should also be stated there that deviations from the interval should not either be assessed quantitatively since it does not involve taking positions. The Debt Office's decisions on the size of the interval and dealing with situations where the percentage is outside the interval shall, however, be reported on and justified in our report for qualitative assessment by the Government and the Riksdag.

To conclude, the idea underlying the proposed control system is that it should filter away the effects of the greater part of the exchange rate fluctuations, in the hope that the exchange rate – and thus the foreign currency percentage – will not diverge too much or too far from its equilibrium rate or benchmark respectively. At the same time, this ensures that the Debt Office reacts to sharp exchange rate movements, including if the exchange rate does not display mean reversion. In this way, this prevents excessively large deviations from the foreign currency percentage which the Government has stated as being appropriate. These reactions can eventually lead to certain additional costs if it is seen that mean reversion eventually takes place and the exchange rate again approaches a mean value although this is in this case an unavoidable consequence of the goal being to keep cost to a minimum *while taking risk into account*. These costs are also limited by the control being focused on bringing the percentage within the interval, rather than back to the mean.

Preliminary assessment of the control interval

It is thus proposed that the Government instruct the Debt Office to set a special control interval within which the foreign currency percentage is permitted to vary (as a result of exchange rate movements) without the Debt Office undertaking control measures. The Government does not need to take a position on how large this interval should be.

In order to none the less provide an idea of the size of the interval that may be needed, we have made calculations based on historical data. They show that if the krona exchange rate in future shows mean reversion at the same strength characteristic for the past decade, an interval of ±2 percentage points would capture the major part of fluctuations in the foreign currency percentage deriving from the exchange rate (see Table 2).

Table 2. Effect of different factors on the foreign currency percentage, percentage points

	Historical FX-movements	Exchange-rate shock	Inflation shock	Borrowing requirement shock
Change in the foreign currency percentage	2.0	2.0	0.1	0.4

This assessment is also supported by our forward-looking analyses. An exchange rate shock where we assume that the krona would be weakened by 12 per cent in relation to the currency benchmark would lead to the foreign currency percentage increasing by 2 percentage points. However, at the same time, the state's exchange rate losses and costs of interest payments in foreign currency would also rise. This leads to an increase in the borrowing requirement, which in turn has some stabilising effect on the foreign currency percentage, provided that the increased borrowing requirement is funded in Swedish kronor. The difference between the currency percentage before and after a weakening of the krona thus decreases over time apace with the total debt increasing.

In addition to variations in the exchange rate, other factors can also affect the foreign currency percentage. For instance, an over-estimate of the borrowing requirement by SEK 30 billion kronor during a quarter will lead to an increase of the foreign currency percentage by 0.4 percentage points

(i.e. the same increase as for the inflation-linked percentage). An inflation shock, where inflation increases to 4 per cent during a year, only affects the percentage of foreign currency loans marginally, however. At most, the foreign currency percentage falls by 0.1 percentage points compared with the base scenario.

2.2.3 Nominal krona debt

Since the debt percentages always add up to one, there is no scope for specifying special benchmarks for the percentage of nominal krona debt but it will be a residual item. Its control likewise follows from the proposals for the inflation-linked and foreign currency debt presented above. It also concurs with current guidelines. The treatment of the nominal debt as a residual item reflects the fact that it is the most flexible type of debt, among other things because the state's funds are traded in Swedish kronor.

2.2.4 Percentage control in practice

The design of the operational control is not subject to Government decision. The intention of taking up the practical control in the guideline proposal is to provide an overview of the control and inspection mechanisms that the Debt Office intends to work with.

Just as at the overarching level, the design of the operational control system is ultimately a trade-off between control and flexibility where practical needs have to play a large part. Moreover, percentage control must be designed in such a way as to take into account the principles on transparency and predictability in the Debt Office's borrowing och debt management.

The starting point is that borrowing is used as a control instrument. This means that percentage control is an integrated part of the ongoing planning of borrowing. Assume that the debt in the initial position has a composition corresponding to the overarching guidelines. The planned borrowing will then in principle be based on our refinancing maturing loans in the respective type of debt and that new borrowing (which can be positive or negative) is allocated in accordance with the percentage benchmarks. Provided that the borrowing requirement develops as forecast, the exchange rate does not change significantly and inflation is in accordance with the Riksbank's target, this will result in the debt maintaining the desired composition in coming periods as well.

More difficult balances have to be struck if something unexpected occurs, e.g. that the borrowing requirement deviates from the forecast. It is still the case that the borrowing is the control instrument. Plans for borrowing are made and published three times per year. As shown by the above discussion, it is, however, not suitable for the planning horizon for controlling percentage benchmarks to be set at as short a time as four months. An adaptation period which was so short would create irregularity in borrowing and management and conflict with our endeavour to act in a transparent and predictable way. Furthermore, it would risk incurring unnecessarily high transaction costs.

The control of percentages by benchmarks should instead be set at approximately the same time horizon as the ordinary forecast and planning horizon (at present around 2 years). In this way, adaptation can take place over a longer period and carried out in small steps. This also means that sudden shifts in borrowing can be avoided. This way of controlling percentages corresponds to today's control of the average maturities in the nominal krona debt.

The same gradual control should be applied if the currency percentage ends up outside the control interval as a result of exchange rate movements. The difference is that the control measures shall then be aimed at bringing the percentage inside the interval, rather than bringing it back to the benchmark.

An important factor in the operational percentage control is the loan and debt management instruments available. There is a big difference here between types of debt.

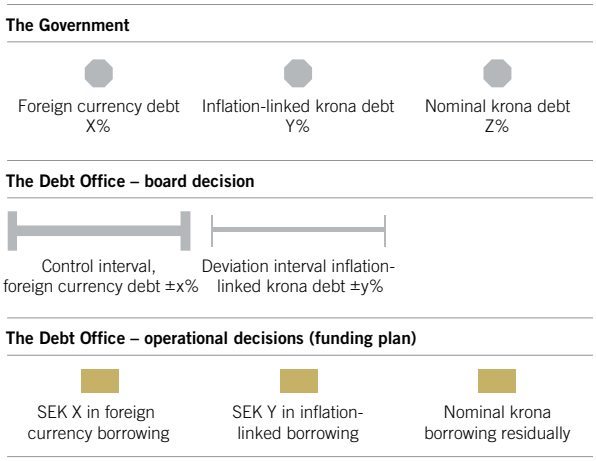
The inflation-linked share will vary in connection with redemptions. To enable us to continue to issue inflation-linked bonds, inflation-linked debt must be handled in such a way that the inflation-linked percentage decreases when an inflation-linked loan matures. In particular in situations with a low net borrowing requirement, it is most appropriate to allow the inflation-linked percentage to fall below the benchmark in connection with maturity and then gradually increase it again by new sale through auctions. In this way, we can maintain normal issue activity. New issues contribute to a more liquid market as they enable all investors to buy these bonds. Only making exchanges would make it difficult for new investors to enter the inflation-linked bond market, which can increase the state's costs in the long run.

The degrees of freedom are greater in the international fixed-income market and the foreign exchange market. The percentage of debt in foreign currency can be controlled by, for instance, choosing between capital market borrowing, short borrowing (commercial paper), swaps and/or currency futures. This accordingly includes derivatives among the instruments in the planned borrowing.

The nominal krona market, finally, requires that special consideration is given to our dominant position and our policy of acting predictably. This reduces flexibility, in particular in the handling of bond issues.

The instruments that are appropriate for use in percentage control and how they are used accordingly vary over time depending on the circumstances in the various markets in which we act. The choice of instrument for percentage control is therefore an operational issue that is appropriately decided upon in current debt management.

Figure 1. OVERVIEW OF THE PROPOSED PERCENTAGE CONTROL SYSTEM



2.2.5 Summary

The Debt Office's proposed percentage control system can be illustrated with Figure 1 showing the three levels of decision.

It is thus proposed that the Government just as before decide on benchmarks for the composition of the debt. It is moreover proposed that the Government instruct the Debt Office to set a special *control interval* for the currency percentage within which no control measures shall be undertaken as a result of exchange rate movements. However, if the currency percentage moves outside the interval limit, the percentage shall be gradually brought back to the interval limit. This means that the Debt Office in the operational handling of the currency percentage will seldom or never aim at the Government's benchmark. However, we will always aim at some point within or at the interval.

It is further proposed that the Government instruct the Debt Office to establish a *deviation interval* for inflation-linked debt, within which the inflation-linked percentage is permitted to vary for operational reasons. The interval is not intended to serve as strict limits in the operational management but more to function as a signal system where any movements beyond the interval limits shall be reported to the board. This model means that the Debt Office in the operational handling of the inflation-linked percentage shall roughly aim at the Government's benchmark. At the same time, certain variations over time are permitted as a result of redemptions, coupon payments, changes in the borrowing requirement etc.

No special guidelines are specified for the nominal krona debt apart from the Government's percentage benchmark. Instead, the nominal krona percentage is treated as a residual items and its control follows from the proposals for inflation-linked and foreign currency debt presented above.

The borrowing plan will be used as a control instrument for operational control. This means that the Government's and the board's guidelines will be broken down to specific amounts for how much is to be borrowed in each type of debt. Accordingly, the percentage control is an integrated part of the current planning of borrowing.

2.3 Calculation of debt percentages

In the control system proposed above, the debt percentages have an operational significance in another way than to date when they have only been descriptive measures. The calculation of debt percentages can be made in several ways and provide then different pictures of the cost and risk characteristics of the debt. The method of calculation also affects the size of the percentages. It is therefore important to analyse and establish in guidelines how the debt is to be calculated in percentage control.

2.3.1 A cash-flow based measure of debt

Calculations of the debt percentages have to date been based on the official measure of central government debt "unconsolidated central government debt", in which the debt instruments are valued at their nominal face value. This is a measure used in the Debt Office's monthly rapport "The Swedish Central Government Debt". The measure is adapted to the guidelines set by the EU for calculation of the general government consolidated debt, which is used, for instance, to consider whether a state should be allowed to participate in the EMU.[3] However, we consider that this measure is less suitable for percentage control. The deficiency lies in it not sufficiently well reflecting the cost and risk characteristics of the type of debt. We are therefore recommending a transition to a new measure that better captures the risk characteristics associated with the types of debt.[4]

The Debt Office proposes that the calculation of the percentages shall be based on a measure that includes all of the debt's contracted cash flows. This means that the measure not only includes the nominal face value of the outstanding debt stock but also the debt's cash flows in the form of coupon payments and inflation compensation.[5] We call this measure "the central government debt's aggregate cash flows", referred to in the following as CCF. The calculation of the average interest rate refixing period (IRR), which is already used for control of the maturity of the debt, is based on the same principle. In this way, consistency is created in the calculation and control of the percentages and maturity respectively.

[3] *See the Debt Office memorandum Central government debt – how and by whom should it be measured and reported? (14 August 2002, dnr 2002/104), where the proposal for the present debt measure is presented.*

[4] *It is important to underline that we are not proposing a change in the measure of central government debt. The official measure of central government debt "unconsolidated central government debt" should continue to be used when calculating the size of central government debt.*

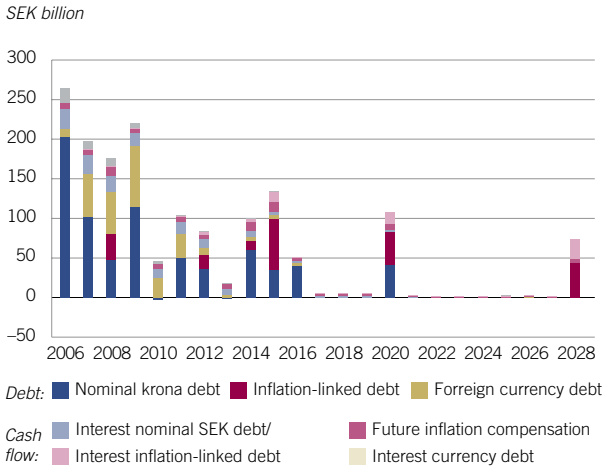
[5] *A more exact description of the measure is given in section 5.1.*

The purpose of percentage control is to handle the exposure of debt in relation to Swedish nominal interest, in relation to the Swedish inflation-linked interest rate/inflation, in relation to foreign interest rates and in relation to the exchange rate. All future contracted cash flows represent an exposure to these factors, which are thus not captured with present measures. In the CCF measure, the debt percentages are calculated by totalling all future cash flows, i.e. both the principal amounts and interest payments including accrued and future expected inflation compensation. The CCF measure thus captures all (expected) cash flows of the types of debt, regardless of whether these are interest, inflation compensation or exchange rate effects. The types of debt can thus be aggregated and their cost and risk characteristics are more comparable.[6]

Figure 2 below shows the difference in how the measures capture the risk exposure of the debt. As shown, the measure of unconsolidated central government debt entails that only the exposure arising through the maturing amounts is taken into consideration (the first bar in the figure –"debt"). The CCF measure, on the other hand, captures all cash flows, which is illustrated by the other bars in the figure – "cash flows" – at the top of the bars.

[6] *Interest payments refer to the contracted interest rates and the exchange rates at the time of calculation (known as stop rates). The future expected inflation compensation can appropriately be based on two per cent inflation. The future flows are not discounted, which means that the time factor will not have any impact in the calculation.*

Figure 2. COMPARISON BETWEEN UNCONSOLIDATED DEBT AND CCF, 31 JULY 2006



2.3.2 Consequences for size of debt percentages

As the calculation of the debt percentages changes, the measured size and internal relation of the percentages will change compared with when the unconsolidated central government debt measure was used. The inclusion of future coupon payments and future expected inflation compensation entails, for instance, an increase in the percentage of inflation-linked debt. This is explained partly by the long time to maturity of the inflation-linked debt, which has therefore a lot of future cash flows in the form of coupon payments, and partly by future expected inflation compensation being included in the calculation. At the same time, the percentages of nominal krona debt and foreign currency debt decrease. Table 3 below shows the differences in percentages in calculations based on the different measures.

It is evident from the table that the change in debt measure makes the percentage of inflation-linked debt rise from 17.9 per cent to 24.6 per cent (as per 31 July 2006). At the same time, the percentage of foreign currency debt falls from 23.2 till 20.5 per cent. This raises the question of whether the percentage benchmarks should also be adjusted. This applies in particular to the inflation-linked percentage which measured in the new way exceeds the benchmark of 20 per cent.

2.4 Benchmarks for the composition of the debt

As mentioned initially, no new analysis of the allocation of debt has been made in this year's guideline proposals. A changeover to the CCF measure for calculation of percentages gives rise, however, to an adjustment of the percentage of benchmarks to compensate for the change in measuring method.

In Table 3, we see that the percentages change when they are measured on the basis of the CCF measure instead of unconsolidated central government debt. The greatest effect is on the inflation-linked percentage, which increases by almost 7 percentage points. The foreign currency percentage decreases by over 2 percentage points. The change of measures does not change the state's real risk exposure, however – the real cash flows included in the

Table 3. Percentages calculated using different methods, 2003-2006

	Unconsolidated central govt debt			Aggregated cash flows of central govt debt (CCF)		
	Nominal SEK debt	*Inflation-linked SEK debt*	*Foreign currency debt*	*Nominal SEK debt*	*Inflation-linked SEK debt*	*Foreign currency debt*
31-07-2006	58.9	17.9	23.2	54.9	24.6	20.5
31-07-2005	61.0	15.9	23.2	56.9	22.5	20.7
21-12-2004	61.0	15.1	23.9	56.9	21.7	21.4
31-12-2003	59.2	13.9	26.9	55.0	20.8	24.2

new measure are already contracted, regardless of whether they are taken into account when measuring percentages or not. We should not therefore make any corresponding change in the percentage benchmarks.

A proportional change of the percentage benchmarks gives new benchmarks of 27 per cent inflation-linked debt and 13 per cent foreign currency debt. Rounding off to the nearest multiple of five, the Debt Office proposes that the benchmark for inflation-linked debt be set at 25 per cent, while the benchmark for foreign currency debt is retained unchanged at 15 per cent. From this, it follows that the benchmark for the nominal krona debt should be set at 60 per cent.

This change entails in reality a marginal reduction of benchmarks for the volume of inflation-linked bonds. However, we consider that the volume is sufficient for us to be able to maintain a well-functioning inflation-linked bond market in the long term. It should also be noted that there is a relatively high level of uncertainty in the assessments of what is a functional percentage of inflation-linked bonds and the respective currency percentage. We do not therefore regard it as a major issue that the proportions of the debt have changed slightly.

2.5 Transition to the new control system

It is not self-evident when and how the transition to the new control system is to be carried out. As shown in section 2.3.2, the percentages of types of debt are at different distances from their benchmarks. There are also different periods of time until when benchmarks are expected to be reached. Given the proposal to set the benchmark for the inflation-linked percentage at 25 per cent, the inflation-linked percentage is at the benchmark, while the foreign currency percentage is expected to reach 15 per cent only at the end of 2008.[7] As the nominal krona debt serves as a residual item, it is dependent on how the other types of debt. As the nominal krona debt serves as a residual item, it is dependent on how the percentages of the other types of debt are controlled. The discussion is therefore concentrated on the inflation-linked and foreign currency debt.

The percentage of inflation-linked debt is close to 25 per cent (24.6 per cent). The assessment is therefore that the percentage control of inflation-linked debt should be incorporated in the new control system from 1 January 2007. This will mean that the inflation-linked percentage will continue to increase slightly in future, and will then fall back in connection with the maturity of bond 3101 in December 2008.

The percentage of foreign currency debt is, however, a good distance from its long-term goal. On 31 July 2006, the percentage amounted to 20.5 per cent, compared with the goal of 15 per cent. It is thus not possible include foreign currency debt in the new control system from 1 January 2007.

The Debt Office proposes that the current arrangement with an annual amortisation mandate continues until further notice. We do not consider that there are reasons to change the current arrangement during a transitional period. Instead, the question of when a transition to percentage control for foreign currency debt should be taken up in future guideline decisions.

[7] *See Table 9 in section 5.2.2.*

3. Maturity control

The Debt Office proposes that a maturity measure for the whole of central government debt be included in the Government's guideline decision. A comprehensive maturity measure is intended to provide a holistic view of the trade-off between expected cost and risk. This is particularly important at times when the composition of the debt changes and the different debt components have different maturities and thus different risks. A benchmark for the maturity of the whole debt increases the possibilities to balance increased risk-taking in one type of debt by a reduction of risk exposure in another part of the debt.

The maturity of the nominal part of the debt is controlled in the current benchmarks by the Government specifying a benchmark for the maturity of the debt expressed in terms of the interest rate refixing period. The inflation-linked part of the debt is not covered by any maturity benchmark, however. There was previously a rule that inflation-linked bonds should have a certain minimum time to maturity when they were issued, but this rule was abolished in 2005. The maturity for the debt as a whole has still been used in analyses in earlier guideline proposals. Among other things, the Debt Office drew attention in the guideline proposal for 2005 that the increased percentage of inflation-linked bonds contributed to extending the debt. This was included in arguments for shortening the maturity of the nominal debt.

Experience thus illustrates that it is possible to take into account the overall maturity even without the Government specifying a maturity benchmark for the whole debt. However, it also shows that there is a risk of unclear control. We therefore consider that it is desirable in a strategic perspective for the Government to specify a benchmark for the maturity of the whole debt, in order to obtain in this way a comprehensive grasp of the costs and risks associated with the debt's maturity.

In this section, we develop the grounds for this proposal and how the control system for maturity should be designed. In the same way as in section 2, we do not take up matters relating to position-taking. These are discussed in section 4.

3.1 The significance of the maturity for costs and risks

Beside the allocation of the debt between types of debt, the choice of maturity is the most important government debt policy decision. It is normally the case that the shorter maturity the debt has, the lower are the expected costs. This is because short-term interest rates are usually lower than long-term rates. The desire to shorten the debt must, however, be weighed against a short-term debt being associated with greater risks. The reason is that the shorter the maturity is, the greater the part of the debt that must be borrowed in new loans in every period. The interest rates on new loans are uncertain. With a high level of gross borrowing, changes in interest rates will have a faster impact on the total cost of the debt. In addition, short-term interest rates usually vary more than long-term rates. Short-term debt is thus associated with higher risk. This risk is usually referred to as the interest rate refixing risk.

If it is also taken into account that the net borrowing requirement is an uncertain factor, even higher risk appears to be attached to short-term debt. A sharp increase in the net borrowing requirement in combination with a large need to refinance old loans can mean that the total central government borrowing requirement starts to appear unmanageable. Ultimately, this can lead to the state having problems in financing its operations at all, i.e. the interest rate refixing risk is changed into a refinancing risk. The choice of maturity thus is of crucial importance for both the costs and the risks of the central government debt.

The above comments are general and do not say anything about how a particular maturity is achieved. The analysis of the maturity of the debt is complicated by Swedish central government debt consisting of three types of debt with different characteristics and prerequisites. Alongside the maturity in the respective type of debt and the direct effects of the respective interest rate, we must take into account the contribution of inflation to risk via inflation-linked debt and the contribution of exchange rate movements through foreign currency debt. A control that is only based on the average maturity of the whole debt, without taking into consideration how it is allocated between different types of debt, would not therefore serve its purpose. It is not indifferent from the point of view of costs and risks whether a particular maturity is created by, for instance, inflation-linked debt or nominal debt.

However, in purely mathematical terms, it is possible to achieve a particular average interest rate refixing period with a lot of different combinations of maturities in the respective type of debt. A benchmark of, for instance, five years can thus be achieved by all the debt components having a five-year time to maturity, although the same average can be created in innumerable different ways, by, for instance, having very short-term foreign currency debt and

long-term inflation-linked debt, or long-term foreign currency debt and short-term nominal krona debt.

In principle, this is nothing new, however. The same relationship applies to the average maturity of current guidelines, which can be achieved in innumerable different ways, with differing characteristics for expected costs and risks. This potential lack of clarity has been resolved by the Government instructing the Debt Office each year to set internal guidelines for how the specified interest rate refixing period is to be allocated between nominal krona debt and foreign currency debt. We consider that the same arrangement can be applied if the Government specifies a maturity measure including all three types of debt. In section 3.3, the Debt Office therefore describes the usual practice for maturity control which we intend to apply if and when an overall maturity measure is introduced. Before that, we take up how maturity should be measured and controlled.

3.2 How should maturity be measured and controlled?

3.2.1 Maturity measured as the average interest rate refixing period

The maturity of the nominal component of the debt is presently measured in terms of the average interest rate refixing period. The Debt Office proposes that the maturity in inflation-linked debt, and thus the debt as a whole, be measured in the same way.

The interest rate refixing period is calculated on the basis of the debt's nominal cash flows. Since we do not know what inflation will be in the future and thus do not know the future nominal flows from inflation-linked debt, we must make an assumption about inflation. It is then reasonable to work on the assumption of 2 per cent, corresponding to the Riksbank's inflation target. The nominal cash flows from inflation-linked debt can then be added to the flows that derive from the nominal krona debt and from foreign currency debt. The weights for calculation of the average are given by the expected nominal cash flow in each period in relation to the total of all cash flows. The overall maturity measure can thus be seen as a weighing-together of the maturity profile illustrated in Figure 2 in section 2.3.1. The measure is thus the same as the measure we propose in that section for measurement of the debt percentages.

3.2.2 The control system functions as before

The control system for the maturity should otherwise function in the same way as before. The Government thus specifies a benchmark for the average interest rate refixing period for the whole debt. In the same way as before, the guidelines should, however, not include any specific interval within which the maturity may move. In the next step, the Debt Office makes a decision on how the interest rate refixing period is to be allocated between types of debt and on the operational deviation interval around the benchmark for the respective type of debt.

This means that the real control of the debt's maturity takes place in the respective type of debt, not at the superior level. This is associated in turn with the prerequisites for control differing between different types of debt. For inflation-linked debt, there are neither liquid derivative instruments nor loans with short maturity. Here the maturity will therefore vary within a relatively broad interval. Neither can the maturity of the nominal krona debt be controlled in detail, since it would require unreasonably large derivative transactions or drastic reorganisations of borrowing. In this case seasonal and other variations in the borrowing requirement also affect the average maturity of the nominal krona debt, since the daily cash management is made in nominal kronor.

If the Debt Office were given the task of controlling the whole maturity, we would accordingly be forced to counter fluctuations in the maturity of the inflation-linked and krona debt by continuously adjusting the maturity of the foreign currency debt. In our assessment, detailed control of this type would result in transaction costs that would not be in proportion to the expected benefits.

For the same reason, we propose that the Debt Office's decision on how the interest rate refixing period is to be allocated between types of debt should be based on the percentage benchmarks specified by the Government, rather than the actual percentages at each particular time. This means, with our current proposal of percentage benchmarks, that the Government's overall maturity benchmark is to be broken down into separate benchmarks for the respective type of debt with the aid of the percentage benchmarks 15 per cent foreign currency debt, 25 per cent inflation-linked debt and 60 per cent nominal krona debt.

3.2.3 Preliminary assessment of the deviation interval

The size of the deviation interval around maturity benchmarks is not a matter for the Government but is to be decided by the Debt Office. However, it can be of interest already at this point to present our assessment of how large an interval is required for inflation-linked debt.

We consider that the interval around the maturity benchmark of the inflation-linked debt must be greater than for the nominal krona debt, where it is at present 0.3 years. Our analyses show that the maturity of inflation-linked debt is primarily affected by redemptions. For instance, the interest rate refixing period of the inflation-linked debt would increase by as much as 1.3 years if the whole of the outstanding stock of inflation-linked loan 3101

were to mature in 2008. This effect is lessened by exchanges, although it can still have a considerable impact. As the larger part of the stock has a common coupon date, coupon payments also mean that the interest rate refixing period increases momentarily. On average, the interest rate refixing period shifts by up to around 0.2 years in conjunction with coupon payment in December.

In the light of this, we consider that an interval limit of ±0.5 years would be well considered for inflation-linked debt. This is sufficiently high to take into account not being able to carry out exchanges of inflation-linked loans to the extent envisaged in the funding forecast, and thus provides slightly more time for control through borrowing. When there is a year left to maturity and all opportunities for exchanges have passed by, we know whether any part of the inflation-linked loans still remains to mature, which provides plenty of time to plan borrowing accordingly.

3.3 The maturity benchmark

The self-evident starting point for our proposal for the benchmark for the total maturity in the debt is a trade-off between cost and risk. Reasons of principle argue in favour of a benchmark for the whole debt being strictly derived from what provides overall an appropriate interest rate refixing risk and it should only then be allocated between types of debt. As we emphasised in section 3.1, there is not, however, any unique relationship between a particular benchmark for average maturity and the risk in the central government debt. Even if an overall assessment must be made for the debt as a whole, this analysis is affected by the characteristics of the respective type of debt. In this context, consideration must be given to the initial position and what is operationally possible and manageable in the future.

3.3.1 The initial position

According to the Guidelines for Central Government Debt Management 2006, the maturity of the nominal debt shall be 3.1 years. In the operational guidelines, the Debt Office has divided this into a benchmark for the nominal krona debt (3.5 years) and a benchmark for the foreign currency debt (2.1 years). We have chosen a longer maturity in the nominal krona debt than in the debt in foreign currency for reasons of market support. According to the guidelines, this allocation must not lead to higher long-term costs. Table 4 shows the interest rate refixing period in the different types of debt on 31 July 2006.[8] The weighting has been made with the actual debt percentages.

[8] *For operational reasons, the average interest rate refixing period is permitted to vary around the respective benchmark within a set interval, which means that the measured maturity does not exactly coincide with the benchmarks.*

Table 4. Average interest rate refixing period measured in years, 31 July 2006

Nominal SEK debt	Inflation linked debt	Foreign currency debt	Total
3.48	11.24	2.09	5.11

It should be noted that the maturity of the inflation-linked debt is 11.2 years, which pulls up the average interest rate refixing period for the whole debt to over 5 years.

3.3.2 What should the maturity be?

An overall assessment

The Debt Office considers that there is scope for shortening the maturity of the whole of central government debt and in this way reducing the expected costs without the total risk level of central government finances increasing significantly. We base this partly on the results of the new simulation model we have developed (see annex *Maturity and risk*).

Models cannot be allowed to control central government debt management in an unreflected way although qualitative reasoning points in the same direction. A starting point is the increase in recent years of the inflation-linked percentage which has contributed to a lengthening of the maturity of the debt (see Table 5). This has reduced the level of risk in the debt, although as the inflation-linked yield curve has a positive slope, it has also contributed to increasing the expected costs on the margin.

Table 5. The average interest rate refixing period, measured in years, 2001-2005 year end

	Nominal SEK debt	Inflation linked debt	Foreign currency debt	Total
2001	3.3	11.2	2.7	4.0
2002	3.1	12.4	2.6	4.4
2003	3.3	12.4	2.6	4.6
2004	3.8	11.9	2.2	4.8
2005	3.3	12.0	2.1	5.0

Another argument is that the prospects for public finances are good in the medium-term. The net borrowing requirement is expected to be small in the next few years. Together with a high level of growth, this will lead to a reduction in the debt ratio. According to our estimates, the debt ratio is expected to decrease from 49 per cent at the end of 2005 to 43 per cent at the end of 2007. Finally, the ongoing reduction of the foreign currency debt will lead to a reduction in the foreign currency risk and thus the total level of risk.

The Debt Office therefore considers that there is scope to decrease the maturity. Our analyses indicate that the state will obtain the best return in terms of reduced expected costs exactly by taking greater risks in the choice of maturity. The reduction in maturity must not be pursued too far, however. There must always be a safety margin to enable unexpected

increases in the borrowing requirement to be managed without jeopardising the sustainability of central government finances. Uncertainty about the development of central government finances in the somewhat longer term also argues in favour of limiting the maturity risk in central government debt management in the shorter perspective.

Prerequisites in the different types of debt
In order to take a position on the maturity that is most appropriate, we must also take into account the prerequisites in the three types of debt. The characteristics of the parts thus also affect the whole.

As regards *foreign currency* debt our most recent model analyses indicate that the state can reduce the maturity of this part of the debt without the interest rate refixing risk in the *total* debt increasing particularly much. There are reasons which indicate that foreign currency borrowing should take place with a shorter maturity than for the nominal krona debt. The foreign currency debt consists of five different currencies, which gives a diversification effect on the interest rate refixing risk. Our analyses also indicate that the volatility of the combined foreign interest is less than in the Swedish nominal interest rate. The correlation between the long foreign interest rates and the long Swedish interest rate is moreover higher than for short interest rates. The short interest rate is strongly linked with the monetary policy of the different currency areas, which are controlled by the internal inflationary pressure. The long-term interest rates are, however, more strongly linked to the view of international investors on global financial and macroeconomic conditions and therefore move together to a greater extent. This indicates that we should allow the foreign currency debt to have a short maturity to obtain the greatest possible diversification effect.

Accordingly, we could thus shift the foreign currency debt to that part of the yield curve where the slope is steepest, i.e. where the saving from shortening the maturity is greatest. One practical solution is for the foreign currency debt to have a fixed interest of one and half month. The currency debt is constructed in such a way that all interest rates are fixed for three months at a time, i.e. have an average interest rate refixing period of one and a half month. We then achieve the maturity of 2.1 years by lengthening the foreign currency debt with the aid of futures contracts. The Debt Office can therefore shorten foreign currency debt quite simply by ceasing to enter into futures contracts. The fact that the maturity of foreign currency debt is controlled with the aid of derivatives moreover means that the change will not increase the state's refinancing risk. Since we continue to borrow in the same way as before, the risk of not being able to find funding remains the same.

The inflation-linked debt has a maturity of over 11 years. The fact that the inflation-linked debt is so long is due to our previously having assumed that there were cost benefits with extra long inflation-linked borrowing. Experience has led us to gradually reconsider this standpoint. Any additional inflation risk premiums that the state can earn on long inflation-linked borrowing are counteracted in practice by the maturity and liquidity risk premiums increasing the longer out on the curve the state borrows. In recent years, the state has therefore successively borrowed in increasingly short maturities in inflation-linked debt. We consider that this policy will continue to be appropriate in future.

The maturity of the inflation-linked debt is hard to control. In practice, we can only affect it by new issues. Since these are normally small in relation to the outstanding stock, the passage of time, which brings outstanding bonds closer to maturity, is the wholly dominating factor. To counteract this, we would need to issue only very long inflation-linked bonds, which would not be defensible for the reasons just mentioned. Accordingly, reasons of cost argue for letting the maturity of inflation-linked debt decrease. Our estimates indicate that the maturity of inflation-linked debt will decrease by an average of 0.7 years per year in the future.

In the case of the *nominal krona debt* we do not see any corresponding reasons to reduce the maturity. We consider that the present benchmark is appropriate. It provides prerequisites to maintain a well-functioning trade in nominal bonds with maturities of up to at least 10 years, which we consider important from the point of view of long-term costs and risks.

The fact that Sweden has an internationally competitive market for government securities is an important risk-reducing factor. If the borrowing requirement increases, it will provide the state with good opportunities to borrow large amounts in domestic currency from international investors as well. In this way, the state can limit the need to take currency risks, which will be the consequence if the Debt Office has to resort to currency borrowing in a difficult situation.

The market for T-bills is dominated by a small number of domestic participants and there are not prerequisites for drastically changing this. In the market for inflation-linked bonds, we have recently seen an increased component of international investors, even if their contribution to the total broadening of the investor basis is probably small. Consequently, a well-balanced debt management means that we have a well-developed market for nominal government bonds, since there are many large international players here. The maturity of the nominal debt must therefore be chosen so as to preserve the international attractiveness of the market. This argues for unchanged maturity in the nominal krona debt.

Proposal for maturity benchmark
The analyses of the different types of debt indicate that there is reason to shorten the maturity of foreign currency debt, to allow the maturity of inflation-linked debt to gradually decrease as the old loans approach maturity and not to change the maturity of the nominal krona debt. Together

with our assessment that there is scope to shorten the total maturity of the debt, this leads to the conclusion that the benchmark for the total maturity of the debt should be set so as to provide scope to shorten the foreign currency debt to one and a half month and to allow the inflation-linked debt to gradually shorten by between 0.5 and 0.9 year per year during the coming three-year period.

This results in the maturity benchmarks for the period 2007–2009 which are presented in Table 6 below. The benchmark proposal for the interest rate refixing period of the whole debt is produced by weighing together the intended benchmarks for the respective type of debt with the percentage benchmarks proposed in this memorandum (i.e. 15 per cent foreign currency debt, 25 per cent inflation-linked debt and 60 per cent nominal krona debt). The reason why we think that percentage benchmarks should be used instead of the actual percentages is that we want to avoid the adjustment problems that otherwise arise as a result of the actual percentages changing (see section 3.2). In purely operational terms, it does not make any difference since the maturity of the debt is not controlled at the aggregated level, but according to the separate benchmarks for the respective type of debt.

Table 6. The maturity benchmarks, per type of debt and totally, measured in years

	Nominal SEK debt	Inflation linked debt	Foreign currency debt	Total
2007	3.5	10.4	0.125*	4.7
2008	3.5	9.9	0.125*	4.6
2009	3.5	9.0	0.125*	4.4

** 0.125 years corresponds to one and a half months' maturity.*

With the starting points discussed above, it is proposed that the benchmark for the average interest rate refixing period for the whole debt be set at 4.7 years at the end of 2007. This is approximately 0.4 years shorter than the benchmark would have been if one started from the maturity of the respective type of debt today (see Table 4).

It is proposed that the preliminary benchmarks for 2008 and 2009 be 4.6 and 4.4 years respectively. This means a further shortening of the maturity benchmark by a total of 0.3 years.

3.4 Transitional issues

We already have a functioning control system for maturity so that the problem of transition will not be the same as in the case of percentage control. What is new is that we will also have a benchmark for inflation-linked debt. Otherwise, the control system should function as before.

4. Taking of position

4.1 A comprehensive risk mandate

The Debt Office has a mandate to take strategic and tactical interest rate and currency positions with a view to reducing the costs of the central government debt. We see no reason to change this direction or the forms of this activity. The changeover to percentage control brings to the fore, however, how control of position-taking and the mandate should be designed. Our proposal is that the guidelines for the Debt Office's position-taking shall be given in the form of a uniformly formulated risk mandate, appropriately stated in terms of daily Value-at-Risk (VaR), according to the model applied for a number of years in the internal control of the active management in foreign currency.[9]

The advantage of a uniformly formulated risk mandate is that it covers all types of positions. It would thus replace the present guidelines for positions concerning the maturity of the debt and the deviation mandate around amortisation of the foreign currency debt. The Government thus obtains a better grasp of the risks the Debt Office may take (in addition to what follows from the central government debt having the characteristics established in the other guidelines). Another consequence is that the risk mandate for active management in foreign currency, which the board now decides upon, would be included in a general risk mandate set by the Government. This risk taking now takes place within frameworks not set in guidelines but based on the Government and the Riksdag having approved the Debt Office's management.

Positions should be taken via derivatives. Derivative positions of this kind should be accounted for in their own portfolio and be market valued continuously. This has a number of advantages. Through the Debt Office using derivatives, we ensure that the positions can be closed. In this way, we can decide to realise profits, if the assessments made when the position was taken prove correct. The Debt Office is also able to close a position if we change our assessment or if developments move in an unexpected direction, i.e. we obtain instruments to continuously control the risks and limit losses. This also provides good conditions for measuring results and evaluation.

The Debt Office's position-taking already takes place through derivatives. This applies both to ongoing active management of foreign currency and the dollar/euro-position that we took in 2000. The only exception is the decisions on deviations from the benchmark for amortisation of foreign currency debt. Something resembling positions is created there by our rearranging the borrowing so that foreign currency borrowing takes place at a different rate than follows from the benchmark. This technique does not work any more when we go over to controlling the percentage of foreign currency debt. It is not either suitable for position-taking in the real sense, among other reasons because it is not clear how large accumulated deviations we are allowed to build up over time and the result is therefore difficult to measure.

A decision of principle that positions are to be taken with the aid of derivatives would clearly separate control from the actual debt (in accordance with the principles presented in sections 2 and 3) from the position-taking. This is the same technique that was previously applied to make a difference between the foreign currency debt, controlled by the benchmark for the "passive portfolio", and the positions placed in the active portfolio. We consider that the other debt management activities would also benefit from a clear division of this type.

One consequence of this is that the idea of allowing expectations on interest rate movements to have an effect on how much the Debt Office issued of long nominal or inflation-linked krona bonds would no longer apply. According to the current guidelines there, it cannot be excluded that situations will arise where the Swedish interest-rate curve has such distinctive characteristics that the Debt Office should take positions. No such positions have been taken. To some extent, this reflects that the Debt Office has found that it is difficult to combine an opportunitistic conduct of this type with our dominant position in the krona bond market. Furthermore, changed issues have long-term effects on the debt since it is not usually possible to buy back bonds that have been issued.

The Debt Office has such a dominant position in the Swedish fixed income market that it is difficult for us in practice to take positions even through derivatives. Pricing of derivatives takes place at the same time as the pricing of the underlying interest-rate instruments. Large transactions in the derivative market can affect interest rates on loan instruments. The Debt Office must therefore avoid arousing concern on the part of our market participants that we will use the information on our future action for position-taking, e.g. by first making derivative transactions and then announcing changed issued volumes of long-term bonds. This means that any derivative positions must also be announced in advance, in the same way that we now announce planned

[9] *VaR is a measure of the market risk in the positions entered into. It is calculated with the aid of historical data for volatility and correlation on the fixed income and foreign currency markets. A risk level corresponding to a daily 95-per cent VaR on, for instance, SEK 600 million implies that the Debt Office with 95 per cent probability will not lose more than SEK 600 million during a day if the development of the market is unfavourable for us. This also means that there is a 5 per cents probability that the loss will be SEK 600 million or more.*

issues of bonds and approximately how many interest-rate swaps we are intending to make during a year. These announcements risk eliminating the potential for profit that brought a position into consideration.

In our assessment, it does not serve its purpose for the Debt Office to take positions in krona interest rates even with the aid of derivatives. The strong co-variation between long-term krona and euro interest rates means that it is possible in most cases to achieve as good a result by taking positions on interest-rate expectations through derivatives on euro interest rates. Without wishing to exclude the possibility of deeper markets for derivatives developing in the future based on krona interest rates or more special derivative products where our information advantage is not significant, the Debt Office therefore recommends that the present possibility of taking positions on krona interest rates in certain special situations should be removed from the guidelines.

Certain restrictions should also be placed on positions between kronor and foreign currency even if these are taken through derivatives. The demand for predictability and clarity in currency exchanges comes into the picture here. It should assume that larger positions are gradually built up with greater openness than what characterises a position between, for instance, dollars and euro. They may probably need to be announced in advance, in the same way as if decisions on the amortisation rate are published in accordance with current practice. We consider that this would exclude the possibility of taking profitable positions to a smaller extent than in the krona interest market since the Debt Office is a smaller player in the foreign currency market and the effect on the exchange rate of our advertising our plans in advance is therefore less. This assessment is supported by earlier decisions on variations in the foreign currency debt not having had any significant exchange rate effects.

4.2 The design and use of the risk mandate

The core of the proposal is that the Government shall specify a risk mandate in terms of a daily Value-at-Risk-measure (VaR) in million kronor. Within this framework, the Debt Office may decide whether and how the mandate is to be used.

A mandate expressed in terms of a daily VaR-measure introduces a new and more complicated concept in the Government's guidelines. However, we consider that the methods for calculation of VaR and the application of this measure for risk management are so standardised that this should not be a problem. The basic idea behind VaR is also intuitively attractive. By stating a particular loss level and a particular probability for losses not to be greater, it enables the principal to express a view of what is an acceptable risk-taking.

If the principal chooses a VaR mandate of, for instance, SEK 600 million (daily VaR and a probability of 95 per cent), this means that he accepts that there is a 5 per cent probability that the loss will be SEK 600 million or *more* on a daily basis. In other words, the principal is prepared to accept a loss of SEK 600 million or more every twentieth day. The other side of this is, of course, that a bigger risk mandate gives scope for larger positions and that the result – if the underlying assessments are met – can be more favourable. With zero permitted risk, the result will also be zero.

VaR calculations are based on a number of assumptions and historical data, which means that it is uncertain whether they give a fair picture of future periods. There is therefore a certain probability that the result will be other than that predicted by the model, for instance, that more (or less) than 5 per cent of the losses during a period will be over the VaR limit. The VaR measure none the less provides a framework for discussion about the choice of risk level in position-taking which is far clearer than has been the case in the Government's guideline decision to date.

4.3 Transition

The application of a comprehensive risk mandate expressed in VaR is, as shown above, to a certain extent linked to the composition of the debt being controlled in percentage terms. Taking into consideration that the Debt Office proposes that the foreign currency debt shall be controlled by an amortisation mandate expressed in billion kronor for at least another year, it is not self-evident that the above-described control system needs to be taken into use as early as 2007.

One possibility is to delay changing control systems to provide time for further analysis and discussion about how it should be applied. Another possibility, which we recommend, is to apply it partially and, until further notice, to leave decisions concerning the value of krona outside. The Government's guideline decision would in this case specify the total risk mandate for the Debt Office's positions in interest rates and between foreign currencies.

The advantage of introducing the new control system already today is that the Government will also obtain a grasp of the risk mandate for active management in foreign currency which the board now establishes. In practice, this means that positions between foreign currencies will also be included in the Government's guidelines (foreign interest-rate positions are already included in the framework for the risk mandate for interest-rate positions of at most 0.5 years duration).

Another benefit is that the duration mandate for interest-rate positions is removed. This appears as a somewhat odd intermediate form in an overarching control system based on the average interest rate refixing period and a position-taking in foreign currency which is in reality guided by a VaR-measure. This design should partly reflect an endeavour to leave scope for krona interest rate positions through changed issues.

The Debt Office states above that krona interest rate positions are inappropriate, in particular if they are undertaken through changes in the issue plan. We therefore recommend that the principle that positions are to be taken via derivatives be confirmed in this year's guideline decision. The exception from this principle is, until further notice, foreign currency debt, where positions are still taken through variations in the amortisation rate.

4.4 The size of the risk mandate

The risk mandate measured in terms of Value-at-Risk should be set at approximately the same level as the Debt Office has worked with to date, including the active management in foreign currency (where the mandate is SEK 220 million). We are presenting some calculations in order to obtain an idea of how high this level is, and how much risk the Debt Office has had in its earlier board positions.

The (hypothetical) positions we are looking at are an interest-rate position in the European market, a strategic foreign currency position between the euro and the dollar corresponding to the position the Debt Office took in 2000 and a deviation from the amortisation benchmark of SEK 15 billion.

These calculations are based on the four most recent daily market price changes calculated since 11 August 2006. These market listings are assumed to represent tomorrow's possible outcome. We calculate the change in value of the position for every observation. From this yield series, we then calculate the 95th percentile as a measure of the position's daily Value-at-Risk. In addition to this, we present the largest negative changes in value of the yield series recorded. This gives an indication of how much the market value could change in a stress scenario. The results are summarised in Table 7.

We start by looking at the interest-rate position. We assume a scenario where the ten-year rate in the European market is considered to be unjustifiably high and the Debt Office takes a position for reduced interest rates via futures contracts. The interest rate risk in the position is calculated at SEK 4 billion, which corresponds to the Debt Office's risk mandate of 0.5 years duration, excluding the scope for active management (0.2 years).

The results show that 95-per cent VaR amounts to SEK 325 million. This means that with 95 per cent probability, the interest rate position would not lead to larger losses than SEK 325 million during a day. The largest loss would amount to SEK 800 million.

A currency position equivalent to that taken by the Debt Office at the end of 2000 for a weaker dollar gives a VaR value of SEK 235 million. The largest loss amounts to SEK 500 million. We have then calculated on a position corresponding to SEK 24 billion for the dollar to weaken against the euro.

Table 7. Daily Value-at-Risk for different positions, SEK million

	Daily VaR (95%)	Worst outcome	Monthly VaR (95%)	Worst outcome
Estimated risk for:				
Interest rate position	325	800	1 625	4 000
Euro/dollar-position	235	500	1 175	2 500
Amortisation deviation	70	170	350	850
Total	630	1 470	3 150	7 350
Risk mandate and risk utilization active management:				
Risk mandate	220			
Risk utilization*	45			

** Average daily VaR October 2001 - September 2006*

A deviation from the benchmark in the amortisation rate of SEK 15 billion is created with the aid of a currency forward in relation to the euro. The calculation shows that VaR ends up at around SEK 70 million. The largest loss in the yield series is SEK 170 million.

If we increase the time horizon in the calculations, the risk increases that the market value will change and thus also the VaR figure. If the Debt Office retains its positions despite the market moving against us, the losses we can make will also increase. If we convert the daily VaR figures into monthly measures, we will obtain a monthly VaR-risk for the interest-rate position of SEK 1.6 billion, SEK 1.2 billion for the euro/dollar position and SEK 350 million for the amortisation deviation.

The calculations presented provide a rough estimate of the risk that the Debt Office has had in its earlier board positions and the risk that the Debt Office could potentially have taken. The risk mandate of the active management shall be added to this. In the light of this, we consider that the Debt Office's present risk mandate can be translated to SEK 600 million in daily Value-at-Risk.

If the risk mandate were to include all the positions investigated, plus the mandate of the active management (630+220), this figure may seem to be somewhat low. In reality, this should not be a problem. In the first place, the probability of the Debt Office taking three such large strategic positions at the same time is low. Secondly, it is seldom the case that the active management uses the whole of its mandate (see Figure 7). Thirdly, combining the different positions leads to diversification effects that reduce the combined VaR figure. Finally, it should be noted that the amortisation mandate is not intended to be included in the VaR measure before we have gone over to controlling foreign currency debt according to the new percentage control system.

Consequently, the Debt Office proposes that the risk mandate be set at SEK 600 million, measured as daily VaR at 95 per cent probability. This corresponds approximately to the risk mandate that the Debt Office has worked with to date.

5. Proposed guidelines

In this section, the Debt Office presents its proposed guidelines for central government debt management in 2007. The time perspective for the guidelines is three years. The Debt Office is thus also presenting preliminary guidelines for 2008 and 2009.

In its guideline decision, the Government establishes overall limits for central government debt management. The main points of earlier guideline decisions have concerned how central government debt should be allocated between the different kinds of debt (nominal krona borrowing, inflation-linked krona borrowing and foreign currency borrowing) and the rate at which this allocation is to be achieved. Another point has related to the maturity of the nominal krona and foreign currency debt, measured in terms of the interest rate refixing period.

The Debt Office is proposing a new control system for percentages in this year's guideline memorandum. This entails a number of other changes. For instance, we are proposing a new method for calculating percentages with a view to better capturing the risk characteristics of types of debt. We also propose that the benchmark for the inflation-linked percentage be set at 25 per cent.

Other changes that we propose are that the Government shall introduce a comprehensive maturity benchmark in the guideline decision. Our proposal is that it should be set at 4.7 years (measured in terms of the average interest rate refixing period). We also propose that the guidelines for the Debt Office's position-taking shall be given in the form of a uniformly formulated risk mandate expressed in terms of daily Value-at-Risk. Finally, we propose that the Governments guideline for retail market borrowing be included in the guideline decision. This activity is now regulated in the Debt Office's appropriation directions.

5.1 Calculation of debt percentages

The Debt Office's proposal: The calculation of the percentages used for control of the composition of the debt shall be based on a measure which includes the cash flows of all the debt, i.e. also future coupon payments and expected inflation compensation.

In section 2, the Debt Office presents its view on a suitable control system for debt percentages. In this proposal, debt percentages have an operational importance in a different way than to date when they have only been a descriptive measure. The calculation of debt percentages can be made in a different way and then give a different picture of the debt's cost and risk characteristics. To date, the calculations have been based on the official measure of central government debt "unconsolidated central government debt", which is a measure used in the Debt Office's monthly report "The Swedish central government debt". In section 2.3, the Debt Office proposes a changeover to a new measure that better captures the characteristics of types of debt.

The Debt Office proposes the calculation of percentages be based on a measure that includes all of the cash flows of the debt. This means that the measure does not only include the nominal value of the outstanding debt stock but also the debt's cash flows in the form of coupon payments and inflation compensation. We call this measure "the central government debt's aggregated cash flows" (CCF). In these calculations, the cash flows in foreign currency are valued at current exchange rates, and the future expected inflation compensation is calculated on the basis of the assumption of 2 per cent inflation. Furthermore, we only take into consideration contracted cash flows during the interest rate refixing period of the debt instrument. This means, for instance, that when we enter into a variable swap contract, we only include the first interest payment, which normally takes place after three months, despite the contract having a term of several years.

One consequence of the new method of calculation is that the size and internal relation of percentages changes compared with unconsolidated central government debt. This has the greatest effect on the percentage of inflation-linked debt, but the currency percentage is also affected. Calculations (per 31.07.2006) show that the percentage of inflation-linked debt increases from 17.9 per cent to 24.6 per cent, while the currency percentage decreases from 23.2 per cent to 20.5 per cent (see Table 8). We will return below to the consequences this should have for percentages in the guidelines.

Table 8. Percentages calculated by different methods, 31 July 2006

Central govt debt at nominal face value			Aggregated cash flows of central govt debt		
Nominal SEK debt	*Inflation linked SEK debt*	*Foreign currency debt*	*Nominal SEK Debt*	*Inflation linked SEK debt*	*Forreign currency debt*
58.9	17.9	23.2	54.9	24.6	20.5

5.2 Foreign currency debt

The Debt Office's proposal: The percentage of foreign currency debt is to decrease in the long-term to 15 per cent. The benchmark for the amortisation rate is to be set at SEK 25 billion kronor during 2007. The direction for 2008 shall be unchanged. It should be possible to introduce a percentage-based control system in 2009. The Debt Office shall be allowed to deviate from the specified amortisation rate by SEK ±15 billion kronor.

5.2.1 Current guidelines

The Government decided in November 2005 that the percentage of foreign currency debt should decrease in the long-term to 15 per cent and that the benchmark for the amortisation rate during 2006 shall be SEK 25 billion kronor. The Government also stated that the Debt Office shall be able to deviate from the amortisation benchmark by SEK ±15 billion. This flexibility shall be used to promote the target of minimising costs while taking into account risks. The amortisation rate was set at an unchanged SEK 25 billion per year for 2007 and 2008.

5.2.2 Considerations and proposals

The control system

In section 2, the Debt Office proposes a new control system for debt percentages. In brief, the new control system for the currency percentage means that the Government, in addition to a benchmark for the currency percentage, instructs the Debt Office to set a special control interval around the benchmark and states that the Debt Office has the right to go outside the interval. The control interval shall function so that deviations in the percentage within the interval as a result of exchange rate movements shall not lead to any adaptations on the part of the Debt Office. If the currency percentage goes outside the interval limit, however, the percentage is to be gradually brought back to the interval limit. The time horizon for this should appropriately coincide with the horizon we have in the funding forecast, which is at present around two years. It should be noted that the control system means that the Debt Office in the operational handling of the currency percentage will seldom or never aim at the Government's benchmark. However, we will always aim at a point within or on the interval. Variations within the interval are not to be valued quantitatively since they depend on factors which the Debt Office shall not react to, according to its instructions.

Since the currency percentage is still a fair distance from the benchmark (20.5 per cent compared with 15 per cent), it is, however, not possible to let the new control system come into effect for the currency percentage on 1 January 2007. The Debt Office therefore proposes that the currency percentage shall continue to be controlled with the aid of an amortisation mandate for at least another year. The question of when a changeover to the new control system shall be made should be taken up in a future guideline decision.

Benchmark for the currency percentage

Two years ago, the Debt Office made an overall assessment of the composition that the central government debt should have of nominal krona debt, inflation-linked SEK debt and foreign currency debt. It was concluded that the percentage of foreign currency debt should be around 15 per cent. According to our present assessment, no new factors have arisen which fundamentally change this conclusion.

The proposed calculation method for debt percentages entails, however, that the currency percentage will decrease from 23.2 per cent to 20.5 per cent (as per 31 July 2006). The change of measure does not, of course, change the state's real risk exposure. A strict proportional change of the benchmark would entail that the benchmark could be set at 13 per cent. With a rounding-off to the nearest multiple of five, the Debt Office proposes, however, that the benchmark for the currency percentage be set at 15 per cent.

Benchmark for the amortisation rate

In earlier proposed guidelines, the Debt Office has advocated a gradual reduction in the foreign currency debt where the choice of amortisation rate should be based on long-term and structural considerations. The intention is to reduce the currency percentage at a rate permitted by borrowing operations, given the development of the state budget, and without causing disruptions in the financial markets.

Last year the Government stated the direction of the amortisation rate for 2007 and 2008 was SEK 25 billion. According to the Debt Office assessment, nothing has emerged which means that these benchmarks should be changed. We therefore propose that the benchmark for the amortisation rate in 2007 should be set at SEK 25 billion. It is proposed that the same benchmark apply in 2008.

However, amortisation should cease in 2009 since the currency percentage is then expected to have reached its benchmark. According to our latest borrowing requirement and funding forecast, the currency percentage is expected to reach 15 per cent at the end of 2008 (see Table 9). [10]

[10] *See Central Government Borrowing – Forecast and Analysis 2006:2.*

Table 9. Composition of the debt, 2006-2008, percentages

	July 2006	2006	2007	2008
Foreign currency debt	20,5	18,7	17,2	15,6
Inflation-linked SEK debt	24,6	23,3	23,0	23,4
Nominal SEK debt	54,9	58,0	59,8	61,0

The percentages have been calculated to 31 December in the respective years.

Deviation interval around the amortisation benchmark
The flexibility for how much the Debt Office is permitted to deviate from the Government's benchmark has previously been SEK ±15 billion. The Debt Office proposes that this mandate is retained.

The interval is to be used to promote the target of minimising costs while taking risk into account. Exchange rate movements are an important factor in decisions to use this flexibility. The budget development can also affect the amortisation rate, for instance, to avoid too great a part of borrowing or amortisation affecting one and the same loan instrument.

5.3 Inflation-linked debt

The Debt Office's proposal: The benchmark for the percentage of inflation-linked loans in central government debt shall be 25 per cent. The Debt Office shall specify the operational deviation interval around this benchmark and guidelines for the operational control of the inflation-linked percentage.

5.3.1 Current guidelines

Last year, the Government decided that the percentage of inflation-linked loans in central government debt should increase in the long-term to 20 per cent. Unlike the foreign currency debt, no quantitative goal was stipulated for the rate of change. Instead, the Government stated that the rate of increase should be weighed against the development of demand for inflation-linked bonds and the costs of borrowing in other types of debt taking risk into account.

5.3.2 Considerations and proposals

New control system
In section 2, the Debt Office presents proposals for how the control system for percentages should be designed. In the case of the inflation-linked percentage, we propose that the Government specify a benchmark just as before. It is proposed that the Government also instruct the Debt Office to establish a deviation interval within which inflation-linked debt is allowed to vary for operational reasons.

An interval of this kind is necessary since the Debt Office is not able to control inflation-linked debt other than roughly in the medium-term. This is primarily due to there being neither short-term inflation-linked loans nor a sufficiently developed market for inflation-linked derivative instruments. The inflation-linked component is therefore greatly affected by issues and redemptions. Since issues, for considerations of costs and risks, should be made in relatively small portions and on many occasions, while redemptions are concentrated to a few dates, the only reasonable solution is to allow the inflation-linked percentage to vary as result of redemptions. In particular, in situations with a small net loan borrowing requirement, it is more appropriate to allow the inflation-linked percentage to fall below the benchmark in connection with redemptions and then gradually raise it again by new sales via auctions. In this way, we can maintain normal issue operations, which facilitates liquidity in the market.

The proposed control system, where the Government specifies a benchmark but instructs the Debt Office to establish a deviation interval, corresponds to that that already applies for the maturity in the debt. Fluctuations in maturity, variations in the inflation-linked percentage should be subject to quantitative evaluation just as little as fluctuations in maturity. In both cases, it concerns variations that depend on operational limitations on the ability to control the debt, not position-taking based on assessments of the future.

It is proposed that the new control system for the inflation-linked percentage come into effect on 1 January 2007.

Benchmark for inflation-linked debt
The Government decided last year that the percentage of inflation-linked debt would increase in the long-term to 20 per cent. The new calculation method for debt percentages will mean that the measured inflation-linked percentage will increase from 17.9 per cent to 24.6 per cent (as at 31 July 2006). The replacement of the measure does not change the real risk exposure of the state. A starting point for the choice of percentage benchmark can therefore be to make a direct translation from one measure to the other. By rounding off to the nearest multiple of five, the Debt Office therefore proposes that the benchmark for inflation-linked debt be set at 25 per cent.

With a benchmark of 25 per cent and an inflation-linked portion of 24.6 per cent, we can note that the inflation-linked percentage is now at its benchmark. This means that the scope for the amount of inflation-linked bonds that can be issued in the future will almost exclusively be determined by how many inflation-linked bonds fall due and how large the net borrowing requirement is.

5.4 Nominal SEK debt

The Debt Office's proposal: With guidelines specified for inflation-linked borrowing and borrowing in foreign currency, it follows by definition that the central government funding requirement otherwise will be met by nominal loans in kronor.

5.4.1 Current guidelines

The Government decided last year that, in addition to inflation-linked borrowing and borrowing in foreign currency that the state's funding requirements would be met by nominal loans in kronor.

5.4.2 Considerations and proposals

The guidelines for central government debt management are based on the debt being divided into three components: inflation-linked loans, foreign currency loans, and nominal krona loans. With guidelines for inflation-linked borrowing and borrowing in foreign currency, it follows by definition that the remaining part of the borrowing requirement is to be met by nominal krona loans.

Through the Debt Office regularly holding auctions of both bonds and T-bills, it is simple to handle changes in the gross borrowing requirement in this market. The krona market thus serves as a buffer in the event of fluctuations in the borrowing requirement or if plans for the other two types of debt change.

5.5 Maturity

The Debt Office's proposal: The benchmark for the average interest rate refixing period in central government debt shall be 4.7 years at the end of 2007. The direction for the corresponding times in 2008 and 2009 shall be 4.6 and 4.4 years respectively. The Debt Office shall break down the comprehensive benchmark for the debt into separate benchmarks for every particular type of debt and specify benchmarks for the operational control of the maturities.

5.5.1 Current guidelines

The Government decided last year that the benchmark for the maturity of the nominal krona and foreign currency debt should be 3.5 years, measured in terms of the average interest rate refixing period.

5.5.2 Considerations and proposals

A comprehensive maturity measure for the whole debt

In section 3, the Debt Office argues in favour of a comprehensive maturity measure for the whole of central government debt being included in the Government's guideline decision. This is intended to obtain a holistic view of the trade-off between expected cost and risk.

The maturity of the nominal component of the debt is measured today in terms of the average interest rate refixing period, where all (nominal) cash flows from the outstanding debt are included. The Debt Office proposes that the maturity of the inflation-linked debt, and thus in the debt as a whole, is measured in the same way. Since we do not know what inflation will be in the future, and thus do not know the future nominal flows of the inflation-linked debt, we must make an assumption about future inflation (see section 3.2). A reasonable starting point then is the Riksbank's inflation target of 2 per cent. The nominal cash flows from inflation-linked debt can then be added to the flows that derive from the nominal krona debt and from foreign currency debt. The weights in the calculation of the average are given by the expected nominal cash flow in each period in relation to the total of all cash flows. The overall maturity measure can thus be regarded as a weighing-together of the maturity profile illustrated in Figure 2 in section 2.3.1.

Control system

The control system for the maturity should otherwise function in the same way as before. The Government should thus specify a benchmark for the average interest rate refixing period in the whole of central government debt, but leave the operational control to the Debt Office. It is thus proposed that the Government instruct the Debt Office to decide how the interest rate refixing period is to be allocated between different types of debt and to set the operational deviation interval around the respective benchmark.

This means that the real control of the maturity of the debt takes place in the respective type of debt, not at the superior level. This is in turn related to the prerequisites for control differing between types of debt. As we note in section 3.2, there are no prerequisites to control either inflation-linked debts or the maturity of the nominal krona debt in detail. This means that the maturity of these types of debt must be permitted to vary within a relatively broad interval.

The proposed control system is consistent with the design of the current guidelines. The only difference is that inflation-linked debt is included. However, certain changes should be made in the Government's instructions for assessment of the allocation of maturity. In the current guidelines, the Government makes it possible for the Debt Office to choose different maturities for the krona and foreign currency debt respectively, although provided that it does not lead to additional costs. Through simplified contrafactual calculations, an annual assessment is also made of the result of the foreign currency debt being shorter than the krona debt. The comparison norm is that the krona and foreign currency debt have the same maturity.

This starting point cannot be used when inflation-linked debt is included. In the first place, it is impossible for the Debt Office to shorten inflation-linked debt to 4.7 years. Secondly, it will be associated with a high level of costs – and incompatible with good market maintenance – to extend the nominal krona debt to 4.7 years. The large difference in maturity in the initial situation and the Debt Office's limited possibilities to change the maturity thus make a comparison of this kind meaningless. The contrafactual comparisons must also be based on realistic alternatives.

The Debt Office also wishes to advise against continuing with the comparison between maturity of the krona and foreign currency debt. An evaluation of this kind risks locking the Debt Office into maintaining approximately the

same maturity in both types of debt. Accordingly, we can be sure that the assessment will not produce substantial results. This form of assessment should be abandoned if the Debt Office is to be able to make use of the cost and risk benefits of shortening foreign currency debt.

More generally, the Debt Office wishes to recommend that quantitative valuations that only focus on costs should be subsequently reduced in importance. They are basically difficult to combine with the forward-looking perspective that must characterise an activity where risk is a central concept. Subsequently, there are no risks, since one knows the result. One intention of reporting in such detail how the Debt Office intends to handle the maturity of debt components is to enable the Government to react in advance in the event of it considering that the intended allocation is unsuitable.

Benchmark for the maturity of the whole of central government debt

In section 3.3.2, the Debt Office discusses what the maturity of the central government debt should be. In our assessment, there is still scope to shorten the maturity of the debt and in this way reduce the expected costs without increasing the total level of risk in central government debt significantly. The analyses for the individual types of debt indicate that a shortening of this kind should be made by shortening the maturity of foreign currency debt, and allowing inflation-linked debt to be gradually shortened apace with the outstanding loans approaching maturity. The maturity of the nominal krona debt should remain unchanged, however.

The Debt Office proposes therefore that the benchmark for the maturity in the whole debt be set at 4.7 years at the end of 2007. For 2008 and 2009, the focus should be 4.6 and 4.4 years respectively. Underlying these changes, the Debt Office intends to reduce the maturity of foreign currency debt to one and a half month from 2007, and to gradually shorten inflation-linked debt by between 0.5 and 0.9 years per year during the coming three-year period. It is proposed that the benchmark should apply at the end of the year because the maturity of the inflation-linked debt changes gradually during the year.

The proposed benchmark for the maturity of the whole debt is based on the intended maturity benchmarks for the different types of debt being weighed together with the suggested percentage benchmarks (i.e. 15 per cent foreign currency debt, 25 per cent inflation-linked debt and 60 per cent nominal krona debt). The reason for us proposing that one should use percentage benchmarks and not the actual percentages is that we wish to avoid the adjustment problems that would otherwise arise as a result of changes in the actual percentages. It makes no difference in purely operational terms since the maturity in the debt is still not controlled at the aggregate level but only according to the separate benchmarks for the respective type of debt.

5.6 Position-taking

The Debt Office's proposal: The Debt Office shall be able by active position-taking to contribute to reducing the costs for the central government debt, while taking into account risks. It shall be possible to take positions with the aid of derivative instruments. The risk mandate for the Debt Office's position-taking shall be set at SEK 600 million, measured as daily Value-at-Risk at 95 per cent probability. The risk mandate is to include all of the Debt Office's positions except those that relate to the krona's exchange rate for other currencies.

5.6.1 Current guidelines

The Debt Office's position-taking is regulated in the current guidelines by two different decisions. The Government specifies that the Debt Office has the right to deviate from the amortisation mandate by SEK ±15 billion, and that the Debt Office is entitled to take interest-rate positions of up to a duration of 0.5 years

5.6.2 Considerations and proposals

A uniform risk mandate

For a number of years, the Debt Office has taken positions in foreign fixed-income and currency markets. This activity, which is carried out within frameworks set by the Debt Office's board has produced a long-term positive result and thus reduced the state's costs. In the guidelines for 2001, the Government has instructed the Debt Office to take the value of the krona into consideration wh/en amortising the foreign currency debt, which has expanded the limits for position-taking. The Debt Office's decision to deviate from the benchmark for amortisation has, at least so far, led to reduced costs.

We see no reason to change the direction or forms for this activity. The goal is unchanged – to contribute to reducing the state's costs while taking risks into account, although the frameworks for position-taking should be clarified and made more uniform.

The Debt Office therefore proposes that guidelines for position-taking shall be given in the form of a daily Value-at-Risk mandate according to the model already applied in the internal control of the active management of foreign currency. The question is discussed in section 4.1, where we indicate a number of benefits.

In the first place, all types of positions can be included in a risk mandate of this kind. This means that the Government will obtain a better grasp of the risks that the Debt Office can take (apart from what follows from the central government debt having the characteristics specified in the other guidelines).The consequence will also be that the risk mandate for active management in foreign currency that

the board also makes decisions on now would be included in the general risk mandate specified by the Government.

It is moreover not possible for the Debt Office to take positions by choosing its own percentage benchmark in relation to the Government in the control system which we outline in this proposal. The reason for this is because the foreign currency debt will not be controlled in relation to the Government's benchmark, but with the aid of a special control interval. In a system of this kind it is not possible to distinguish the Debt Office's krona/currency positions from permitted movements within the interval.

Positions should be taken in derivatives

The Debt Office proposes that positions should be exclusively taken in derivatives and not by changes in the issues. One advantage is that it is possible to account for derivative positions in a portfolio of their own, which is continuously valued at market value. Another advantage is that the derivative positions can be both taken and closed during a short period.

The Government has already stated today that the Debt Office should take positions with the aid of derivatives in the first place. However, the door is left open for other methods. We consider that debt management activities would benefit from a decision in principle on this matter, since it clarifies the difference between control of the actual debt and position-taking.

Until further notice, decisions to change the amortisation rate of the foreign currency debt should be exempted, since this is based on changes in borrowing. When foreign currency debt is also included in the percentage control system, the principle of derivatives should also be applied to positions relating to the value of the krona.

SEK 600 million in daily Value-at-Risk

The Debt Office proposes that the risk mandate for position-taking should be set at SEK 600 million, measured as daily VaR at 95 per cent probability. A mandate of this kind means, if the mandate is used to the full, that a potential loss will, with 95 per cent probability, not exceed SEK 600 million during a day. However, there is a 5 per cent probability that the loss can be SEK 600 million or more.

The starting point for the proposed VaR figure is that it should correspond to approximately the risk mandate which the Debt Office has worked with to date. The idea is also that the operation should be conducted approximately as to date. We give an account in section 4.4 on the underlying calculations and assessments.

5.7 Market and debt support

The Debt Office's proposal: The Debt Office shall contribute to improving the market's function by market and debt support. This may not lead to the goal of keeping costs to a minimum in the long-term being set aside.

5.7.1 Current guidelines

In last year's guideline decision, the Government stated that the Debt Office shall contribute to improving the performance of the market. However, this must not lead to the goal of keeping costs to a minimum in the long term being set aside.

5.7.2 Considerations and proposals

The Government decided in last year's guideline decision to include the goal for the Debt Office's market support within the framework of the guideline decision. The goal was regulated earlier, and with the same wording, as in the Debt Office's appropriation directions.

The Debt Office concurs with the Government's assessment and the goal formulation for market support. Consequently, we propose that the present guideline be retained unchanged.

5.8 Retail market borrowing

The Debt Office's proposal: The Debt Office shall contribute to reducing the costs of central government debt by retail market borrowing.

5.8.1 Current guidelines

The guidelines for central government debt management apply to all parts of central government debt, i.e. also the instruments directed at the retail market. These instruments are thus included in the percentages, maturity measure etc. that the guidelines are based on, even if they are directly taken up in analyses and discussions.

The Government states in the Debt Office's appropriation directions that the goal for retail market borrowing shall be to achieve the greatest possible cost saving in relation to the Debt Office's alternative borrowing forms in the capital market.

5.8.2 Considerations and proposals

Both the Debt Office's reporting back and the Government's and the Riksdag's evaluation of central government debt management include retail market borrowing. This follows from it being included in the central government debt and thus in the activity controlled by the Central Government Borrowing and Debt Management Act. It appears appropriate to also include guidelines for all parts of central government debt management in the same document.

The Debt Office therefore proposes that the goal for retail market borrowing shall be specified in the Government's guideline decision. The task and the evaluation methods should be the same as to date.

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RIKSGÄLDS KONTORET
THE SWEDISH NATIONAL DEBT OFFICE

Visiting address: Norrlandsgatan 15 • Postal address: SE-103 74 Stockholm, Sweden
Telephone: +46-8-613 45 00 • Fax: +46-8-21 21 63 • E-mail: rgk@rgk.se • Internet: www.rgk.se