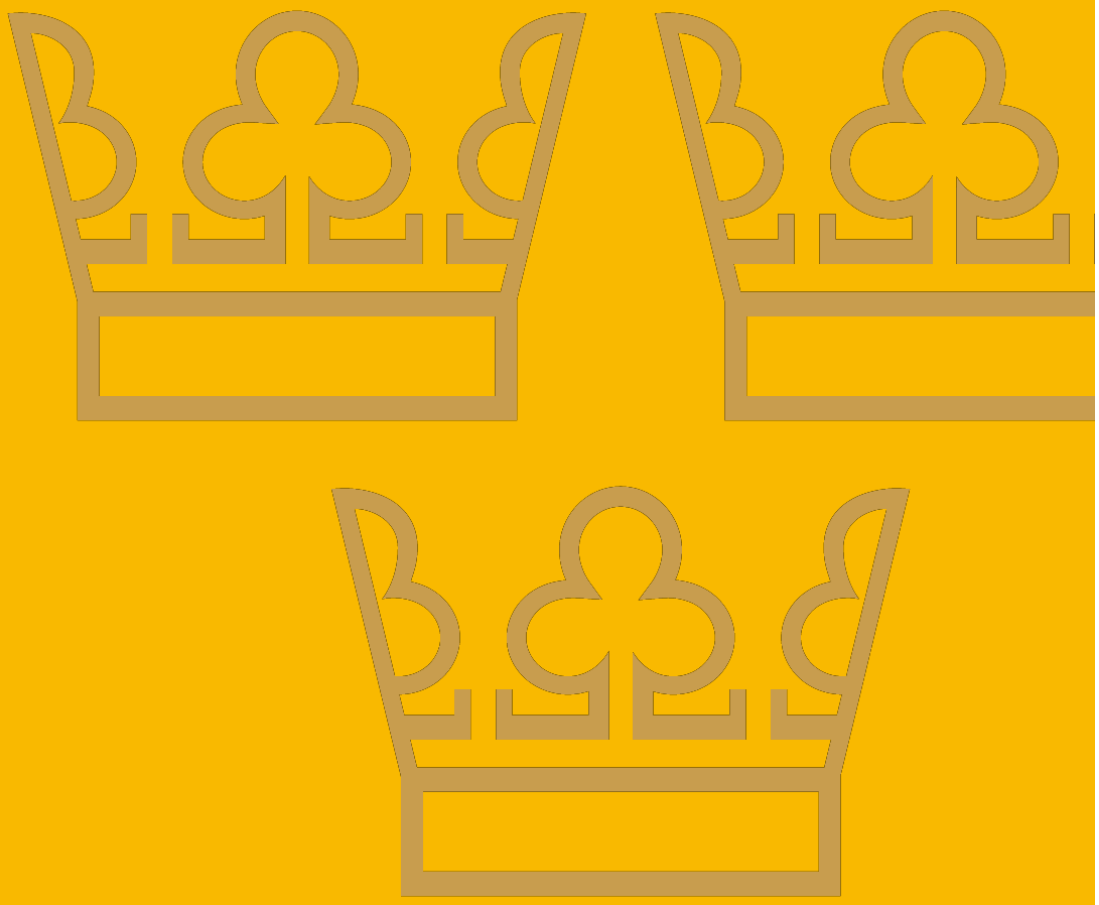
RIKSGÄLDEN

15 March 2018

CENTRAL GOVERNMENT GUARANTEES AND LENDING

A Risk Analysis



Mission of the Swedish National Debt Office

The Swedish government provides guarantees and loans for the purposes established by the Riksdag and the Government. A guarantee implies that central government guarantees the payment obligations of another party, which entails a credit risk for central government. Credit risk arises in the same way when central government lends money, to parties such as a company or a private individual.

At year-end 2017 central government guarantees and lending with credit risk, excepting the deposit insurance amounted to SEK 569 billion.[1] The portfolio contains student loans, export guarantees, housing guarantees, loans to other states and guarantees to the benefit of international financial institutions of which Sweden is a member. In the report, these undertakings are referred to using the umbrella term 'the regular portfolio'. The deposit insurance, which as of 31 December 2016 amounted to SEK 1,689 billion, is analysed separately in the report.[2]

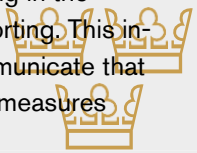
Since 2012, the Swedish National Debt Office (the Debt Office) has annually submitted the report 'Central government guarantees and lending – a comprehensive risk analysis' to the Government. The report is prepared in collaboration with the Swedish Export Credits Guarantee Board (EKN), the National Board of Housing, Building and Planning (Boverket), the Swedish International Development Cooperation Agency (Sida) and the Swedish Board of Student Finance (CSN), as well as other affected government agencies.[3]

Increased knowledge creates conditions for better risk management

The risk analysis in this report is a supplement to the financial description of the guarantee and lending operations given in the Annual Report of the Central Government (ÅRS). Outstanding amounts, reserves for losses and the fees charged by central government in these operations are presented in this Annual Report. The purpose of the risk analysis is to provide increased knowledge about the credit and liquidity risks that the undertakings entail. Therefore, the report focuses primarily on:

- the risk of major credit losses in the portfolio, that is, losses the exceed expected losses and even normal deviations (credit risk analysis)
- which events or circumstances could give rise to major credit losses
- the risk that large rapid pay-outs from central government as a result of the fulfilment of guarantees or utilization of loan commitments could make central government's borrowing costs more expensive (liquidity risk analysis).

The risk analysis thus deepens the picture of central government's risk-taking in the aggregated portfolio as a supplement to existing risk management and reporting. This in-depth presentation makes it easier for the political decision-makers to communicate that control of operations is good and to determine whether further risk-limiting measures need to be taken.



[1] *Excluding the guarantees and loans excepted from the risk analysis, see Appendix 2.*

[2] *The size of the deposit insurance for 2017 was not available when the report was written.*

[3] *A report containing a comprehensive risk analysis of central government guarantees and lending is to be presented on 15 March in accordance with the Ordinance containing instructions for the National Debt Office (2007:1447).*

Contents

Summary

The Debt Office considers that the risk of major losses in the so-called regular portfolio, which contains student loans, export credit guarantees and guarantees to the benefit of international financial institutions, has remained on the same level as in the prior-year report. For the deposit insurance, which is the single largest undertaking, the risk assessment has been adjusted as a result of the Debt Office's further development of the analysis. The Debt Office now considers the risk of major losses resulting from the failure of several non-systemically important institutions to be low to moderate. The risk analysis is based on reported amounts in the Annual Report of the Central Government but focuses on the risk of unexpected losses – that is, losses over and above the reported expected losses for which central government charges fees. 'Major losses' refers to tens of billions of kronor over a five-year horizon.

Low risk of major losses in the regular portfolio

The Debt Office considers the risk of major aggregate credit losses in the regular guarantee and lending portfolio to be low. The Debt Office bases its assessment on the relatively good diversification of the portfolio, including a large number of guarantees and loans that are well diversified both geographically and in terms of industries represented. The concentrations that nevertheless do exist in the portfolio represent a low risk of major losses.

The concentrations involve primarily a number of large individual undertakings, geographically concentrated on Sweden (student loans) and in terms of industrial sector on telecom operators. The reason for the Debt Office's assessment of a low risk of these concentrations causing major losses to central government is primarily that the creditworthiness of the undertakings in which the concentrations occur is good.

Over and above the existing concentrations it is also possible that co-variances between debt holders and borrowers in different industries and geographical areas exist due to changes in the general financial environment. The Debt Office's assessment is that it would take a severe financial crisis with global spread for such co-variances to give rise to major losses.

An important factor in the relatively low risk in the portfolio is the principles and regulatory frameworks that steer the central government's guarantee and lending operations. Central government's risk-taking is minimized by the fact that guarantees and loans are limited in amount and duration, that the expected cost is reported and financed at the time of the decision and that risk-limiting conditions are applied. This is described in more detail in Appendix 1.

Table 1. Credit risks in the regular portfolio

Risk factors	Risk of major losses
Name concentration (large individual undertakings)	Low
Close connections between guarantee holders or borrowers	Low
Industry concentration	Low
Geographic concentration	Low
Risk due to changes in the general financial environment	Low

The risk level is assessed according to a four-degree scale: low, moderate, significant and high.

Low liquidity risk in the regular portfolio

The Debt Office considers the liquidity risks in the regular portfolio to be low. The pay-outs to which the undertakings in the portfolio could give rise are not so large that central government could not manage them within its regular liquidity management operations. Granted, central government could encounter higher borrowing costs, but such higher costs would be short-term only and connected to individual pay-outs.

Low to moderate risk in the deposit insurance

The Debt Office considers the risk of major losses linked to the deposit insurance to be low to moderate. For the large banks and other institutions considered systemically important the deposit insurance may need to contribute to maintain the depositors' protection in resolution. However, the institutions would have to suffer extremely extensive losses before such contributions would be required.

If a non-systemically important institution were to fail, the deposit insurance would be fulfilled instead by central government paying compensation directly to the depositors and would then acquire a claim on the institution. For such fulfilments to lead to major losses, several non-systemically important institutions would have to fail in the same time period. The Debt Office considers the risk of that occurring to be low to moderate.

Table 2. Risk based on type of fulfilment

Type of fulfilment	Risk of major losses
Direct fulfilment	Low to moderate
Fulfilment via resolution	Low

The risk level is assessed according to a four-degree scale: low, moderate, significant and high.

Analytical framework

The risk analysis of the central government guarantees and lending with credit risk is based on an analytical framework that establishes basic assumptions, definitions and method.

Guarantees and loans included in the analysis

The risk analysis encompasses the central government portfolio of guarantees and loans with credit risk that at year-end 2017 were issued to parties not belonging to central government. Over and above guarantees and loans already disbursed, the liquidity risk analysis also contains loan commitments according to which a party not belonging to central government has the right to borrow from central government on given terms and conditions but has not yet utilized this right.[4]

Lending financed by appropriations, public enterprise agencies' guarantees and the investor compensation scheme are excepted from the risk analysis. In this context they constitute either small amounts or negligible risks, and are excepted for practical reasons. The exceptions do not affect the conclusions of the Debt Office. See Appendix 2 for further information about guarantees and loans excepted from the analysis.

Deposit insurance analysed in a separate section

The deposit insurance, in terms of the reported amount, accounts for more than half of central government's aggregated portfolio. Given the background of the large amount and the complex regulatory frameworks that directly affect the risk in the deposit insurance, the Debt Office considers it appropriate to place the analysis in a separate section.
The credit risk in the deposit insurance, however, is analysed on the basis of the same analytical frameworks as is the regular portfolio, with a focus on the risk of major losses.

Two risk perspectives

The analysis deals with two risk perspectives: credit risk and liquidity risk.

Credit risk

If a guarantee holder or borrower does not fulfil its obligations according to the terms and conditions of the undertaking, a so-called default occurs. This normally leads to a credit loss for central government. When central government has issued a guarantee, it is required to pay compensation to the party guaranteed (the guarantee holder), which implies that the guarantee is fulfilled. If central government had lent money instead, the loss consists of central government not getting the full outstanding amount repaid.

Liquidity risk

The focus of the analysis is credit risks; however, the report also contains an analysis of liquidity risks in the regular portfolio. This clarifies central government's ability to manage large, rapid pay-outs and the risk that such payments would lead to higher borrowing costs.

A key difference between guarantees and lending is that guarantees give rise to pay-outs when they are fulfilled. Central government must then be able to borrow the liquidity required for the pay-out. Depending on the size of the amounts that need to be fulfilled and how quickly it must

[4] *Unutilized loan commitments are not included in the credit risk analysis since central government has no credit risk with counterparties that do not yet have obligations to central government.*

occur, there is a risk that the borrowing that is required to manage the pay-out will be more expensive than usual.

With lending, there is no risk of central government having to make more pay-outs. The exception is when the lending occurs through loan commitments in which there is uncertainty as to whether and to what extent the loan commitment will be utilized.

The deposit insurance is not dealt with in the liquidity risk section of the report. Liquidity risk management relating to the deposit insurance is instead described in the fact box inset about the deposit insurance fund on page 37. The EU regulatory framework was recently changed, bringing a requirement of faster pay-outs in connection with fulfilments. Therefore, the Debt Office is currently conducting a review of its liquidity management.

Focus on large unexpected losses

The risk analysis presented in the report has a different perspective from the reporting in the Annual Report of the Central Government (ÅRS). ÅRS presents the undertaking amounts in the central government's guarantee and lending operations. It also reports the losses that over time are expected to arise in the operations and the fees charged to cover these expected losses.

The present report, unlike the ÅRS, focuses on the risk that in certain periods there will be losses that are greater than the expected losses – so-called unexpected losses.

The difference between expected and unexpected loss

Expected loss

Every guarantee or loan has an expected loss. It is usually estimated on the basis of a historical average loss for other guarantees and loans with similar creditworthiness, conditions and maturity. The expected loss for an individual guarantee, or an individual loan, is thus the average loss that can be observed from a number of guarantees and loans with the same characteristics.

Based on the expected loss, central government charges a fee to the guarantee holder or the borrower. This ensures that central government's guarantee and lending operations will be self-funded over the long term.[5] The expected loss in a portfolio can be calculated by totalling the expected loss for all guarantees and loans in the portfolio, even if they have different maturities.

Unexpected loss

The actual losses in a guarantee or loan portfolio are expected to correspond to the expected loss in the long run, even if they vary around it the whole time. Unexpected loss is an estimate of the losses that may exceed the expected loss during a defined period. Accordingly, it refers to the spread around expected loss, which is connected to the risk level in the portfolio.

To assess unexpected losses, the Debt Office estimates how often and to what degree actual losses could conceivably exceed the expected loss. Variations in the losses depend primarily on how well diversified a portfolio is (the size of different concentrations in the portfolio), the creditworthiness of the guarantees and loans in the portfolio and how sensitive they are to changes in the general financial environment (see the subsection on risk factors).

[5] *This implies that the fee is reflective of the risk, which in turn means that fees for guarantees and loans with a higher expected loss are higher than for those with a low expected loss.*

Losses of at least a few tens of billions of Swedish kronor within a five-year period

A risk analysis must be based on an assessment of what events are perceived as a threat of some type. Within central government there is no precisely defined view as to the size of loss that would constitute a potential threat – for example, based on the administration of the government debt or the assessment of budget policy room. Over and above that, the risk analysis encompasses only a limited part of central government's finances, making it difficult to determine in advance the size of losses that would have to occur to generate problems for central government as a whole.

These considerations imply that a choice must be made as regards the view of risk taken in this report. The Debt Office considers it less relevant to analyse the risk of normal deviations from expected losses, since such losses have historically not involved any particular management difficulty even if they have been of substantial size. Losses that clearly exceed expected losses and normal deviations, on the other hand, are more relevant. In terms of amounts, this implies that the Debt Office has chosen to focus on losses that amount to at least a few tens of billions of Swedish kronor ('major losses') within a five-year period ('medium-term horizon'), that is, correspond to up to some small percentage of the central government budget.

The risk analysis is based on amounts reported in ÅRS

While the risk analysis and the ÅRS have different perspectives, there is reason to take as a starting-point the amounts reported in ÅRS for central government's risk exposure – the maximum amounts central government may lose for each guarantee or loan. Granted, this approach entails a certain simplification, since the contents of the portfolio partly change on an ongoing basis. In individual cases, in which it was clearly justified, the Debt Office has departed from the principle of basing the amounts in the risk analysis on the reported amounts. An in-depth reporting of the amounts dealt with in the risk analysis is provided in Appendix 3.

Loss in consideration of the recovery potential but not of fees paid

By 'losses' the Debt Office, in the report, means credit losses for which consideration is given to the possibility of recovering a portion of the lost amount. On the other hand, consideration is not given to the extent to which the losses that arise over time are covered by fees. This is because the analysis focuses on the risk that large losses will arise over a medium-term horizon, not on following up the goal of long-term cost cover in accordance with the central government guarantee and lending framework.

The chosen view of losses entails a simplification as regards the deposit insurance. If losses that are large in relation to the size of the deposit insurance fund occur, central government has the right to subsequently increase the fee charged to the institutions that participate in the deposit insurance (see box inset 'Deposit Insurance Fund' on page 37). This right helps minimize central government's loss long-term.

The effects of losses and recoveries on cash flow not limited in time

The medium-term horizon of five years implies that the Debt Office analyses the risk that major losses will arise as a result of defaults occurring within the coming five-year period. However, the effects of these losses on central government's cash flow need not necessarily arise during the same time.

For example, guarantees in the portfolio are usually fulfilled on a regular basis as the borrower would have made payments on the guaranteed loan. Guarantees of loans that fall due after the end of the medium-term horizon are in these cases therefore not fulfilled in their entirety during the period. Moreover, recoveries can occur in some cases long after a guarantee has been fulfilled or a loan defaulted on.

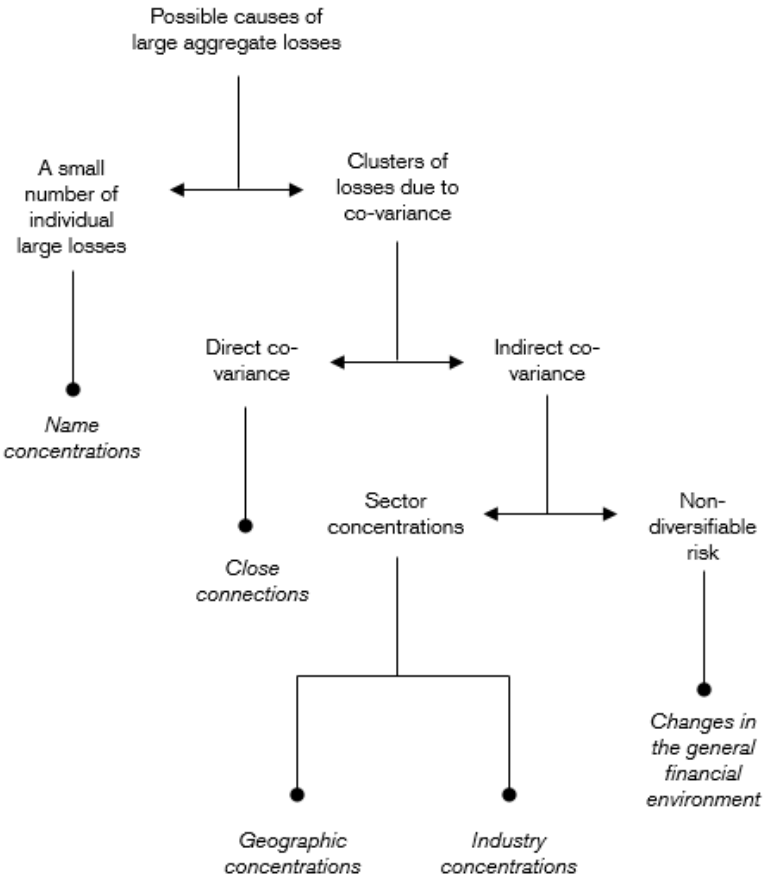
Risk factors

There are essentially two types of events that can bring about major losses:

- a small number of losses arises for individual large guarantees or loans that account for a significant proportion of the portfolio
- a group (a cluster) of losses arises that together represents large amounts and is as a rule attributable to co-variances.[6]

The risk analysis identifies and discusses circumstances that can give rise to these two events – so-called risk factors. The risk factors identified are name concentrations, close connections between guarantee holders and borrowers, respectively, industry concentrations, geographical concentrations and changes in the general financial environment. Figure 1 summarizes the inter-relationships between the identified risk factors.

Figure 1. Risk factors and their inter-relationships



[6] *Depending on, for example, the business phase or changed conditions in a particular sector (such as an industry or a geographical area), credit losses tend to coincide in time in so-called clusters. This may be interpreted as meaning that the possibility for guarantee holders and borrowers to fulfil their undertakings co-varies. There are two types of co-variances. 'Direct co-variances' means, in this context, that the credit risk in one guarantee or loan directly affects the credit risk in another. 'Indirect co-variances' means that one background factor affects the credit risk in several guarantees and loans.*

Name concentrations (individual large guarantees and loans)
The analysis of name concentrations is related to how large a proportion of the portfolio a particular commitment represents. If there are individual guarantees and loans that represent a significant proportion of the portfolio, a small number of defaults can mean large losses. For such cases no co-variances are needed, as a small number of defaults can occur randomly at the same point in time due to unrelated causes. The analysis of name concentrations differs then from the analysis of other risk factors with the common characteristic of being dependent on co-variances.

Close connections
If guarantee holders or borrowers have close connections with each other, financial or legal, there is a risk that a default by one guarantee holder or borrower will lead to the other also failing to meet its undertaking. Examples of such connections are when a number of companies belong to the same corporate group or are part of the same supplier chain. In this way, close connections lead to direct co-variances that can lead to clusters of losses.

Concentrations in a particular geographical region or industry
Indirect co-variances can arise in different sectors – for example, geographical regions or industries. This occurs because the creditworthiness of guarantee holders and borrowers in one sector is affected by the same underlying factors, such as demand for a product that is manufactured by another company in the same sector. A negative shock, such as a drop in demand, can give rise to indirect co-variance between companies within a sector and lead to clusters of losses.

Geographical concentrations imply that guarantee holders and borrowers in the same geographical region are affected simultaneously by negative economic changes, such as an economic downturn or changes in currencies and interest rates. Negative shocks can then lead to indirect co-variances that give rise to clusters of losses.

'Industry concentration' refers to low diversification as regards guarantee holders' and borrowers' industry affiliation. This can occur because either the portfolio is exposed to only a few industries or some individual industries represent a significant proportion of the portfolio.

Changes in the general financial environment
The risk factors described so far are related to the occurrence of concentrations in a portfolio. But even in a perfectly diversified portfolio (without significant concentrations) there is a risk of loss clustering due to indirect co-variances. An economic shock such as an economic downturn affecting several industries and geographical regions can give rise to indirect co-variances between different sectors.

Credit risks in the regular portfolio

The Debt Office considers the risk of major losses in the regular portfolio to be low. This is because the larger guarantees and loans generally have strong creditworthiness and the portfolio is relatively well diversified. The concentrations that nevertheless do exist in the portfolio represent a low risk of major losses. For co-variances between guarantee holders and borrowers in different sectors to cause major losses, a deep financial crisis with global spread is required.

The regular portfolio

This section analyses the risk of major credit losses in the regular portfolio. In accordance with previous delimitations, as of 31 December 2017 the portfolio amounted to SEK 569 billion, as compared with SEK 589 billion at the preceding year-end. It is divided into slightly more than 3,000 guarantees and approximately 1.5 million loans, and contains:

- guarantees and loans managed in accordance with the central government guarantee and lending framework (see Appendix 1)
- student loans issued under the student finance system
- callable capital commitments to various international financial institutions of which Sweden is a member.

An in-depth account of the amounts dealt with in the risk analysis is provided in Appendix 3. Over and above this risk analysis, the Debt Office has carried out quantitative calculations with the help of a portfolio model explained in detail in Appendix 2 of the risk report for the preceding year.[7] The results of this year's calculations do not differ significantly from the results of the preceding year and are considered to be in line with the conclusions presented in the risk analysis.

The structure of the section follows the analytical framework. First, based on identified risk factors the risk of major losses from existing concentrations in the portfolio is analysed. This is followed by an analysis of the risk of major losses resulting from changes in the general financial environment.

Despite concentrations, low risk of major losses

The regular portfolio contains a number of substantial concentrations: one industry concentration, on the telecom sector, one geographical concentration, on Sweden, which consists mainly of student loans, and a number of sizeable name concentrations. The Debt Office considers the risk that major losses will arise among the concentrations identified to be low. Other than these concentrations, the portfolio is well diversified.

[7] *Central government guarantees and lending – a risk analysis 2017 (in Swedish only)*

Guarantees and loans in the regular portfolio

Tables 3 to 7 show the total size of central government's guarantees and loans in the regular portfolio as of 31 December 2016 and 2017 respectively, in accordance with the delimitations made. The regular portfolio amounted at year-end 2017 to SEK 569 billion, compared with SEK 589 billion in the preceding year. The amounts for certain guarantees refer to the maximum lending that the guarantees can cover, even in those cases in which the loans have not yet been disbursed.

Table 3. Housing guarantees

SEK million	2016-12-31	2017-12-31
Housing credit guarantees	1 985	2 786
Acquisition guarantees	0.1	0
Total	1 985.1	2 786

The Swedish Board of Housing, Construction and Planning issues, administrates and reports on central government housing guarantees.

Table 4. Export guarantees

SEK million	2016-12-31	2017-12-31
Export credit guarantees	192 492	181 485[1]

[1]For 2017 EKN changed its accounting principles for total guarantee undertakings, compared with 2016. For 2017, deductions were made for amounts that recently fell due from non-problematic cases.
EKN provides government export guarantees to promote Swedish export and Swedish companies' internationalization.

Table 5. Guarantee and credit stock

SEK million	2016-12-31	2017-12-31
U-credit guarantees	1 081	893
Independent guarantees	3 882	4 011
Total	4 963	4 904

Within the framework of Swedish foreign aid and development cooperation there are several issued guarantees and loans that are managed by Sida.

Table 6. Student loans

SEK million	2016-12-31	2017-12-31
Student loans	209 793	215 292

A large part of the regular portfolio consists of student loans that are granted and managed by CSN.

Other

Central government also issues guarantees and loans pertaining to infrastructure projects, undertakings linked to central government's role as owner of various companies, membership in international financial institutions, and research and development

Table 7. Other guarantees and loans managed by the Debt Office and the Government Offices and that are part of the regular portfolio

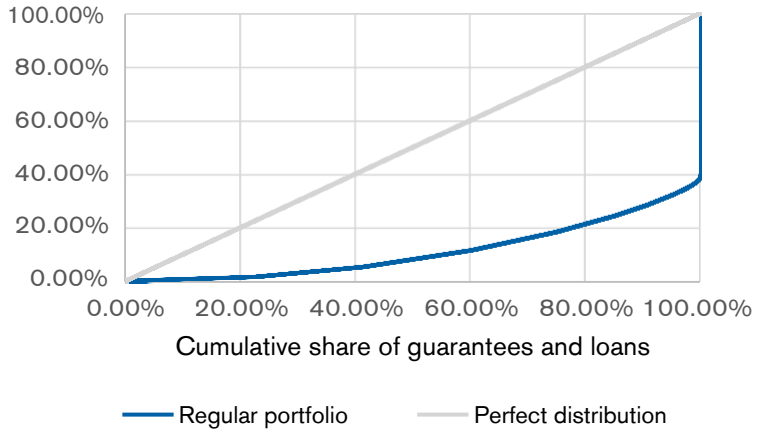
SEK million	2016-12-31	2017-12-31
Credit guarantees within infrastructure	18 578	17 309
International undertakings	5 808	3 556
Basic fund obligations	405	405
Callable capital	134 138	133 457
Pension guarantees	8 514	8 376
Other credit guarantees	10	9
Lending to other governments	5 749	0
Lending within infrastructure	6 511	957[1]
Lending to R&D	163	116
Other lending	19	17
Total	179 895	164 201

[1]As of the current-year report, Svensk–Danska Broförbindelsen SVEDAB AB is no longer included in the regu portfolio as it is now covered by the capital adequacy guarantee extended by the National Transport Administr see Appendix 2.

Name concentrations – good creditworthiness in individual large guarantees and loans

The regular portfolio consists of a large number of guarantees and loans, most of which are student loans. These make up 99.8 percent of the total number of guarantees and loans but only 38 percent of the total amount. Over and above that, there are a few guarantees and loans that individually account for a significant proportion, in terms of their amount, of the portfolio – so-called name concentrations. The occurrence of name concentrations in a portfolio with a large number of guarantees and loans can be illustrated with the help of a Lorenz curve – see Chart 1.

Chart 1. Lorenz curve that describes the amount distribution of the regular portfolio



Not included here is the deposit insurance, which is analysed separately in the section 'Credit risks in the deposit insurance'. Source: Data from EKN, Sida, CSN, the National Board of Housing, Building and Planning, and the Debt Office, as of 31 December 2017.

The straight line in the chart represents a portfolio in which all guarantees and loans are equally large. In such a portfolio, every commitment's share of the number of guarantees and loans in the portfolio is exactly the same as is its share of the total amount of the portfolio. The more a portfolio deviates from the straight line, the more uneven is the distribution of amounts in the portfolio. Chart 1 shows that the distribution of the regular portfolio is strikingly uneven.

Individual large exposures

The 15 largest exposures are shown in Table 8. These exposures account for 43.2 percent of the total portfolio, compared with the preceding year's report, in which the 15 largest exposures accounted for 41.1 percent of the total portfolio. The table shows there is a significant difference between the two largest guarantees and loans and the others. Only the two largest would be capable of independently causing large losses if they were fulfilled in their entirety.

To provide a fair picture, the amounts of guarantees or loans issued to the same counterparty have been combined. That is because if one guarantee holder or borrower runs into problems in fulfilling its undertakings, it will usually default on several of its guarantees or loans simultaneously.

Credit risk in individual large exposures

The Debt Office has two criteria on which to assess the extent to which existing name concentrations represent a risk of major losses. The first is the creditworthiness of the individual guarantee holders and the borrowers, expressed as a rating. The other is assessments of recovery in the event of default for the individual loans and guarantees. In most cases, the Debt Office obtains assessments of creditworthiness and recovery given default from the authority that has issued the guarantee or the loan, or from the three major international rating institutions, Standard & Poor's (S&P), Moody's Investors Service (Moody's) and Fitch Ratings (Fitch).

Table 9 shows the creditworthiness for the name concentrations shown in Table 8 with the exception of the callable capital, which is analysed separately in the next subsection. As shown in the table, the credit risk for most of the individual large exposures is low to moderate.

Table 8. The size of the 15 largest guarantees and loans in the regular portfolio

	Amount (SEK billion)	Share
Callable capital	64.7	11.4
Credit guarantee[1]	53.2	9.4
Callable capital	19.5	3.4
Callable capital	18.6	3.3
Credit guarantee[2]	17.3	3.0
Credit guarantee	12.0	2.1
Callable capital	11.1	2.0
Credit guarantee	8.8	1.5
Credit guarantee	7.8	1.4
Credit guarantee	6.7	1.2
Credit guarantee	6.3	1.1
Credit guarantee	6.1	1.1
Callable capital	5.3	0.9
Callable capital	4.4	0.8
Callable capital	4.1	0.7
Total	245.9	43.2

[1] The exposure is shown here in accordance with ÅRS to the maximum guaranteed amount during the term, which extends to 2039; however, the exposure during the medium-term horizon is significantly lower and amounts that could be fulfilled and could affect cash flow over the coming five years account for only approximately 4 percent of the reported amount.
[2] The Swedish government guarantees all of the loans of the Öresundsbro Konsortiet in collaboration with the Danish government. That said it is not given whether the extent of the Swedish government's undertaking is to be utilized in its entirety or as 50% of outstanding amounts. In the table, a strict formal assessment has been made; therefore, the entire amount is reported. This also accords with the reporting of this undertaking in ÅRS.

Excepted from this is the deposit insurance, which is analysed separately. Source: Data from EKN, Sida, CSN, the National Board of Housing, Building and Planning, and the Debt Office, as of 31 December 2017.

Table 9. Creditworthiness assessments for individual large credit guarantees and loans, SEK billion

	High expected recovery (≥ 60%)	Normal expected recovery (25 – 60%)	Low expected recovery (≤ 25%)
Low to medium credit risk (AAA/Aaa – BBB-/Baa3)[1]	24.0 (6.8)[3]	13.8 (51.2)[4]	5.0 (-)
Significant to high credit risk (BB+/Ba1 – C/C)[2]	6.3 (-)	53.2 (60.7)	- (-)

[1] So-called investment grade rating.
[2] So-called speculative grade rating.
[3] The difference from previous years is because the Öresundsbro Konsortiet was previously placed in the category of normal expected recovery. 4The difference from previous years is due to the guarantee to the Öresundsbro Konsortiet's having been transferred to high expected recovery, the loan to Ireland having been repaid and the lending to Svedab not being included in the regular portfolio but rather reported as a capital adequacy guarantee as of 31 December 2017.

As of 31 December 2017. Prior-year information in parentheses. Source: Data from EKN and the Debt Office.

A few major exposures, however, have a higher credit risk. The largest, reported as SEK 53.2 billion in ÅRS, concerns a guarantee holder with a creditworthiness corresponding to BB or Ba2 according to the rating institutions. This indicates that the guarantee entails a somewhat higher probability of major losses.

It is, however, only a small proportion of the outstanding amount of the guarantee in ÅRS that will fall due within the medium-term horizon of the analysis.[8] Therefore, this guarantee does not change the assessment that the risk of major losses due to name concentrations is low. At a pace with the increase in the exposure under the guarantee, however, this assessment can change, unless the rating of the guarantee holder or the expected recovery improves.

In 2017, a few export credit guarantees for significant amounts were signed. These new guarantee commitments are of such a size that they may also represent large exposures in the regular portfolio during the horizon of the analysis. One of the guarantee commitments is the largest commitment that EKN has made involving a private-sector company as the guarantee holder. The counterparty currently continues to represent a name concentration in the portfolio; however, at year-end 2017 its new business transactions had not yet given rise to any exposure. Nor is it possible at December 2017 to determine how large a proportion of the guarantee commitment will be utilized.

Credit risk in the callable capital commitments that individually represent large exposures

Sweden is a member of a number of international financial institutions that through their lending activities contribute to the goals on which the member countries have agreed. Membership can be equated with share ownership, since each member country contributes a portion of the institutions' own capital. The own capital consists of both paid-in capital from the member countries and a callable capital amount. The callable capital entitles the institutions to additional capital infusions from the member countries, up to the guaranteed amount.

The size of Sweden's callable capital to international financial institutions is shown in Table 10.

Table 10. Sweden's membership in international financial institutions, SEK billion

	Callable capital
The European Investment Bank	64.7
The Nordic Investment Bank	19.5
The World Bank Group	18.6
The African Development Bank	11.2
The European Development Bank	5.3
The Inter-American Development Bank	4.4
The Asian Bank of Infrastructure Investments	4.1
The Asian Development Bank	4.0
The Development Bank of the European Council	1.2
Eurofima	0.4
Total	133.5

Source: Data as of 31 December 2017 from the Government Offices and the National Transport Administration.

[8] *The amount in ÅRS refers to the full term of the guarantee.*

To date, a callable capital commitment has never been fulfilled in the formal sense. The international financial institutions' capital has instead been gradually increased as the member countries have paid in small amounts and adjusted the size of the callable capital amounts. The Debt Office considers that the callable capital commitments would only be fulfilled if an institution were to find itself in an extraordinary situation involving an acute requirement of a capital infusion due to financial difficulties. In such a situation, the member countries could also opt to contribute capital without fulfilment of the callable capital. No member country, however, has committed to any such capital contributions; instead, it would take place through new agreements between the member countries and the institutions. The risk analysis only deals with the capital contributions to which central government has committed itself explicitly and that could potentially entail losses.

The Debt Office considers the probability of fulfilments of the callable capital commitments occurring, leading to major losses for central government, to be low. This assessment is based primarily on the fact that the institutions have a high underlying creditworthiness, which is attributable to their role as a prioritized creditor.[9] The underlying creditworthiness concerns, unlike the rating, the institutions' creditworthiness given that they have not had access to extraordinary support from the member countries. Table 11 shows that S&P's assessments of the various institutions' underlying creditworthiness lie within the interval aa to aaa. The high underlying creditworthiness is also based on the fact that the member countries have a history of contributing capital, when required, to expand the institution's lending. The member countries are obligated, however, to make such capital contributions and they also involve small amounts that are paid in under normal circumstances. Therefore, the good creditworthiness of the institutions indicates that the probability of their encountering an extraordinary situation in which they would be required to contribute capital, for example, in fulfilment of the callable capital commitments, is low.

Table 11. Creditworthiness of international financial institutions of which Sweden was a member as of 31 December 2017

	Underlying creditworthiness	Rating
The European Investment Bank	aa+	AAA
The Nordic Investment Bank	aaa	AAA
The World Bank Group	aaa	AAA
The African Development Bank	aa+	AAA
The Inter-American Development Bank	aa+	AAA
The European Development Bank	aaa	AAA
The Development Bank of the European Council	aa	AA+
The Asian Bank of Infrastructure Investments	aaa	AAA
The Asian Development Bank	aaa	AAA
Eurofima	aa	AA+

Based on S&P's rating methodology. Standard & Poor's (2012). Multilateral Lending Institutions and Other Supranational Institutions Ratings Methodology.

[9] *The strong underlying creditworthiness is also attributable to the fact that distributions are as a rule not made. NIB, however, normally distributes an annual dividend of 25% of profit to the member countries. In most of the other institutions, however, distributions have never occurred, nor is it expected that they will occur in future.*

Limited occurrence of close connections – low risk of problems spreading

The guarantee holders and borrowers in the regular portfolio have certain, albeit limited, connections to each other that could give rise to default contagion. There are only a few legal connections between guarantee holders and borrowers through ownership interests and group affiliation. Therefore, the Debt Office considers the risk that close connections will give rise to major losses in the regular portfolio to be low.

Industry concentrations – exposure to telecom operators

Guarantee holders and borrowers in the regular portfolio belong to several industries, as shown in Table 12. The most prominent industry concentration is on telecom. This amounts to SEK 52.4 billion, or 9.2 percent of the regular portfolio, and consists mainly of export credit guarantees linked to the sale of telecom equipment, for which central government's credit risk is on the purchasers (telecom operators).

The industry concentration's share of the regular portfolio was largely unchanged compared with preceding years. The exposure to telecom operators, however, is expected to increase during the analysis horizon as a result of a couple of new guarantee commitments representing significant amounts that were signed in 2017 but that have not yet given rise to any exposure. As explained in the section on name concentrations these guarantees are of such size that they could also potentially entail large exposures in the regular portfolio.

Table 12 shows that it is only a small share of the portfolio, 25.3 percent, that can be categorized by industry affiliation. The remainder of the portfolio consists primarily of student loans (SEK 215 billion), callable capital (SEK 134 billion) and guarantees and loans for which the credit risk is directly against another government (SEK 54 billion).

Table 12. Exposure to companies in the regular portfolio by industry, 31 December 2017

	SEK billion	Share, %[1]
Telecommunications	52.4	9.2 (11.0)
Transport	27.1	4.8 (5.2)
Industrial goods and metals	16.5	2.9 (2.3)
Power supply	10.7	1.9 (2.0)
Properties	10.5	1.8 (1.9)
Energy and natural resources	10.0	1.8 (0.9)
Finance[2]	9.9	1.7 (1.8)
Wood and building products	6.2	1.1 (1.1)
Daily consumer goods and services	0.4	0.1 (0.1)
Total	143.7	25.3 (26.4)

[1] Prior-year information in parentheses.
[2] With the exception of the deposit insurance (SEK 1,689 billion as of 31 December 2016), which is analysed separately (see the section 'Credit risks in the deposit insurance').

Based on the Global Industry Classification Standard (GICS) developed by Morgan Stanley Capital International (MSCI) and S&P. Data from EKN, Sida, CSN, the National Board of Housing, Building and Planning, the Debt Office and the Government Offices.

Concentration of telecom operators

The Debt Office considers the risk that the industry concentration on telecom operators will give rise to major losses to be low. The industry is stable, with a low probability of negative shocks that could entail clusters of losses.

Central government's exposure to telecom operators consists of export credit guarantees. These guarantees are extended to export transactions particularly to riskier countries. Many of the telecom operators whose loans are guaranteed by central government have a creditworthiness that is lower than the industry average, according to EKN's assessment. This implies that they have lower resistance to negative shocks in the industry, such as reduced demand for telecom services. The lower creditworthiness is, however, mainly attributable to the high country risk in the countries in which the telecom operators operate. The companies have generally strong positions in their domestic markets, which raises the assessment of their ability to withstand negative shocks.

As a result of the signing in 2017 of a couple of new guarantee commitments of significant amounts, the portfolio's geographical distribution during the analysis horizon will likely shift, in terms of volume, toward the high-income countries of the OECD, which are mature markets with low country risk. As a result of this, the average creditworthiness in the industry concentration of telecom operators will improve. Some of the telecom portfolio, however, is expected to continue to have lower creditworthiness due to the high country risk in the current telecom portfolio.

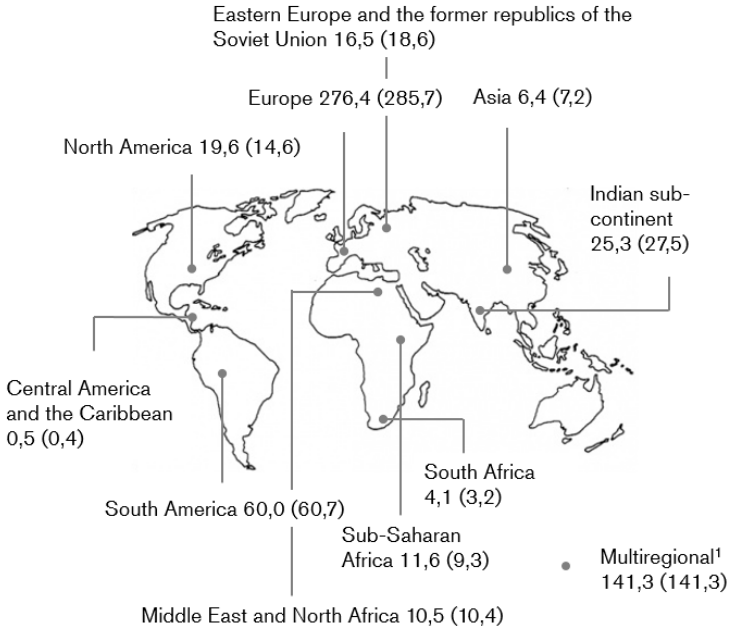
Moreover, the Debt Office considers the likelihood that extended guarantees will be fulfilled to be lower than what the guarantee holders' creditworthiness would indicate. The reason for this is mainly that the conditions of the guarantees, such as risk sharing, provide incentives for the lenders to avoid a fulfilment.

The Debt Office considers that central government's opportunities for recovery after a fulfilment are in most cases normal, corresponding to a recovery rate of about 50 percent of the fulfilled amount.

Geographical concentrations – large proportion in Sweden

The guarantees and loans in the regular portfolio are distributed over 180 countries, which is attributable primarily to the export credit guarantees issued by EKN and central government's undertakings in respect of international financial institutions. The geographical spread reduces, to some degree, the risk of major losses. Figure 2 shows the portfolio's composition in terms of geographical regions, 2016 figures being shown in parentheses.

Figure 2. Regular portfolio distribution by geographical region as of 31 December 2017, SEK billion



[1]The multiregional category includes callable capital commitments to international financial institutions. The common denominator of the commitments in this category is that they contribute to the geographical spread of the portfolio.

The categories correspond to those employed by Moody's in their analyses of geographical concentrations in structured products. Moody's (2015). Moody's Approach to Rating Corporate Synthetic Collateralized Debt Obligations. Exhibit 9: Classification of Countries by Contagion Region. Figures in parentheses refer to 2016. Source: Data from EKN, Sida, CSN, the National Board of Housing, Building and Planning, the Debt Office and the Government Offices.

High geographical concentration on Sweden

The geographical distribution of the portfolio in Figure 2 is supplemented in Table 13 with information concerning the ten largest exposures to individual countries. The table also shows how external assessors view the country risk of these countries. The country risk looks at the degree of economic and political stability and can be considered an indicator of the risk of negative financial shocks.[10]

Table 13 shows a clear geographical concentration on Sweden, with slightly over 40 percent of the portfolio referring to guarantees and lending in the country.

[10] The country risk of a particular country must not be confused with a government's creditworthiness. These two measures of risk focus mainly on the same risk factors but there are also key differences between them.

Table 13. The ten largest country exposures in the regular portfolio as of 31 December 2017, SEK billion

	Country risk class[1]	Country risk rating[2]	SEK billion	Share, %
Sweden	1	Aaa/Aaa	229.7	40.4
Brazil	4	A3/Ba1	56.4	9.9
USA	1	Aaa/Aaa	19.2	3.2
Spain	3	Aa2/Aa2	14.7	2.6
India	4	A1/Baa2	12.2	2.2
Pakistan	6	Ba3/B2	11.8	2.1
Russia	5	Baa3/Ba1	10.4	1.8
Denmark	1	Aaa/Aaa	9.7	1.7
France	1	Aaa/Aaa	6.2	1.1
Saudi Arabia	2	A1/A1	4.5	0.8
South Africa	4	A2/A3	3.9	0.7
Total			378.7	66.5

[1] Refers to S&P's country risk classification, in which category 1 represents the lowest risk and category 6 the highest risk. S&P (2016). List of Country Risk Assessments.
[2] Refers to Moody's so-called 'country ceiling' for debt instruments in local and foreign currencies, respectively. Moody's (2017). Sovereign and Supranational Rating List.

Low risk of major losses in Swedish student loans

The Debt Office considers the risk of major losses resulting from the concentration on Sweden to be low. The concentration consists mainly – that is, 86.8 percent corresponding to SEK 200 billion – of student loans to borrowers residing in Sweden. Accordingly, it concerns a large number of loans of relatively small amounts; therefore, it would take a high degree of co-variance among the borrowers for major losses to arise.

Student loans have been issued under two distinct systems, but the two loan types have similar characteristics, such as long terms of maturity (on average 25 years or more) and 'soft' conditions involving the option to reduce the borrower's annual payments during periods of lower income. The student loans can therefore be compared with conditional loans for which the repayment to central government depends on the borrower's future income growth.

The Debt Office considers that it would take a deep financial crisis in Sweden, with sharply increased unemployment resulting in many borrowers simultaneously experiencing loss of income, before clusters of losses in the portfolio relating to student loans would occur. The fact that such crises are rather unlikely is a key factor in the risk assessment. The Debt Office considers that there are several factors indicating generally good creditworthiness and thus resilience among the borrowers even given a deep crisis in Sweden's economy.[11] The borrowers' relatively high level of education reduces the risk of unemployment, and the existence of unemployment insurance and other insurance systems dampens the effect of unemployment on

[11] *There is currently a lack of essential information on borrowers' creditworthiness, such as total debt (including mortgages, unsecured personal loans and credit card debt), employment form and payment behaviour. Given these limitations, the analysis of unexpected losses is incomplete and simplified.*

borrowers' incomes. A key insight that is also fundamental to the risk assessment is that the degree of co-variance in private individuals' repayment ability declines with increasing creditworthiness.[12]

The reduced rate of membership in the unemployment insurance scheme, however, could imply that the drop in income would be greater.[13] A further factor that could affect the borrowers' repayment ability negatively in a financial crisis is if many people are highly indebted. This applies particularly if an economic downturn were to coincide with rising interest rates. In such a situation there could be a risk of an increasing proportion of missed payments.

It is difficult to quantify the likelihood of clusters of losses in the portfolio as regards student loans because there is no information on the likelihood of default and recovery rate given default by student loan holders. Nor is there any information on the degree of co-variance among borrowers. As mentioned above, this is partly related to the fact that the individual borrowers' creditworthiness is not known.

One way of estimating the proportion of borrowers who would need to run into payment problems before major losses occurred is to look at the differences between amounts charged and amounts paid as regards the student loans. CSN estimates that amortizations and interest payments will amount to approx. SEK 12 billion per year over the next three years.[14] The repayment rate in 2015-2017 amounted to 94 percent for borrowers residing in Sweden.[15] Given CSN's estimate, it would require a significant reduction of the repayment rate for the student loans, down to an average level of approximately 50 percent over the medium-term horizon, for the difference between charged amounts and paid amounts to contribute to major losses.

Low risk of major losses resulting from an economic downturn

The Debt Office considers the risk that significant co-variances resulting from an economic downturn would lead to major losses to be low. 'Significant co-variances' refers to co-variances over and above those identified earlier in the report in the analysis of the different concentrations in the portfolio. It would probably take a deep global economic crisis for major losses to occur.

General changes in the financial environment is a background factor to which few or no guarantee holders or borrowers are immune. This means an economic downturn could lead to major losses in the regular portfolio that are not necessarily attributable to a particular part or concentration in the portfolio. How much creditworthiness would be affected by an economic downturn varies for different categories of guarantee holders or borrowers. Whether the effect is sufficiently strong to lead to a default also depends to a great extent on the commitment's creditworthiness before the economic downturn.

A significant proportion of the portfolio consists of guarantees and loans with strong creditworthiness (such as the callable capital obligations) – see Chart 2. At the same time there is a not insignificant proportion of guarantees and loans with low creditworthiness. It consists mainly of export credit guarantees and guarantee issuance as part of foreign aid, for which the weaker creditworthiness is due to the fact that the guarantee holders operate primarily in countries with

[12] *See, among others, Lee, Joseph et al. (2009): The Relationship Between Average Asset Correlation and Default Probability. Moody's KMV.*

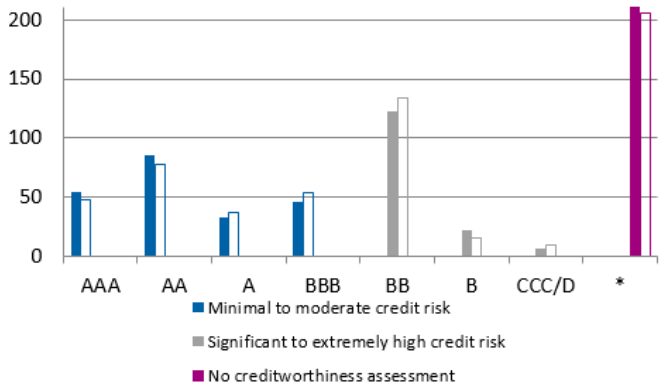
[13] *Statistics Sweden (2016) http://www.scb.se/ 14 February 2018. Inspektionen för arbetslöshetsförsäkringen (2016) http://www.iaf.se/Statistik/Statistikdatabasen/ 14 February 2018.*

[14] *CSN, Budgetunderlag 2018-2020, Utgiftsområde 15 – Studiestöd, February 2017.*

[15] *CSN, (2017) Annual Report*

risk levels considered significant or high. The bar representing the guarantees and loans that lack creditworthiness assessment consist almost exclusively of student loans.

Chart 2. Creditworthiness assessments as of 31 December 2017, SEK billion



The solid bars refer to 2017 data, whereas the hollow bars refer to 2016 data.
* The category for which there is no creditworthiness assessment concerns primarily student loans. The assessment of the guarantee holders' and borrowers' creditworthiness is based on estimates of the probability of default that are made in conjunction with the calculation of expected losses for the guarantee and lending authorities' decisions.

For portfolios containing loans to private individuals there is a negative correlation between creditworthiness and degree of co-variance, that depends on changes in the general economic environment. The larger the proportion of guarantees or loans to private individuals with weak creditworthiness, the greater the risk of co-variances that lead to clusters of losses. For the student loans, which make up a relatively large proportion of the portfolio, no assessment is made of individual borrowers' creditworthiness when the loans are granted, since only study-based criteria apply to the issuance of these loans. As indicated by the subsection on the geographical concentration on Sweden in the portfolio, however, an overall assessment of the creditworthiness of the student loan borrowers has been made. The conclusion is that generally their financial resilience is considered to be relatively strong.

For companies, the correlation between creditworthiness and co-variances that is due to changes in the general economic environment is not as clear. The companies' size must be taken into consideration, however, since larger companies in different geographical regions co-vary more than do small and medium-size companies. This is attributable to the fact that larger companies are affected to a greater extent by changes in the global economy, whereas small and medium-size companies have to a greater extent a local or regional focus. On the one hand a significant exposure to larger companies thus entails a high risk of co-variances in the event of a financial crises with large spread. On the other hand, larger companies often have stronger creditworthiness than do smaller companies, which entails a better ability to withstand negative shocks.

Given the composition of the portfolio, with a significant proportion of guarantees and loans to companies and households with generally good creditworthiness, and a limited portion of guarantees and loans to multinational companies, the Debt Office considers the risk of significant co-variances resulting from a financial crisis to be low.

Liquidity risk in the regular portfolio

The Debt Office considers the liquidity risks in the regular portfolio to be low. The pay-outs to which the undertakings in the portfolio could give rise are not so large that central government could not manage them within its regular liquidity management operations. Granted, central government could encounter higher borrowing costs, but such higher costs would be short-term only and connected to individual pay-outs.

Basic assumptions of the liquidity risk analysis

Guarantees and loan commitments entail a liquidity risk since it is not known in advance whether or when pay-outs connected to the undertakings will need to be made. If a government guarantee is fulfilled, or a loan commitment is utilized, funds are paid out and central government's debt increases.[16] The loan requirement is managed in the short term within the daily liquidity management and in the long-term through planned borrowing on the capital market.

The liquidity risk analysis begins with a comparison of the size of the pay-outs to which the portfolio can lead and the flexibility of central government's liquidity management. The purpose of the comparison is to answer the question of whether potential pay-outs can be managed within the liquidity management operations. The analysis then describes the potential additional cost to government borrowing stemming from guarantees and loan commitments. Finally, this is followed by an analysis of potential cost increases relating to pay-outs in foreign currency.

Potential pay-outs small in relation to preparedness

The larger the guarantee undertakings and loan commitments, the greater the risk that potential pay-outs could affect the borrowing requirement. Table 14 shows the ten largest undertakings in the regular portfolio.

Potential pay-outs may seem large; however, within central government liquidity management operations, deficits (borrowing requirements) of up to SEK 100 billion are funded over short periods. Granted, if several sizeable guarantees or loan commitments had to be fulfilled in the same short time period, even larger deficits than that could arise. However, the probability of such an outcome is low and the need for rapid pay-outs is in practice lower than reported amounts, due to the contractual terms concerning pay-outs.

Usually a certain period of time between fulfilment and pay-out

The risk that pay-outs linked to government guarantees and lending will lead to higher borrowing costs is affected by pay-out size, but also by how quickly and in what currency the pay-outs are to be made.

A review of the contractual terms that apply to the undertakings presented in Table 14 shows that the potential liquidity stress is low in the regular portfolio. Either circumstances are such that central government need not fulfil its undertaking entirely at all one time, or there is in practice a certain

[16] *It is a different situation, however, in most of the cases in which central government has extended guarantees in foreign currencies – primarily for the export guarantees from EKN, but also for guarantees administrated by Sida. For these cases, special reserves have been established in the form of investments in currency accounts in banks or in securities in foreign currencies. This implies that it is these dedicated reserves that will be drawn upon first in the event of a fulfilment.*

period when it can be assumed that central government can systematically plan the pay-outs that result from a fulfilment.

It is only in exceptional cases it may be necessary to rapidly fulfil the undertaking in its entirety. This applies primarily to issued undertakings of callable capital. For such undertakings there is no contractual payment period. In a few cases, however, it has been communicated that if necessary central government must pay out a capital contribution within one week, but that the time allowed will be adapted according to the size of the pay-out – that is, a larger amount implies the potential of time allowed for the pay-out, and vice versa.

Table 14. The ten largest guarantees and the loan frame in the regular portfolio as of 31 December 2017

	SEK billion
Loan frame	125.0
Callable capital	64.7
Credit guarantee	53.2
Callable capital	19.5
Callable capital	18.5
Credit guarantee[1]	17.3
Callable capital	11.2
Credit guarantee	12.0
Credit guarantee	8.8
Credit guarantee	7.8
Total	337.9

[1] The Swedish government and the Danish government jointly provide guarantees for all of the loans of Öresundsbro Konsortiet. That said, whether the Swedish government's undertaking is to be utilized in its entirety or up to 50 percent of outstanding amounts is not given. In the table, a strict formal assessment has been made; therefore, the entire amount is reported.

Source: Data from the Swedish Export Credits Guarantee Board (EKN), Sida, the Swedish Board of Student Finance (CSN), the National Board of Housing, Building and Planning, and the Debt Office.

Considerable flexibility in liquidity management

The liquidity management operations are designed to ensure that government payments are always on time. Central government's payment flows in Swedish kronor are grouped in a central Riksbanken account in which in-payments and out-payments are matched as far as possible. This means the liquidity management operations only handle the net of all government authorities' in- and out-payments. The days when the out-payments are greater than the in-payments, the Debt Office borrows to finance the deficit; when in-payments exceed out-payments, the surplus is invested.

The net can, from one day to another, range from a surplus (investment requirement) of up to SEK 80 billion to a deficit (borrowing requirement) of the same magnitude. During short period, the borrowing requirement can be as large as SEK 100 billion. In the words, the liquidity management is well adapted to handling extensive fluctuations in government payments.

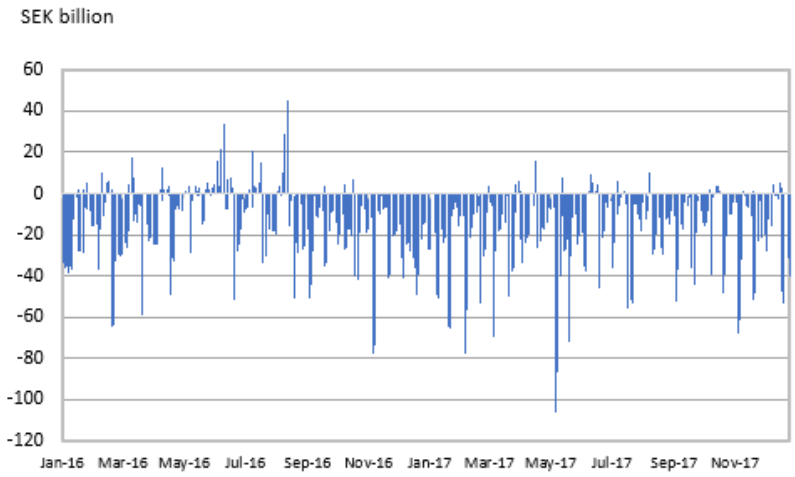
To ensure efficient long-term planning of liquidity management, the Debt Office makes forecasts of its daily borrowing or investing requirement. Forecast deviations resulting from unforeseen events tend to be limited to one to two billion kronor per day. Deviations of as much as SEK 10 to 20 billion,

however, can be handled on the overnight market, which is the shortest-term area of money market, involving borrowing and lending over night between banks and other financial actors.

Several instruments used

The Debt Office employs several instruments in its liquidity management operations. To handle the daily cash position, it uses overnight loans. Chart 3 shows variations in the daily flows handled on the overnight market.

Chart 3. Volumes in the deposit market



Source: Data from the Debt Office's business system in the debt management operations.

The Riksbank has a payment system in Swedish kronor (RIX) that makes it easier for market actors to make financial transfers to and from each other without credit or liquidity risks. The participants in RIX always have access to financing in Swedish kronor, providing they post securities as collateral.

RIX is a closed system, which means that if the Debt Office has a large short-term borrowing requirement there will be one or more counterparties in the bank system with a corresponding surplus to invest. Many of the participants in RIX also have the option of borrowing directly from the Riksbank overnight should the liquidity in the payment system be inadequate. This facility makes it possible to borrow large sums from counterparties in the system. The Debt Office, on the other hand, may not have deficits vis-à-vis the Riksbank over night; rather, it must always ensure that the closing balance of the government's central account is zero.

To finance deficits for periods of up to a few months ahead, Swedish treasury bills or commercial paper are used. Commercial paper provides access to the international money market, which is considerably larger than the Swedish market. Combining this borrowing with currency derivatives makes the procedure comparable to borrowing in Swedish kronor.

Potential strains only short-term and isolated

Unforeseen events that increase the borrowing requirement are initially handled as part of liquidity management. If it involves a sustained increase in the borrowing requirement, the Debt Office adapts its long-term borrowing accordingly. This means that loans in the liquidity management operations are gradually replaced with borrowings on the capital market. If, despite expectations, a large, unforeseen out-payment were to lead to a higher

borrowing cost, this cost would be limited to the particular pay-out and would soon decrease, in that borrowing on the capital market would replace the initial borrowing.

No risk of expensive currency exchanges

In conjunction with the payment of a guarantee or loan in foreign currency, government borrowing takes place in the same way as other borrowing. The exception is when the fulfilment is charged to the guarantee reserves in foreign currency that have been established outside central government.[17] If borrowing takes place in a currency other than the currency that is to be paid out, an exchange is carried out using derivatives on the currency market.

If there is a need to exchange large amounts on small currency markets, where liquidity is limited, there is a risk that the transaction will be more expensive than usual. At present, however, there are no exposures to small currencies among the portfolio's large undertakings.

[17] *EKN has in certain cases contracts in small currencies. However, a fulfilment is always conducted in the currency's conversion value in one of the currencies SEK, USD, EUF, CHF or JPY.*

Credit risks in the deposit insurance

The Debt Office considers the risk of major losses linked to the deposit insurance to be low to moderate. For the large banks and other institutions considered systemically important, the deposit insurance may need to contribute to maintain the depositors' protection in resolution. However, the institutions would have to suffer extremely extensive losses before such contributions would be required. If a non-systemically important institution were to fail, the deposit insurance would come into effect. The government would pay compensation directly to the depositors and would acquire a corresponding claim on the institution. For such fulfilments to lead to major losses, several non-systemically important institutions would have to fail in the same time period. The Debt Office considers the risk of that occurring to be low to moderate.

Undertaking for consumer protection and financial stability

The deposit insurance is a measure of consumer protection for deposits in accounts in banks, credit market companies and securities ('institutions').[18] The maximum compensation amount is SEK 950,000 per person and institution. Protecting account balances creates security for the depositors. This reduces the risk that many depositors will withdraw their funds at the same time, leading to so-called bank runs, which could threaten financial stability.

The deposit insurance is the single largest government guarantee in terms of its reported amount. On 31 December 2016, total guaranteed deposits amounted to SEK 1,689 billion, distributed among 107 institutions.[19]

Different function depending on type of crisis management

The purpose of the deposit insurance is the same in all situations, but it functions differently depending on whether a failing institution is placed in bankruptcy or placed in resolution.

If an institution with guaranteed deposits runs into problems leading to bankruptcy, or if the Swedish Financial Supervisory Authority (FI) decides that the guarantee should come into effect, a so-called direct fulfilment of the deposit insurance occurs.[20] The government then pays compensation to the institution's depositors. The deposit insurance then takes over the depositors' claim on the institution in bankruptcy.

[18] *Most institutions that receive deposits from the public are covered by the deposit insurance, pursuant to the Deposit Guarantee Act (1995:1571). There are exceptions, however, such as so-called deposit-taking companies.*

[19] *The sum of all guaranteed deposits will decrease if the announced relocation by Nordea of its head office to Finland in October 2018 comes to pass. The move would also mean that the Debt Office's responsibility as resolution and deposit insurance authority for Nordea would cease.*

[20] *Chapter 8 of the Deposit Guarantee Act (1995:1571) indicates that FSA decisions are based on the circumstance that a deposit that has come due for payment has not been repaid by the institution and that the inability to pay is due to the institution's financial situation and is not merely temporary.*

If a failing institution is considered to be systemically important[21] and is consequently managed through resolution, the government assumes the control (but not the ownership) of the institution to effect an orderly reconstruction or phasing-out of the institution.[22] The first hand solution is that the shareholders and lenders have their claims written down and/or converted into share capital based on a predetermined priority ranking – so-called bail-in.

Guaranteed deposits, however, are exempted from bail-in. Any losses or recapitalization requirements for which the depositors would have been responsible had they not be exempted are covered instead by the deposit insurance fund. This takes place through an injection on the asset side of the institution's balance sheet.

Based on these different modes of functioning, the risk analysis is divided into two parts:

- Direct fulfilments
- Deposit insurance contributions to resolution.

To make this division possible, the institutions must be sorted into different categories.

Different categories of institutions

The institutions affected by the analysis of major losses in the deposit insurance have been divided into four categories, given that the different modes of functioning of the deposit insurance should determine the structure of the analysis – see Table 15. The institutions expected to be subject to resolution are placed in categories 1 and 2. Institutions that instead are expected to be subject to direct fulfilment in the event of a default are placed in categories 3 and 4.[23] The categories are based on the Debt Office's decision as of December 2017 that nine institutions, which accept deposits, conduct operations that are critical to the financial system.[24]

[21] *'Systemically important' refers in this publication to an institution that in the estimation of the Debt Office conducts operations that were they to cease would probably lead to a serious disturbance in the financial system.*

[22] *Resolution is a reconstruction procedure for institutions that cannot be phased out through bankruptcy, because it would create serious disturbances in the financial system. The purpose of resolution is that to provide central government with an opportunity to maintain the institution's critical functions (accounts, payment transfer, capital supply, etc.) without the taxpayers having to bear the cost. As with bankruptcy, the intention is that shareholders and lenders will bear the costs of an institution's failure. The Debt Office is the so-called resolution authority and is responsible for both the preparation and the management of institutions in crisis.*

[23] *The categorization of institutions in this analysis is based on the Debt Office decision on resolution plans from December 2017. These decisions are based on an assessment of whether the individual institutions can be managed through bankruptcy/phasing-out or if resolution measures are necessary. Even if the plans are intended to provide guidance as to how the institution is to be managed, it is not possible to determine in advance the most appropriate form of management for every individual potential situation. For example, an institution in categories 1 or 2 could be considered non-systemically important on the occasion of the default and thus potentially subject to direct fulfilment instead of resolution. Conversely it could be deemed necessary to employ resolution for institutions in categories 3 and 4, for example, in a situation in which there was a more widely spread and general threat to financial stability. This circumstance does not significantly affect the conclusions of the analysis. Possibly central government's losses from the deposit insurance could on average be somewhat lower if more institutions than planned were managed through resolution. This is because the value destruction in the institution would probably be lower if an institution were managed through resolution compared with bankruptcy (direct fulfilment).*

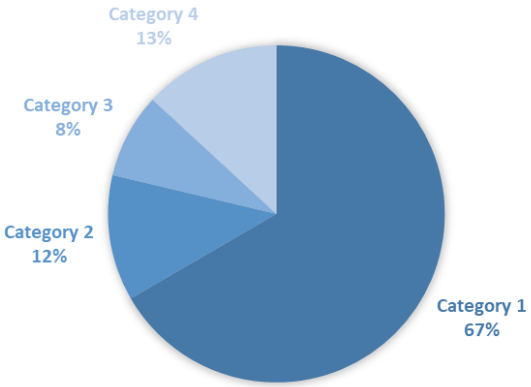
[24] *AB Svensk Exportkredit was also covered by the same decision by the Debt Office; however, this institution has no guaranteed deposits.*

Table 15. Categories of institutions according to the analysis in this report

Institution categories	Resolution	Bankruptcy (direct fulfilment)
Category 1: Large banks that in the event of a crisis cannot be managed by means of bankruptcy.	- Nordea - Skandinaviska Enskilda Banken - Svenska Handelsbanken - Swedbank	
Category 2: Other institutions which, the large banks alike, are not deemed suitable for management by means of bankruptcy.	- Landshypotek Bank - Länsförsäkringar Bank - SBAB - Skandiabanken - Sparbanken Skåne	
Category 3: Institutions that are considered potentially subject to direct fulfilment from the deposit insurance and that have guaranteed deposits of more than SEK 10 billion.		10 institutions.
Category 4: Institutions that are considered potentially subject to direct fulfilment of the deposit insurance and that have guaranteed deposits amounting to less than SEK 10 billion.		Approx. 90 institutions.

As indicated by Chart 4, the guaranteed deposits are unevenly distributed among the various institutions. The four large banks (category 1) account for 67 percent while the smallest institutions, in category 4 – approximately 90 institutions – combined, account for only 13 percent. If Nordea moves to Finland as announced, the distribution will change.

Chart 4. Total guaranteed deposits by category, as of 31 December 2016



Risk factors for the deposit insurance

The initial analytical framework describes different risk factors and that there are essentially two types of events that can cause major losses.

The first such event is that individual, or a small number of, sufficiently large institutions (name concentrations), fail independently of each other and thus cause, by their size alone, major losses. In the first two categories there are significant name concentrations. There are also smaller name concentrations in category 3 that include the ten institutions deemed potentially subject to direct fulfilments and that have guaranteed deposits in excess of SEK 10 billion.

The other such event is that the majority of institutions fail, together causing major losses. A high degree of default could almost exclusively be attributed to the defaults having been being in some way dependent on each other – that is, that they co-varied. Co-variances can be direct or indirect (see Figure 1).

A characteristic risk factor of the financial system is that the institutions are to varying degrees interlinked with each other. There is therefore a risk that confidence issues regarding one institution would spread to other institutions, particularly institutions that have a similar risk profile or are active in the same markets. A more direct connection is the occurrence of financial connections between certain institutions. One such connection is that the institutions have credit exposures to each other to varying degrees, in the form of both secured and unsecured lending.

Similar to the student loans in the regular portfolio, the deposit insurance also implies a geographical concentration on Sweden, even if many larger institutions have significant operations in other countries.

The fact that different groups of institutions have similar business models could also generate co-variances in default. If institutions have similar lending portfolios, the probability that large credit losses within a particular area of lending would lead to several institutions being affected increases.

Low to moderate risk of direct fulfilments causing major losses

The Debt Office considers the risk to be low to moderate that direct fulfilments of the deposit insurance will lead to major losses, that is, fulfilments in institutions that could presumably be placed in bankruptcy, without threat to financial stability (categories 3 and 4). Such losses would more likely be due to co-variances leading to the failure of several institutions rather than arise as a result of the independent defaulting of individual large institutions. The losses would also probably be limited to a few tens of billions of kronor.

Low risk of major losses resulting from name concentrations alone

The risk that the name concentrations in category 3 would lead to major losses depends mainly on the likelihood of default by these individual large institutions and the size of their guaranteed deposits.

The likelihood of default can be estimated by assessing an institution's creditworthiness – for example, by means of a credit rating. For the institutions that have a public rating this

has been used. For some of the institutions that do not have such a rating, the Debt Office has produced its own rating based on the international credit rating institutions' methods.[25]

Table 16. Creditworthiness of category 3 institutions

	Number of institutions	Probability of default for individual institutions[1] percent
Low to moderate credit risk[2]	3	0.4-1.5
Significant to high credit risk[3]	3	2.8-13.5
Creditworthiness assessment lacking	4	

[1] For a three- to five-year horizon.
[2] So-called investment grade.
[3] So-called speculative grade.

Information from Moody's Annual Default Study Corporate Default and Recovery Rates 1920-2016, Exhibit 35 – Average Cumulative Issuer-Weighted Global Default Rates by Alphanumeric Rating, 1983-2016.

Some of the institutions in category 3 have relatively weak creditworthiness. Table 16 indicates that the probability of such institutions failing is not insignificant. The guaranteed deposits in these institutions, on the other hand, are of limited size. Combined, the ten institutions have approximately SEK 135 billion in guaranteed deposits and the distribution among them is relatively even. Consequently, several institutions would have to fail for major losses to arise in the deposit insurance.
The likelihood of several mutually independent defaults arising over a limited time period is significantly lower than the likelihood of an individual default.

It should also be noted that the likelihood of a direct fulfilment of the deposit insurance is lower than the likelihood that an institution will fail. This is mainly because some of the problems that could lead to a default would not necessarily result in a direct fulfilment. One such example is if the Financial Supervisory Authority revoked an institution's authorisation (which would be classified as a default) and the institution was subsequently wound down through a private-sector solution in which another actor acquired all or parts of the institution (including its stock of deposits).[26]

The Debt Office considers the risk of large losses for these institutions to be low. Even if the institutions generally have a lower rating than the institutions in categories 1 and 2 (see Tables 16 and 17), it is a limited number of them that have relatively weak creditworthiness. The guaranteed volumes in the latter institutions are also limited to a few tens of billions of kronor altogether, which is why it would require the failure of several institutions.

Moderate risk of major losses due to co-varying defaults

The analysis of co-varying defaults includes both categories 3 and 4. Category 4 consists of approximately 90 fairly small institutions that together have guaranteed deposits totalling approximately SEK 220 billion.

[25] *Moody's (2016). Rating Methodology: Banks. S&P (2011). Banks. Rating Methodology and Assumptions*

[26] *An example of such a case is when in 2010 HQ Bank lost its authorisation and was acquired by Carnegie.*

As previously mentioned, the financial sector is characterized by a number of risk factors that can contribute to co-varying defaults. The most prominent of them, in categories 3 and 4, is, according to the Debt Office, that a number of institutions have similar business models. For example, several have a significant share of their lending to customer segments with relatively low creditworthiness. This implies a heightened risk of credit losses in the institutions since the creditworthiness of loan recipients in similar segments also tends to be affected by the same background factors, such as the general financial environment.

The conclusion is that a financial shock, such as a deep economic downturn leading to sharply increased credit losses in the financial sector, could cause major losses through direct pay-outs. This primarily applies to the institutions in category 3 that have lower creditworthiness. However, given the limited volumes involved the pay-outs would need to occur in more than one of these institutions before major losses would arise. This applies despite the fact the central government recovery opportunities in conjunction with a pay-out are limited, as is described in the following section.

Relatively small recovery potential with direct fulfilment

The government's loss in a direct fulfilment depends partly on the size of the total losses for the institution and partly on how much of the fulfilled amount can be recovered. The latter is determined by where guaranteed deposits are in terms of priority rights in relation to other forms of debt.

The Debt Office considers that the recovery of paid-out funds is usually low with direct fulfilments of the deposit insurance. The difference in the recovery between individual compensation cases can, however, be significant. These conclusions are based primarily on the following assessments:

- The total loss for an institution is higher in bankruptcy than in other types of default.[27] Problem institutions whose assets are of significant value have a relatively good chance of being acquired by other institutions before a fulfilment. This means that institutions that eventually become subject to direct fulfilment have on average worse recovery potential.
- For direct fulfilments the positive effect of the status of guaranteed deposits in terms of priority rights, is more limited than for the institutions assessed as being potentially subject to resolution. Given that these institutions generally have a capital structure that as a rule contains a smaller volume of liabilities that are written down before guarantee deposits (see sub-section below).

Regarding recoveries, it should be noted that if losses occur that require larger pay-outs than what is available in the fund, fees covering the deficit must be charged retroactively from the institutions that are connected to the deposit insurance (see box inset 'Deposit Insurance Fund'). This helps ensure that the entire loss will eventually be borne by the institutions.

Large share of deposits means worse recovery potential

In conjunction with implementation of the crisis management directive in Swedish law in 2016, guaranteed deposits were assigned a general priority right.[28] This implies a preferential claim on any distributions from a bankruptcy in relation to claims having no priority right (so-called non-prioritized creditors). The preferential order must also be respected in a resolution.

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[27] *'Default' refers to events such as delayed interest payments, delayed amortizations, consent to a limited-time respite for one or more payments, or the conversion of loans to shares or some other type of subordinated claim.*

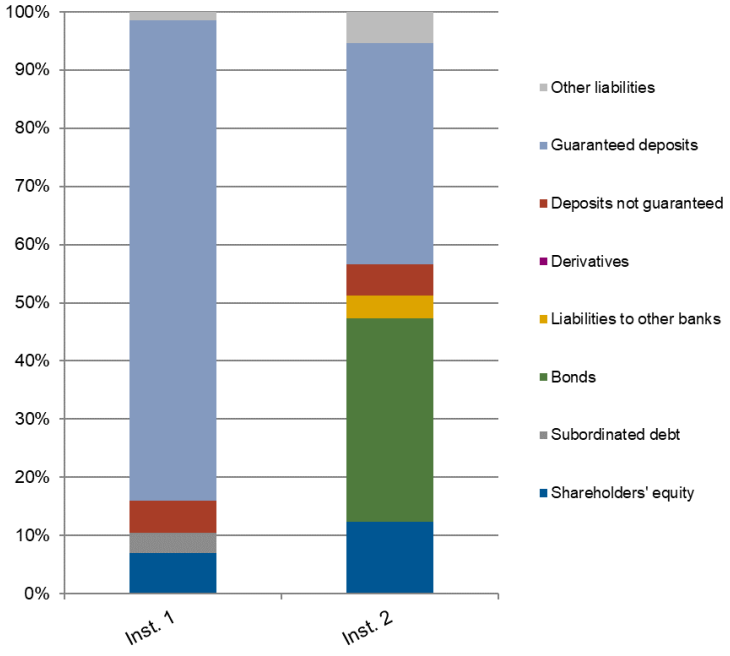
[28] *Section 13a of the Priority Rights Act (1970:979). The change went into effect on 1 February 2016.*

The prioritized position of guaranteed deposits entails a lower risk of losses for the deposit insurance both in the case of direct fulfilment and resolution. For institutions that finance their operations extensively via deposits from the public, with most of the said deposits being protected under the deposit insurance, the positive effect is, however, considered limited. This is attributable to the fact that for these institutions there is no large quantity of claims having priority rights lower than that of guaranteed deposits in bankruptcy.

The capital structure of the institutions that would presumably be subject to direct fulfilments (categories 3 and 4) is relatively well diversified. Some institutions finance their activities almost exclusively with deposits; others employ more diversified financing that also includes non-prioritized capital market borrowings. The share of deposits that are covered by the deposit insurance is on average 83 percent for this category. For several institutions, however, that share is over 90 percent.[29]

Chart 5 illustrates the two institutions in category 3 that constitute the extremes as regards capital structure. Institution 1 is the one that finances its activities to the largest extent through deposits, and institution 2 is the one that has the largest share of non-prioritized capital market borrowings. The capital structure is shown on the basis of the order of priority rights that applies in a bankruptcy.

Chart 5. The balance sheet for two types of institutions considered potentially subject to direct fulfilment, 31 December 2016



At the same time, it must be stressed that an institution's capital structure can change if problems arise, which would lead to an increased risk of losses under the deposit insurance.

[29] *Certain types of debt have the same priority rights. These include non-prioritized debt such as short-term capital market borrowing, inter-bank borrowing, bond loans and derivatives.*

Such dynamic capital structure changes are explained in more detail in the next section, on the deposit insurance's contribution to resolution.

Low risk of major losses for the deposit insurance in resolution

In the assessment of the Debt Office, the risk of major losses resulting from potential deposit insurance contributions to resolution is low. The institutions with the largest deposits have good creditworthiness, making the likelihood of default and consequent resolution interventions low. If an intervention nevertheless were to be required, significant losses in the institutions would be required before the deposit insurance would have to contribute to resolution. If the deposit insurance would be required to contribute, the potential for recovering paid-out funds are in most cases relatively good.

The analysis encompasses the institutions that would presumably be subject to resolution if they were to fail. These include the four large banks (category 1) and five other deposit-taking institutions (category 2).

Probability of a resolution intervention

The probability of a resolution intervention is most appropriately assessed on the basis of the likelihood that an institution will fail, which in turn is based on the institution's underlying creditworthiness.[30]

Table 17 shows that the creditworthiness of the institutions in categories 1 and 2 is good. That means the likelihood of resolution interventions is low.

Table 17. The creditworthiness of institutions with guaranteed deposits that would presumably be subject to resolution were they to fail

	No. of institutions	Probability of default for individual institutions[1] percent
Low to moderate credit risk[2]	9	0.1-0.9
Significant to high credit risk[3]	-	-

[1] For a three- to five-year horizon.
[2] So-called investment grade rating.
[3] So-called speculative grade rating.
Moody's Annual Default Study Corporate Default and Recovery Rates 1920-2016, Exhibit 35 – Average Cumulative Issuer-Weighted Global Default Rates by Alphanumeric Rating, 1983-2016.

Likelihood of a deposit insurance contribution to resolution

The Debt Office assesses that it would require significant losses in the institutions for the deposit insurance to be required to contribute in resolution. This is because guaranteed deposits have a high rank in the capital structure given the general priority right. It is primarily the following two factors that affect the risk that the deposit insurance would have to contribute to resolution:

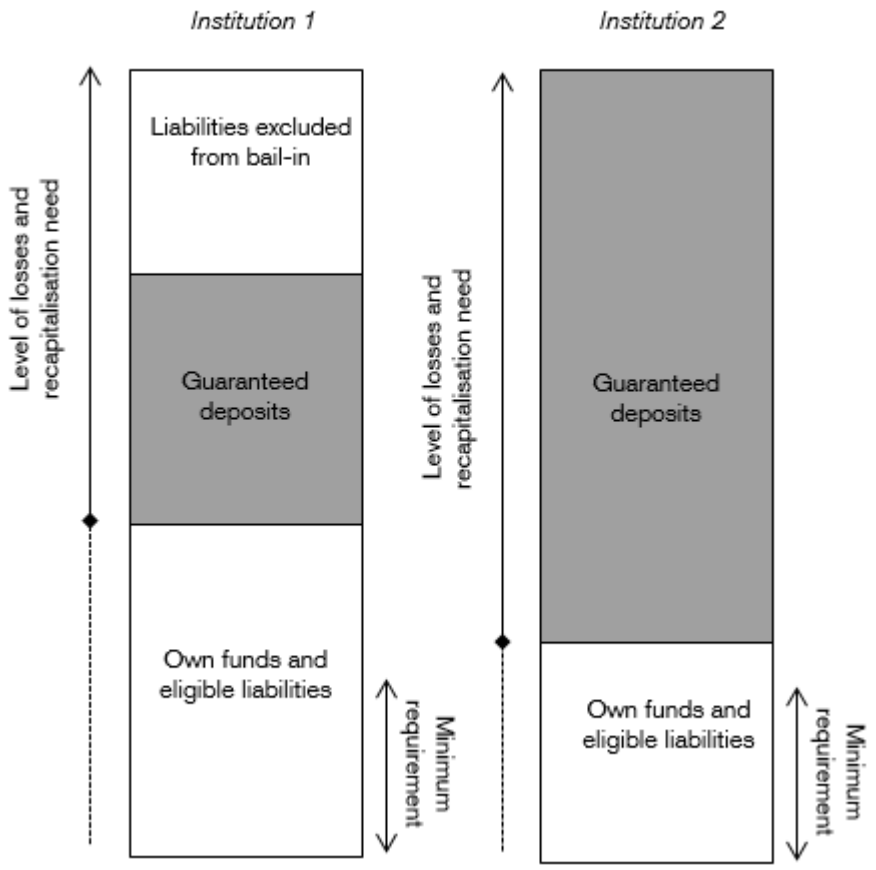
- The size of the losses: The value destruction, and consequent need for loss cover and recapitalization, are considered lower in resolution than in bankruptcy.

[30] *'Underlying creditworthiness' refers here to the credit rating referred to as the Baseline Credit Assessment from Moody's and the Stand-alone Credit Profile from S&P, respectively.*

- Capital structure: The amount of own capital and eligible liabilities having priority rights lower than that of guaranteed deposits.

Figure 3 describes the schematic level of the losses necessary for the deposit insurance to be required to contribute to resolution, depending on the capital structure of an institution. The likelihood is particularly low for institutions that have more own funds and eligible liabilities than the minimum requirement that is imposed.

Figure 3. Illustration of the losses necessary for the deposit insurance to be required to contributed to resolution



Deposit insurance fund

Losses from the deposit insurance are financed via funds from the deposit insurance fund. The institutions covered by the deposit insurance pay a regulated fee. The total fees for every year are to amount to a sum corresponding to 0.1 percent of the institutions' guaranteed deposits as of the most recent year-end.[31] After deduction of the Debt Office's administrative expenses for the guarantee, fees received are transferred to the deposit insurance fund. The fund, which is administrated by the Swedish Legal, Financial and Administrative Services Agency on commission from the Debt Office, amounted as of 31 December 2017 to SEK 39.8 billion.

Fund assets invested in government bonds

The deposit insurance fund's assets are invested in such a way as to obtain a favourable return over the long term, while simultaneously maintaining a strong payment preparedness and risk spread. In order to achieve this, the funds may be held in an account with the Debt Office or invested in nominal government bonds that can be quickly redeemed, should a compensation requirement arise. With the exception of situations requiring that the holding be utilized, the bonds are to be held to maturity. In addition, the deposit insurance fund may enter into repo transactions with a term of up to 90 days to increase the return on the fund.

Unlimited borrowing right

Should the fund assets prove insufficient to meet compensation requirements, the fund has an unlimited credit facility with the Debt Office, similar to the way the guarantee and lending reserves work for the regular portfolio.

Target level of the fund

The fund is to amount to at least 0.8 percent of the institutions' aggregate deposits, to the extent the deposits are covered by the guarantee.[32] Should the fund fall below two-thirds of the target level, it must be restored within six years via regular fees from the affiliated institutions. In addition, extra fees of up to 0.5 percent of the guaranteed deposits per year shall be charged if the retained fees are not sufficient to pay compensation (that is, if the fund balance has become negative and the borrowing right has thus been utilized).

Fund holdings as of 31 December 2017 corresponded to approximately 2.35 percent of the guaranteed deposits at 31 December 2016, and are thus nearly three times greater than the statutory target level.

According to the resolution regulations, the fund may also contribute to resolution. The contribution for a single institution, however, may never exceed 200 percent of the target level. This means the fund may contribute a maximum of 1.6 percent of guaranteed deposits in resolution. Currently that corresponds to SEK 27 billion, based on guaranteed deposits as of 31 December 2016.

The fact that the deposit insurance contribution in resolution is limited in its amount does not mean, however, that the depositors' protection is limited. Any additional funds (over and above SEK 27 billion per institution) necessary to carry out a resolution will be contributed first from the resolution reserve fund.[33]

Minimum Requirement of Own Funds and Eligible Liabilities (MREL)

To ensure that resolution can be implemented without requiring the use of central government funds, the Debt Office imposes special requirements on the institutions' capital structure, the so-called Minimum Requirement of Own Funds and Eligible Liabilities (MREL). The requirement means the institutions always have a certain amount of capital and liabilities with lower priority rights than guaranteed deposits.

The minimum requirements must reflect the loss-absorbing and recapitalization requirement that every company is considered to have in the event of a default. Therefore, the requirement consists of two components: a loss-absorbing amount that in rough terms is to correspond to the company's capital requirement, and a recapitalization amount that is to correspond to the amount required to restore the capital to the requirement levels that will apply for the company after resolution.[34]

The Debt Office decided in December 2017 on the MREL requirements that would apply for the institutions. It follows from the Debt Office's method of establishing MREL that the minimum requirement must be met only with subordinated instruments (capital and subordinated debt) and must consist of a certain proportion of debt.[35]

The risk analysis is based on the assumption that the institutions have fully adapted to the requirements that follow from the Debt Office's resolution planning including the principle that liabilities that may be included in MREL must be subordinated.

Analysis of the capital structure of the large banks

Chart 6 shows the average capital structure of the large banks at year-end 2016. The share of

liabilities with lower priority rights than the deposit insurance amounts for the large banks to an average of slightly over 51 percent of total liabilities and own capital.[36]

Excluding certificates, inter-bank borrowing and derivatives (see section 'Dynamic capital structure changes'), the share of liabilities with lower priority rights than the deposit insurance amounts to slightly over 38 percent. Even taking into consideration the risk that the proportion of non-prioritized deposits may decrease, the proportion of liabilities with lower priority rights lower than guaranteed deposits is significant and exceeds the MREL requirement by an average of approximately 30 percentage points.

[31] *Section 12 of the Deposit Guarantee Act (1995:1571).*

[32] *Section 15a of the Deposit Guarantee Act (1995:1571).*

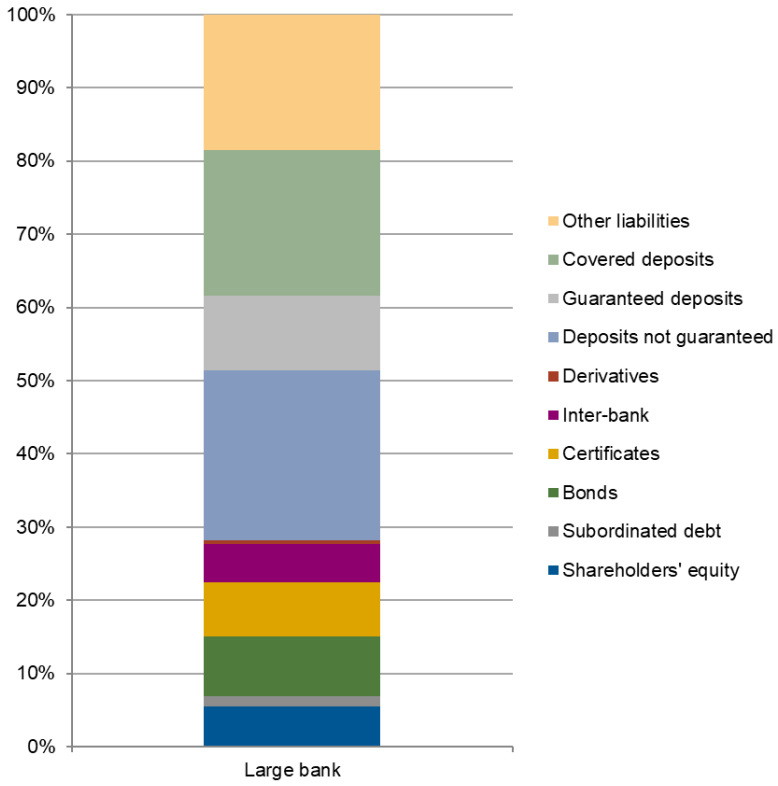
[33] *The resolution reserve fund is a special financing arrangement, separate from the deposit insurance fund, established to finance resolution measures taken by the Debt Office that are permitted under the Resolution Act.*

[34] *For certain institutions that are considered potentially subject to resolution there is a recapitalization requirement only for parts of the operations considered to contain critical functions, whereas it is deemed the remaining parts of the operations can be isolated and phased out through normal bankruptcy proceedings.*

[35] *See the Debt Office report (in Swedish),* Tillämpning av minimikravet på nedskrivningsbara skulder *('Application of the minimum requirement on eligible liabilities'), Ref. No.: 2016/425.*

[36] *There is at present no information on how large a proportion of the large banks' deposits consists of non-prioritized deposits from large companies and institutions.*

Chart 6. Average capital structure of the large banks (category 1), 31 December 2016



The large banks' capital structure will be changed as a result of the MREL requirements in such a way that a significant proportion of the large banks' existing loan financing will need to be replaced with subordinated debt instruments.[37]

Capital structure of the other systemically important institutions

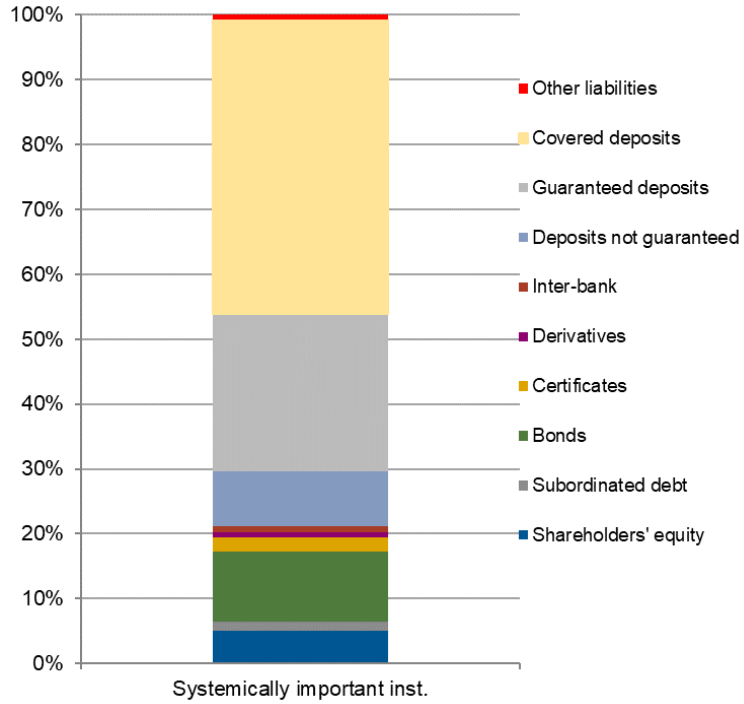
The average capital structure of institutions in category 2 is illustrated in Chart 7.[38] For this category the proportion of liabilities with lower priority rights than the deposit insurance amounts on average to 30 percent.[39] Excluding certificates, inter-bank borrowing and derivatives, the proportion is 26 percent.

[37] *According to calculations made by the Debt Office the four large banks must issue subordinated bond loans totalling approximately SEK 500 billion over the coming five years. The calculation is based on balance sheet data at 30 June 2016.*

[38] *There are other systemically important institutions that are included in category 2 but that do not conduct deposit-taking operations and are therefore excluded here.*

[39] *None of the institutions in category 2 have deposit-taking operations in markets other than Sweden, which is why the proportion of guaranteed deposits is known.*

Chart 7. Average capital structure of the other systemically important institutions (category 2) as of 31 December 2016



One conclusion is that these medium-size institutions' capital structure does not differ essentially from that of the large banks in terms of own capital and liabilities with lower priority rights than guaranteed deposits. This applies particularly if short-term borrowing and inter-bank borrowing are excluded, as these account for a comparatively larger proportion of the large banks' capital structure.[40]

However, the categories differ regarding their proportions of deposits versus secured financing. The proportion of deposits covered by the deposit insurance also varies: the average for the large banks was 40 percent guaranteed deposits, whereas the average proportion for category 2 was 73 percent. Both of these proportions are lower than the average of 83 percent for the institutions deemed potentially subject to direct fulfilment. For institutions in category 2 the likelihood that the deposit insurance will be required to intervene in resolution is therefore assessed to be low.

Dynamic capital structure changes

It is also necessary to clarify potential changes in the volume of liabilities that must bear losses before guaranteed deposits in resolution. The proportion of forms of debt having lower priority rights than guaranteed

[40] *The medium-size institutions obtain a significantly smaller proportion of their financing from short-term borrowing. The institution that has the highest proportion is Skandiabanken, with 3.5 percent of its financing from certificates, as compared with Handelsbanken, with 13.9 percent.*

deposits may decrease when the creditworthiness of an institution is lowered, for example.[41] The shorter the term to maturity and the lower the priority right of a debt form, the greater the risk of this occurring.[42]

There is a risk that maturing short-term borrowing in the form of certificate borrowing and unsecured inter-bank borrowing will not be renewed or replaced with secured borrowing – and thus achieve a better priority than guaranteed deposits. Similarly, there is a risk that the proportion of corporate deposits also could decrease, since it constitutes a non-prioritized claim most of which can be called immediately. There is a risk that derivatives will become secured before an institution fails.[43]

Altogether, this increases the likelihood that the deposit insurance will be required to contribute to resolution. In this context it is worth noting that the minimum requirement of eligible liabilities is, however, a cap on the size of the capital structure changes that can occur.

Discretionary exceptions

Under certain circumstances, a need can arise in a resolution to exempt liabilities from being written down (so-called discretionary exceptions).[44] Since a departure from the regular priority right is permitted in such cases, such exceptions may entail an increased risk that the deposit insurance will be required to contribute to resolution. The need to make such exceptions is deemed small, however, due to the Debt Office's requirement that the minimum requirement of eligible liabilities must be met entirely with subordinated liabilities.

Historical losses in banks

The overall likelihood that the deposit insurance will contribute to resolution is assessed as low, given the significant losses required and the special requirements placed on the institutions. As a comparison, these losses can be considered beside historical loss levels in bank failures.

A review of a number of studies of the size of losses due to default indicates that a loss-absorbing and recapitalization capacity corresponding to the MREL requirement would in almost all cases have been sufficient to cover the losses that arose.[45] Given an assumption that the observed institutions in a resolution intervention had had own funds and eligible liabilities over and above MREL, similar to the capital structure analysis above, the studies show no loss levels that would lead to a deposit insurance contribution to resolution.

Relatively good potential for recovery in resolution

The contribution from the deposit insurance to resolution corresponds to the amount that the guarantee would be required to inject into every individual institution to cover outstanding losses or to recapitalize an institution. To estimate the final loss for central government, the value of potential recoveries must be included.

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[41] *Even changes in priority rights that disadvantage a particular debt form at the expense of other debt forms could lead to such changes, without an institution's creditworthiness having declined.*

[42] *Experience, from the USA among other places, suggests that such changes occur before an institution fails. See Marino, James A. and Bennett, Rosalind L. (1999): The Consequences of National Depositor Preference. FDIC Banking Review, Volume 12, No. 2. pp. 19-38.*

[43] *To create room for this dynamic, the international rating institution Moody's makes assumptions on the extent of the changes in debt forms that occur prior to a resolution intervention – see Moody's Investors' Service (2016). Rating Methodology: Banks.*

[44] *Chapter 21, Section 27 of the Resolution Act (2015:1016).*

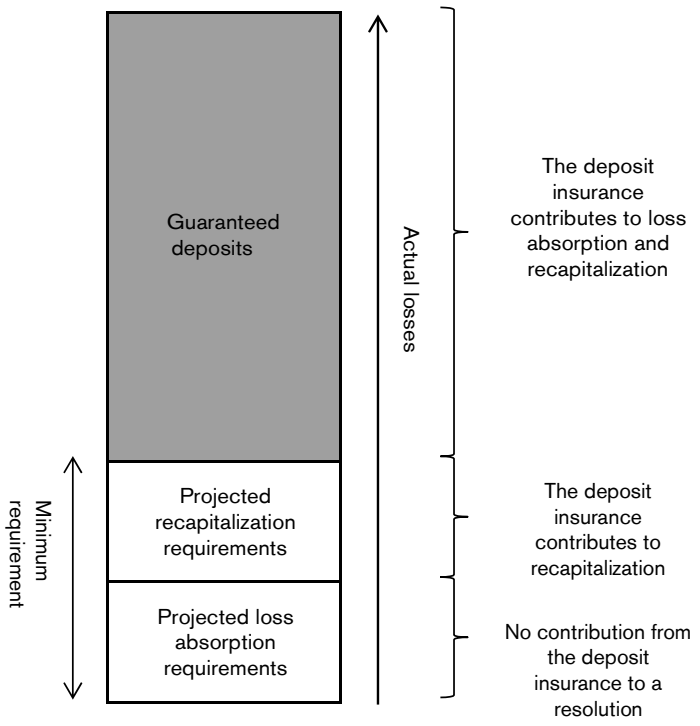
[45] *See, for example, the Financial Stability Board, 2015: Historical losses and recapitalization needs, and BCBS, 2010a: Calibrating regulatory minimum capital requirements and capital buffers: a top-down approach.*

To the extent the contribution from the deposit insurance is used to recapitalise an institution, the deposit insurance fund receives an asset in the form of shares in the reconstructed institution. It constitutes compensation for the deposit insurance contribution and presumably entails a good potential for recovery for the government, even as much as a potential gain.

If, instead, the deposit insurance contribution is used to cover losses, the assessment of the Debt Office is that there would be no chance for any recovery. This is because in the case of a covering of losses there is no claim that could generate a recovery, which is comparable to what happens to a lender's claim in a debt write-down.

However, it is more likely that the deposit insurance contribution would refer to recapitalization than to loss covering in an institution undergoing resolution. The explanation for this is that it would take even greater losses for the deposit insurance to be required to contribute to the covering of losses than what would be needed for recapitalization (see Figure 4). This aspect contributes favourably to the government's ability to eventually recover the funds contributed.

Figure 4. Illustration of the losses necessary for the deposit insurance to be required to contribute to recapitalization and to the covering of losses in resolution



As previously pointed out, the government charges an extra fee ex post if losses that are large in relation to the size of the deposit insurance fund occur (see box inset Deposit Insurance Fund).

Appendix 1: Central government guarantee and lending activities

The management of central government guarantees and lending in Sweden builds on sound principles and clear rules designed to clarify the financial risks and costs that such management is associated with (the so-called guarantee and lending framework). This ensures central government avoids taking on unwanted risks. These principles and rules are described here as they themselves have a favourable effect on the risk level of the central government guarantee and lending portfolio. There are also guarantees and loans that are regulated separately from the common framework. This applies, for example, to student loans and to the deposit insurance.

The central government guarantee and lending framework

In the mid-1990s, a framework for managing central government guarantees was adopted for the first time, in the Central Government Budget Act (1996:1059). In the period up to and including 2001, risk assessments of previously issued guarantees were conducted on the basis of the new framework. As of 2002, the principles of the guarantee framework thus also applied to guarantees issued before the framework's introduction.

The revised Budget Act (2011:203) further clarified the principles for the provision of central government guarantees. At the same time, it was decided that corresponding principles should also be applied to central government lending with credit risk. The Lending and Guarantees Ordinance (2011:211) supplements the Budget Act with more detailed regulations. This means that there are uniform and clear rules for both guarantees and lending with credit risk.

Overall, the central government guarantee and lending framework rests on a number of rules intended to foster both responsible and cost-effective management of financial risks. Most of the rules help ensure that (i) decision-makers are aware of the risks and (ii) central government makes provisions for those risks. Others are intended to ensure that central government avoids taking unwanted risks and to reduce risk-taking overall.

In practice this means the primary rule is that guarantees and loans are to be limited in amounts and terms of maturity, that the expected cost is booked and financed in conjunction with the issuance decision, that the financial position of the guarantee and loan recipients is analysed and that the contracts are associated with appropriate risk-limiting conditions.

Moreover, the authorities that issue guarantees and loans will regularly analyse, limit and report the credit risk of guarantees and loans issued. This approach will reduce the likelihood that the portfolio will become too large or contain risks that are inappropriately high or difficult to assess. The principles and regulatory frameworks on which the central government guarantee and lending framework rests are thus a key factor in why the overall risk of major losses in the regular portfolio is considered to be low.

Cost-recovery principle

One of the fundamental principles is for central government to charge a fee that corresponds to the expected cost of the guarantee or loan. The expected cost consists both of the expected credit loss (usually abbreviated to expected loss) and the administrative costs associated with the commitment.

The expected cost arises because there is a probability that the recipient of a guarantee or loan will not be able to fulfil their undertaking, which usually results in a credit loss for central government. For loans, the central government's interest expense for financing the loan is added to this.

> Expected loss = Exposure at Default x Probability of Default x (1 - Expected Recovery given Default)

Central government charges a fee to cover this expected cost. The expected cost for the guarantee or loan at hand is thus matched by a predetermined income. This means that, in theory, the financial position of central government is initially unaffected at the time of the decision to issue a central government guarantee or loan.

If the guarantee holder or borrower is allowed to pay a fee that is lower than the expected cost a subsidy arises. To create transparency around this subsidy, the Budget Act requires that it be financed, unless the Riksdag makes a decision to the contrary. This often means that a sum corresponding to the subsidy is charged to an appropriation. This means, in turn, that the expenditure for the subsidy needs to be weighed against other expenditure in the central government budget and therefore competes for space under the expenditure ceiling. Consequently, any subsidy of a government guarantee or loan is treated in the same way as any other central government expenditure.

A model in which fees – including any subsidy financed via appropriations – equal expected cost builds on an actuarial cost-recovery principle. In the long term, the accumulated fees are expected to correspond to the costs of credit losses and administration. In practice, however, the outcome will vary over time and deviate from the expected outcome – in both a positive and a negative direction. Accordingly, in many ways the model has parallels to conventional insurance operations, where fees from a large number of claim-free commitments are expected to cover the costs related to a small number of claims (credit losses).

Central government risk-neutral at the margin

Unlike the situation in insurance operations, in accordance with the fundamental principle in the Budget Act, central government does not charge a risk premium. In theoretical terms, this can be seen as central government being marginally risk-neutral, and therefore does not require extra return to cover the risk that follows from guarantees and lending (deviations from the expected outcome). One significant reason for this is that central government has an extensive and strong balance sheet underpinned by its right of taxation.

As a result, central government does not maintain an earmarked risk buffer and does not tie up any capital that requires a return. It should be stressed that central government is only risk neutral at the margin, that is, for risks in the guarantee and lending portfolio that are not excessive in relation to the entire central government balance sheet.

Outcomes are booked against notional reserve accounts

The design of the guarantee and lending framework means that fees and costs are handled outside the income headings and appropriations in the central government budget. Fee income – including appropriation funding to cover any subsidies – is not entered under an income heading but instead booked against notional reserve accounts. Correspondingly, credit losses and any recoveries are booked against these reserve accounts as well.

An unlimited mandate to raise new debt is linked to each reserve account. This addresses the issue of how to finance and report credit losses that temporarily exceed the balance of the reserve. In this way, the reserves can be allowed to be negative from time to time.

It is important to note that the reserves at the Debt Office are only notional accounts. There are exceptions, however, in the form of actual funds. The portion of the reserve that the Swedish Export Credits Guarantee Board has invested in foreign currency outside central government is one example of such a fund; the deposit insurance fund is another.

One reason for mainly having notional reserve accounts instead of special assets and liquidity portfolios is that such portfolios could add risks rather than reduce them. It is thus normally not a question of either earmarking or accumulating money in an actual fund. Instead, fees booked against the notional reserve accounts are included in the cash flow of central government. The payment of a fee thus improves the budget balance and reduces central government debt.

The total assets in the guarantee and lending activities do not consist solely of the balance in the notional reserve accounts that the responsible agencies have at the Debt Office. Other assets are the recourse claims that arise when guarantees are called and the remaining value of outstanding claims after confirmed defaults on loans issued. Moreover, the present value of agreed but not paid fees is also an asset. The total value of all these assets should be compared with the expected losses when assessing the actuarial deficit or surplus in the central government guarantee and lending activities.

Guarantees and lending regulated separately

Some guarantees and loans are regulated separately, in separate acts or through individual decisions by the Riksdag or the Government.

The student finance system

The Student Finance Act (1999:1395) regulates the management of student loans. The Act contains provisions on who can receive student loans and grants, interest, repayment and recovery demands. The provisions of the Act differ in several respects from how lending is handled in the guarantee and lending framework. New student loans granted after 2013 are managed in accordance with the guarantee and lending framework in the sense that appropriations corresponding to expected losses are transferred to a notional reserve account. For the remainder of the loans, however, confirmed credit losses are financed from appropriations as they arise.

Deposit insurance scheme and investor compensation scheme

The deposit insurance scheme is intended to provide consumer protection for deposits by private individuals and to promote the stability of the financial system. The guarantee is regulated in the Deposit Guarantee Act (1995:1571).

The investor compensation scheme provides protection for investors' financial instruments and funds held with a securities company, securities broker or an asset management company. Any costs following a call on the guarantee are recovered through ex-post fees paid by the remaining institutions covered by the scheme.

Lending financed by appropriations

According to Chapter 7, Section 3 of the Budget Act, lending with high expected loss must be financed by appropriations. Since such lending is already fully financed by appropriations, there is no reserve account to manage losses on these loans. Amortization and interest payments are reported under an income heading.

Callable capital to international financial institutions

Central government has issued guarantees to provide, when required, additional capital – known as callable capital – for a number of international financial institutions of which Sweden is a member.

Callable capital has been exempted by the Riksdag from the central government guarantee and lending framework. However, to make clear that these guarantees and the risks associated with them exist, a specialized notional account with credit has been set up at the Debt Office. Any charge on this account has to be cleared from appropriations.

Public enterprise guarantees

Following decisions by the Riksdag and the Government, public enterprise agencies can also issue guarantees and provide loans linked to their activities. At present Luftfartsverket (the Swedish Civil Aviation Administration) has issued such guarantees.

The effects on central government finances

The following examples illustrate the effects of a guarantee and the effects of a loan on central government finances.

Central government issues a guarantee for SEK 100

When the guarantee is issued, central government charges a fee corresponding to its estimate of the expected loss on the guarantee. Assume the fee is set at SEK 5. The balance in the reserve increases by SEK 5 while the provision in the financial reporting increases by the same amount. Central government's net financial wealth is thus unaffected. Its cash flow increases by SEK 5, decreasing central government debt by the same amount.

A change in the expected loss

If the expected loss of the guarantee increases/decreases, central government must increase/decrease provisioning for the guarantee by the corresponding amount. As a result, central government's net financial wealth decreases/increases.

Central government fulfils the guarantee

The guarantee is called and central government makes a payment corresponding to all or part of the guaranteed amount. Like all other cash flows, the payment is financed by the Debt Office, and affects central government debt. Assume that the whole amount under the guarantee, SEK 100, is called. Central government debt increases by SEK 100 and the balance in the guarantee reserve decreases by the same amount.

When a guarantee is called, central government also gets a recourse claim on the creditor (an asset). If the claim is initially assessed to be worth 50 per cent of the sum paid out, the net effect is a reduction of the central government's net financial wealth by SEK 45.

Central government recovers 60 percent

The balance in the guarantee reserve increases by SEK 60. The payment improves cash flow by SEK 60 and reduces central government debt by the same amount. In sum, the payment under the guarantee resulted in a reduction in central government's net financial wealth by SEK 35. The net charge in the guarantee reserve is also SEK 35, as is the increase in the central government debt.

Central government lends SEK 100

To finance the loan, central government must borrow, increasing the central government debt by SEK 100. At the same time, central government gets an asset in the form of a loan receivable. However, because of the credit risk in the loan, this asset is worth less than SEK 100. The expected loss is estimated at SEK 5, resulting in a write-down of the loan receivable by SEK 5 to SEK 95.

Central government charges an interest margin on the loan corresponding to the expected loss. The balance in the central government lending reserve increases by SEK 5. At the same time, there is a corresponding decrease in central government debt. The net effect on the balance sheet is a loan receivable of SEK 95 on the asset side and an increase in debt of SEK 95 on the liability side. Central government's net wealth is therefore unaffected.

A change in the expected loss

If the expected loss of the loan increases, the value of the loan receivable decreases, reducing central government’s net wealth, and vice versa.

A default occurs
Central government's cash flow is reduced by the amount of contracted future payments that are not received. For the sake of simplicity, it is assumed that none of the loan amount is repaid. After the default, the expected recovery is 50 per cent of the claim. The value of the loan receivable is written down to SEK 50. Central government's net financial wealth has decreased by SEK 45.

Central government recovers 60 percent
Central government's cash flow is improved by SEK 60, reducing central government debt by the same amount. In total, central government's net financial wealth is reduced by SEK 35, and central government debt increases by the same amount.

Similarities and differences between credit guarantees and lending

Credit guarantees and lending are regulated in a similar way since the credit risk, and thus the expected cost, is similar for the two types of exposures. Both guarantees and lending require approval by the Riksdag and they are treated similarly in the central government budget process. There are however differences which should be taken into consideration when deciding whether to issue a guarantee or a loan.

Lending is more transparent than guarantees

When central government grants a loan this is financed by central government, whereas in the case of a credit guarantee the financing of the underlying loan is done by a private party. Consequently, unlike guarantee issuance, lending affects the central government's borrowing need and the size of government debt when the loan is granted. In the case of a guarantee, central government increases its borrowing only if there is a pay-out under the guarantee. Guarantees can thus be seen as contingent government debt.

This difference is reflected also in financial reporting. Increased borrowing affects gross debt, and the loan receivable is accounted for as an asset.

Lending is normally cheaper than guarantees

Central government's cost for expected loss and administration can be assumed to be approximately equally high when financing is provided through direct loans from central government as when it is provided through a central government guaranteed loan from a private actor. The total cost of financing through direct lending includes the central government borrowing cost. The cost of financing through a central government guarantee, on the other hand, includes the private lender's cost for borrowing and administration.

Since in normal circumstances the private actor's borrowing costs are higher than those of central government, the cost of direct lending by the central government is lower than that of a guarantee. This applies despite the risk to central government being the same in both cases.

Lending involves greater restrictions

A difference in the regulation of guarantees and lending respectively is that only lending with low expected loss can be financed with borrowing in the Debt Office. In practice, this means that loans with high expected loss are financed through appropriations. There is no corresponding regulation for guarantees. Consequently, the Budget Act requires a more conservative treatment of lending with high credit risk.

Loan provision sometimes entails less complicated management

A credit guarantee often involves a three party relationship between the central government, the lender and the borrower, whereas direct lending involves only two parties. This three party arrangement may potentially give rise to a more complex management in order to avoid risks that arise from, for example, moral hazard.

There are advantages with guarantees which may outweigh the disadvantages

However, there are several examples of situations in which the advantages of a guarantee outweigh the disadvantages.

One argument in favour of using guarantees is that they simplify risk sharing, with the government guarantee covering less than the whole amount of the underlying loan. In addition, guarantees with an appropriate degree of risk sharing may be more effective in dealing with a limited market failure, enabling borrowing that would otherwise not take place due to the lenders systematically overestimating the risks involved. Guarantees can also be seen as less of a market intervention than lending.

Choosing guarantees may also be justified when the goal is to enable funding to a large number of borrowers. In such a case a bank's existing network, systems and administrative routines might lead to greater efficiency than if the central government engages in direct lending.

Appendix 2: Guarantees and lending excluded from the risk analysis

The Debt Office has chosen to exclude from the analysis lending financed by appropriations, guarantees and loans issued by public enterprise agencies and the investor compensation scheme. This is primarily for practical reasons, but also because they involve either small amounts or negligible risks. These exclusions only marginally limit the transparency in the reporting of the aggregate portfolio of guarantees and loans and do not affect the conclusions of the risk analysis.

Lending financed by appropriations

Unlike lending financed by central government borrowing, lending financed by appropriations is included in expenditure capped by the expenditure ceiling. Such financing thus falls outside the guarantee and lending framework (not confirmed pursuant to Chapter 6, Section 3 of the Budget Act) and is excluded from the aggregate risk analysis. One can view lending financed by appropriations as a transfer with repayment conditions. Potential credit losses can therefore be assumed to have been subject to the customary political discussion of the expenditure prioritization in the central government budget, which is why this lending is excluded from the risk analysis.

Lending financed by appropriations amounted to SEK 4.6 billion on 31 December 2017. Most of the amount consists of older student loans and home improvement loans.

Public enterprise agencies' guarantees

The few guarantees issued by public enterprise agencies are excluded from the risk analysis. Any losses related to such guarantees are borne, firstly, by the assets in the respective agencies' operations. Should these assets prove insufficient, losses will be borne by appropriations on the state budget, since the public enterprise agencies and the central government are one and the same legal entity.

Public enterprise agencies' guarantees amounted to SEK 18 million on 31 December 2017.

The Debt Office previously included the loan to Svedab in the report for aggregate risk analysis. The losses to which the lending to Svedab could give rise are secured by a capital adequacy guarantee from Trafikverket (the Swedish Transport Administration). As of 2017 the risk for the capital adequacy guarantee for Svedab is reported in Trafikverket's annual report. The Debt Office has therefore chosen to exclude Svedab from this year's report for aggregate risk analysis, in line with its previous exclusion of the capital adequacy guarantee from Trafikverket to Arlandabanan Infrastructure AB (Arlandabanan). Capital adequacy guarantees from Trafikverket to Arlandabanan and to Svedab amounted to SEK 1,268 million and SEK 3,029 million, respectively, at year-end 2017.

Investor compensation scheme

The investor compensation scheme protects securities holders whose securities are held on deposit by a securities institution. The guarantee is triggered if such an institution goes bankrupt, and it turns out the institution has not held customers' assets separate from its own assets, which generally would

imply gross negligence or criminal activity. The probability of the investor compensation scheme being triggered is therefore significantly lower than the probability that an institution providing investment services goes bankrupt.

The size of the central government's undertaking under the investor compensation scheme is unknown. Fees are only charged ex post to recover compensation paid out from the guarantee (ex-post fees), and compensation from the scheme has only paid out on one occasion. At that time, the total assets covered by the guarantee were estimated to around SEK 93 billion. However, this figure referred to covered assets on 31 December 2004, the date of the bankruptcy that caused the compensation case.

There are many indications that central government's cost for the investor compensation scheme is small. Since the guarantee was introduced, it has only been called once. In addition, since central government charges fees to the remaining institutions – recovering the full cost of any call on the guarantee – in principle, the investor compensation scheme does not give rise to any credit risk for central government. This is at least the position as long are there still are institutions that can be required to cover the cost. Against this background, the investor compensation scheme is excluded from the risk analysis.

Also for the deposit insurance central government is entitled to charge fees ex post to cover losses, should retained fees prove insufficient. For the deposit insurance, however, the potential amounts are greater. In conjunction with a financial crisis, large losses for the deposit insurance would be more likely to occur than with the investor compensation scheme, which could make it difficult to charge out such fees.

Appendix 3: In-depth presentation of the central government guarantee and lending portfolio

The in-depth disclosure in this annex further increases the transparency concerning central government guarantees and loans with credit risk. The annex constitutes a supplement to both the risk analysis in the report and to the Annual Report of the Central Government (ÅRS). The amounts reported in the Appendix pertain to the commitments included in the risk analysis.

Size of the guarantee and lending portfolio

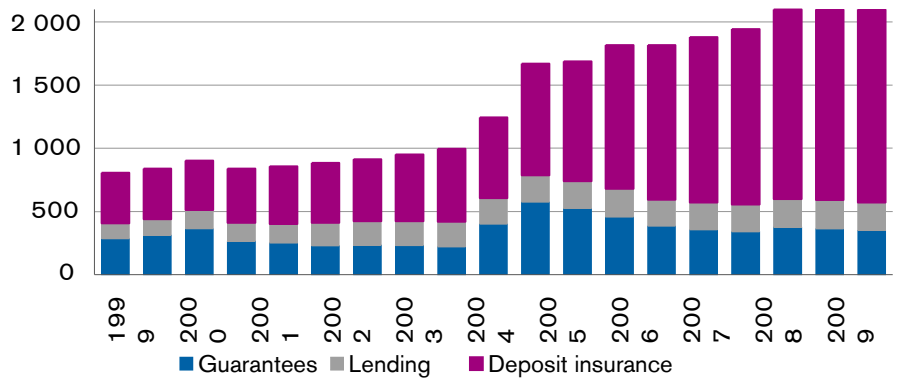
Table 18 presents the size of the central government portfolio of guarantees and lending at year-end 2017, in both absolute and relative terms. Chart 8 shows the trend over the past 19 years.

Table 18. Size of the guarantee and lending portfolio as of 31 December 2017

	SEK billion
Guarantees and loans to companies and private individuals	569
Deposit insurance[1]	1 689
Total	2 258
Share of GDP	49 %
Share of central government debt	185%
Share of central government balance sheet	141%

[1] The figure referring to the deposit insurance is from year-end 2016 as the 2017 figure was not available when the report was written. Source: Data from the Swedish Export Credits Guarantee Board, Sida, the Swedish Board of Student Finance, the National Board of Housing, Building and Planning, the Debt Office, the Government Offices, the National Financial Management Authority (ESV) and own computations.

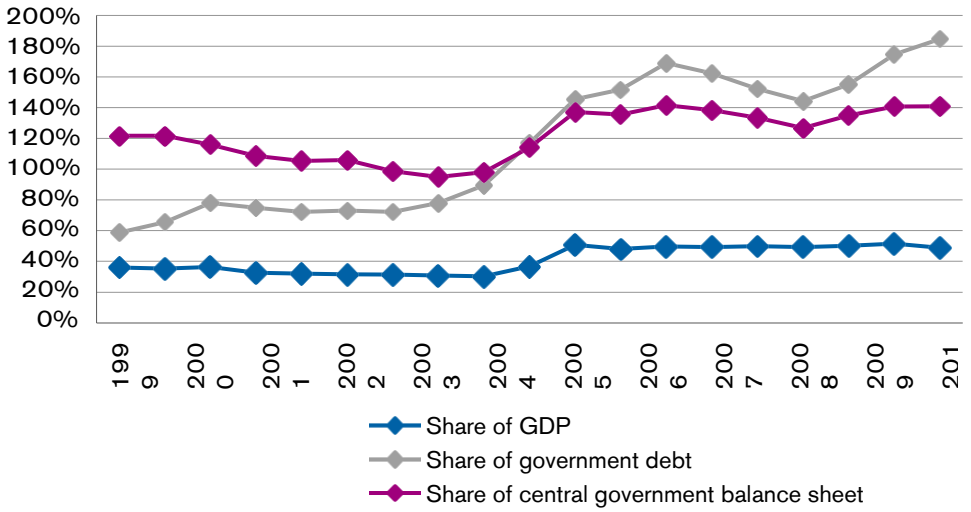
Chart 8. Historical data on the size of the portfolio 1999–2017, SEK billion



Source: Annual Report for Central Government, Information for the Annual Report for Central Government which is compiled by the Debt Office, and own computations. Note that the 2016 deposit insurance figure is used as an approximation of the 2017 figure, as the 2017 information was not available when the report was written.

Chart 9 shows the corresponding historical information in relation to certain fiscal quantities and GDP for Sweden.

Chart 9. Historical data on the relative size of the guarantee and lending portfolio 1999–2017

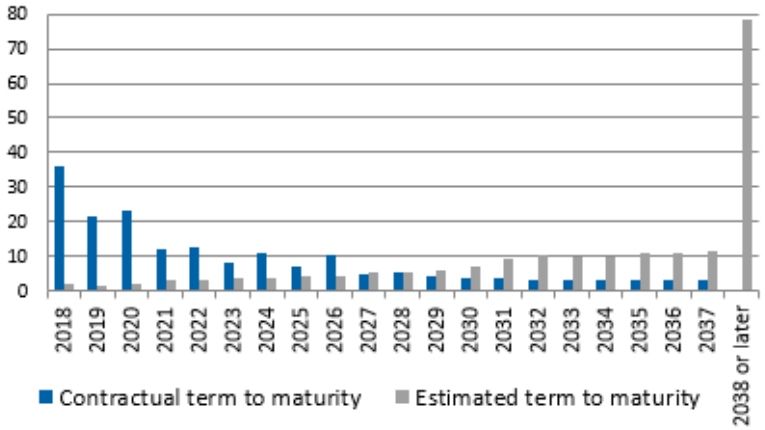


Source: Annual Report for Central Government, Information for the Annual Report for Central Government which is compiled by the Debt Office, data from the National Financial Management Authority (ESV) and Statistics Sweden (SCB) and own computations.

Term to maturity

A significant part of the central government portfolio (32 percent) consists of guarantees with unlimited term to maturity. This includes the deposit insurance and callable capital commitments issued to international financial institutions. In the remaining cases the term to maturity of the guarantee or loan is contractually regulated. Alternatively, the term to maturity may be a function of some underlying factor (such as trend in revenues in the case of loans with conditional repayment). In the latter case there is an estimated time to maturity. The maturity structure of guarantees and loans with a regulated or estimated term to maturity are shown in Chart 10.

Chart 10. Maturity structure of the guarantee and lending portfolio as of 31 December 2017, SEK billion



Excluding guarantees that are without time limit (SEK 1,845 billion) and student loans holders who have not yet become liable for repayment (SEK 27 billion). Source: Data from the Swedish Export Credits Guarantee Board (EKN), Sida, the Swedish Board of Student Finance (CSN), the National Board of Housing, Building and Planning, and the Debt Office.

Currencies

The loans that have been granted and the commitments that are guaranteed are given in different currencies. Table 19 shows the corresponding value in SEK for all guarantees and loans in the portfolio.

Table 19. The guarantee and lending portfolio divided by currency as of 31 December 2017

Currency	SEK billion	Share
SEK	1 998	88.5
USD	121	5.4
EUR	118	5.3
NKK	2.5	0.1
JPY	0.9	0.04
CHF	0.8	0.04
SDR[1]	15.2	0.7
Total	2 258	100

[1] Special drawing rights correspond to a collection of currencies which are used in international trade and finance (EUR, GBP, JPY and USD).
Source: Data from the Swedish Export Credits Guarantee Board (EKN), Sida, the Swedish Board of Student Finance (CSN), the National Board of Housing, Building and Planning, the Debt Office, and the Government Offices.

Approaches to financing the credit risk of the guarantees and loans

The guarantees and loans in the portfolio are managed differently in terms of cost recovery. Table 20 illustrates these differences.

Many of the guarantees and loans are managed on the basis of the central government guarantee and lending framework. A central part of this model is that the expected loss of the guarantee or loan is

financed at the time of issuance, generally by charging fees from guarantee holders and borrowers, but in some cases the expected loss is financed by appropriations. The fees are booked against a notional reserve account, to which an unlimited mandate to raise new debt is linked in order to deal with losses that temporarily exceed the size of the reserve.

The management of student loans is regulated separately. For loans issued as of 2014 the expected loss is financed by appropriations when the loan is granted, which is in line with the guarantee and lending framework. For student loans issued prior to that date, actual losses are financed by appropriations when they occur.

The management of the deposit insurance is also regulated separately. All institutions covered by the guarantee pay an annual statutory fee to the central government, which is risk-differentiated for individual institutions. The level of the aggregate annual fees charged, however, is regulated by law. The fees are placed in a fund that is managed separately. Pay-outs are financed primarily with money from the fund. If the fund's assets are insufficient there is an unlimited mandate to raise new debt linked to the fund.

In addition, there are outstanding guarantees and loans with credit risk that are managed separately on the basis of individual decisions.

Among these are callable capital commitments issued by central government to international financial institutions of which Sweden is a member. Payments under these guarantees are financed by appropriations when they arise.

There are also a small number of loans financed by borrowing that were issued before the central government lending framework was introduced. In some cases, fees covering at least the expected loss were set at the time when the loans were granted. In other cases, no fee has been charged at all. But the common denominator of these loans is that the method of financing actual credit losses has not been established in advance.

Table 20. The portfolio divided by approach to financing the credit risk of the guarantees and loans as of 31 December 2017, SEK billion

System	Expected loss	Actual loss	Amount	Share[3]
Guarantee and lending framework	Fees/appropriations	Reserve	219.0	9.7
Deposit insurance system	Fees[1]	Reserve	1 689	74.8
Student loans:				
New student loans	Appropriations	Reserve	65.3	2.9
Old student loans[2]	-	Appropriations	150.0	6.6
Callable capital	-	Appropriations	133.5	5.9
Individual loans	Fees/-	Unknown	1.1	0.1
Total			2 258	100

[1] Fees for the deposit insurance are not set on the basis of expected loss. The statutory fee amounts to 0.10 percent of total guaranteed deposits in all covered institutions at the previous year-end.
[2] Student loans granted prior to 2014.
[3] Share of SEK 2,258 billion
Source: Data from the Swedish Export Credits Guarantee Board (EKN), Sida, the Swedish Board of Student Finance (CSN), the National Board of Housing, Building and Planning, the Debt Office, and the Government Offices.

Problem guarantees and loans

For problem guarantees and loans a credit loss is likely to occur. These are guarantees and loans where a negative credit event – such as delayed payment or non-payment of interest or principal – has already occurred. Alternatively, there are other good reasons to doubt whether a loan issued or guaranteed will be repaid in time.[46]

Table 21. Problem guarantees and loans as of 31 December 2017, SEK billion

	SEK billion	Share
Problem guarantees and loans	13	0.6
Performing guarantees and loans	2 258	99.4

Source: Data from the Swedish Export Credits Guarantee Board (EKN), Sida, the Swedish Board of Student Finance (CSN), the National Board of Housing, Building and Planning, and the Debt Office.

Guarantees and loans where the expected loss is difficult to determine

Disclosing and financing the expected loss that relates to the credit risk in a guarantee or loan is an important part of the central government's guarantee and lending framework. There are, however, guarantees and loans with characteristics that make it more challenging to estimate the expected loss in a reliable way. That being said, it is important to stress that such guarantees and loans are not necessarily unjustified or inappropriate. Central government guarantees and loans are political decisions. The objectives that form the basis for the decisions often contain other positive effects that outweigh the difficulties in managing the guarantees and loans. Transparency regarding these guarantees and loans may nevertheless result in greater awareness of the problems they bring.

The data in table 22 show that there are guarantees and loans with characteristics that make estimating the expected loss more challenging (for parts of the portfolio where estimation of expected loss is required according to the regulation). This mainly relates to guarantees and loans with very long term to maturity or where the term to maturity is not regulated at all.

Unlimited guarantees or loans

One typical example of guarantees or loans that are difficult to manage is when the term to maturity and/or the amount are unlimited. Such guarantees and loans involve a certain arbitrariness in the risk assessment, which often applies particularly where there is no limit on the amount involved. In those cases, it is not possible to determine the scope of the central government undertaking unequivocally.

Guarantees or loans with long term to maturity

For guarantees or loans with a very long term – longer than 20 years – it is also difficult to estimate the expected loss for the whole of the term in a non-arbitrary way.

Guarantees or loans to financially weak counterparties

Another difficulty applies to guarantees or loans that are granted to financially weak counterparties, that is, companies that are in financial difficulties not caused

[46] *Problem guarantees and loans do not include the following two of CSN's criteria for loan losses: reservation based on security rules in respect of repayment and reservation in respect of future losses due to death.*

by a market failure (such as prolonged decline in revenues or an unsustainable capital structure).

Issuing a loan or guarantee in favour of such a company increases the asymmetry between risk and reward that already exists between a company's owners and its creditors, and which hampers the possibilities to assess and limit central government's credit risk in a proper way. Determining the expected loss in a reliable way becomes difficult as well.

Guarantees where the role of central government is unclear

A final example of challenging circumstances is when guarantees are issued to companies where central government is also a major shareholder. Such dual roles make it challenging to assess the probability of the guarantee being called since this depends, in practice, on an assessment of how central government in its role as an owner is expected to act if the company gets into trouble. This problem arises mainly with guarantees that entail a pledge to inject new capital.

Table 22. Guarantees and loans with challenging characteristics as of 31 December 2017, SEK billion

Challenging characteristics	SEK billion
Guarantees or loans with unlimited term to maturity[1]	8.4
Guarantees or loans with unlimited term to maturity and amount[2]	21.3
Guarantees or loans with an original term to maturity exceeding 20 years	62
Guarantees or loans granted to financially weak counterparties	-
Guarantees where the role of central government is unclear	0.4
Total	92.1

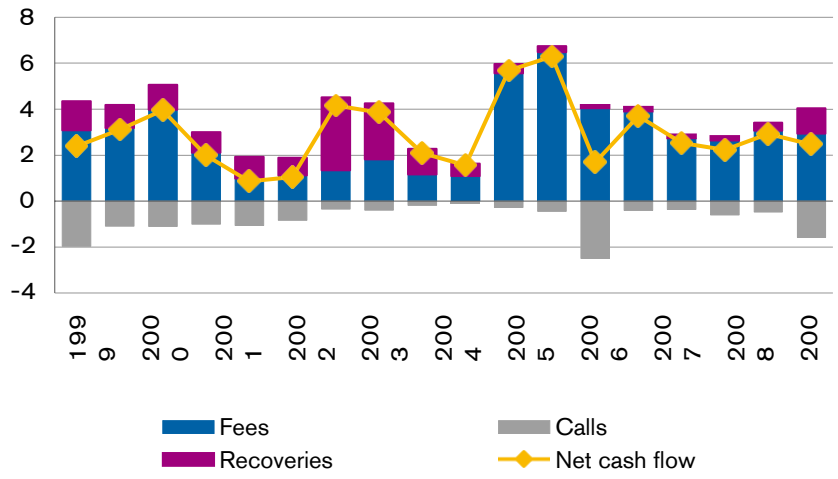
Excluding the deposit insurance (SEK 1,689 billion), callable capital (SEK 133.5 billion), student loans granted prior to 2014 (SEK 147.5 billion) and royalty and conditional loans (SEK 1.1 billion) for which expected loss is not calculated.
[1] Outstanding amounts for guarantees with unlimited term to maturity. Mostly relates to guarantees managed by the Debt Office but also the National Board of Housing, Building and Planning.
[2] Outstanding amounts for guarantees with unlimited term to maturity and amount. Relates to guarantees managed by the Debt Office.

Historical flows

Guarantees

For guarantees, there are mainly three types of in- and outflows: incoming payments of fees, outgoing payments due to calls on guarantees, and recoveries. It is worth pointing out that these in- and outflows vary over time. There may be a time lag of several years from a call on a guarantee and the time when recoveries are made. Consequently, it is natural for the size of in- and outflows to differ in individual years.

Chart 11. Historical in- and outflows in the guarantee portfolio 1999–2016, SEK billion



Source: Annual Report of the Central Government (ÅRS), Information for the 2016 Annual Report for Central Government which is compiled by the Debt Office, and own computations. Note that 2017 data is absent as new accounting rules from 2017 have rendered comparison with the preceding year more difficult.

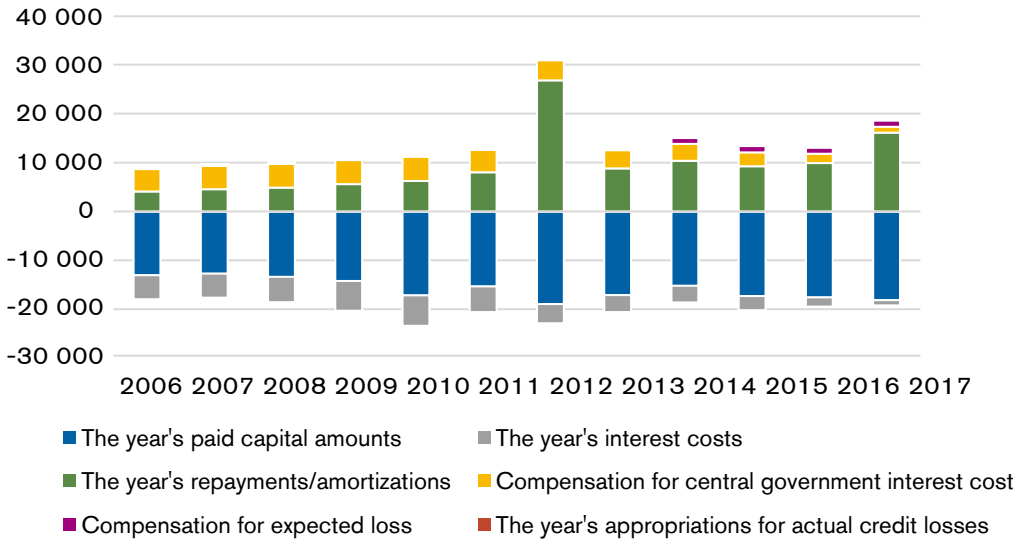
Lending with credit risk

Central government lending with credit risk is dominated by the Swedish Board of Student Finance's student loans but also includes lending by the Debt Office. The large amortization for 2012 refers to a loan to Botniabanan issued by the Debt Office.

The compilation of historical flows concerning central government lending in Chart 12 consists of paid capital amounts, interest costs, repayment/amortizations, compensation for central government interest cost, compensations for expected loss and appropriations for actual credit losses for the period from 2006 to 2017.

The flows relating to the so-called royalty loans are excluded from the chart.

Chart 12. Historical flows in the central government lending portfolio 2006-2017, SEK billion



Source: Data from the Swedish Board of Student Finance (CSN) and the Debt Office.

The Swedish National Debt Office endeavours to ensure that central government finances are managed efficiently and that the financial system is stable. The Debt Office thus plays a key role in both the financial markets and in the economy overall.

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