RIKSGÄLDEN
SWEDISH NATIONAL DEBT OFFICE

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CENTRAL GOVERNMENT GUARANTEES AND LENDING

A Risk Analysis

The Debt Office's mandate

The Swedish state provides guarantees and loans for purposes established by the Riksdag (Swedish Parliament) and the Government. A guarantee entails that the central government stands surety for the payment obligations of another party. This involves a credit risk for the state. A credit risk also arises when the state lends money to parties, such as a company or private individual.

At year-end 2021/2022, central government guarantees and lending with credit risk, excluding the deposit insurance scheme, amounted to SEK 750 billion.[1] The portfolio includes student loans, export guarantees, housing guarantees and guarantees to benefit international financial institutions of which Sweden is a member. These commitments are collectively referred to in this report as the regular portfolio. The deposit insurance scheme, which amounted to SEK 1,917 billion on 31 December 2020, is analysed separately in the report.[2]

The Swedish National Debt Office has submitted the report *Central Government Guarantees and Lending – A Risk Analysis* to the Government every year since 2012. The report is prepared in collaboration with EKN (the Swedish Export Credits Guarantee Board), Boverket (the Swedish National Board of Housing, Building and Planning), Sida (the Swedish International Development Cooperation Agency) and CSN (the Swedish Board of Student Finance), as well as other relevant government agencies.[3]

Increased awareness for better risk management

This risk analysis report is a supplement to the financial reporting of the guarantee and lending operations provided in the central government's annual report. That report includes outstanding amounts, provisions for losses, and the fees charged by the central government as part of these activities. The purpose of the risk analysis is to provide further information about the credit and liquidity risks involved in the commitments. This report therefore focuses primarily on:

- the risk of major credit losses in the portfolio, i.e., losses that exceed expectations and normal deviations (credit risk analysis)
- events or circumstances that could give rise to large credit losses
- the central government's ability to handle large unforeseen outgoing payments and the risk of payments in connection with guarantees and loan commitments leading to higher borrowing costs in the central government's liquidity management operations (liquidity risk analysis).

This in-depth analysis promotes transparency about the operations and also makes it easier for policy makers to determine whether further risk-mitigation measures are needed.

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[1] Excluding the commitments exempted from the risk analysis (see Appendix 2).

[2] The size of the deposit insurance scheme for 2021 was not available at the time of this report.

[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).

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Summary

The Debt Office's assessment is that the risk of large losses in the regular portfolio – which amounts to SEK 750 billion and includes student loans, export credit guarantees and guarantees to benefit international financial institutions – has remained at the same low level as in the previous year. The risk of large losses in the deposit insurance scheme is assessed to remain at the same moderate level as in the previous year. The term large losses refers to SEK 20 billion over a five-year time horizon. The prolonged pandemic is considered to have adversely affected the risk in both of these portfolios to a limited extent. The war in Ukraine and the worsened security situation in Europe bring increased uncertainty in regard to the macroeconomic development and the development in the financial markets. The Debt Office is closely monitoring this and maintaining an ongoing dialogue with other agencies and financial actors. The regular portfolio has limited exposure in Ukraine, Russia, and Belarus.

Low risk of large losses in the regular portfolio

The Debt Office assesses the risk of large losses in the regular portfolio to be low. Large parts of the portfolio have good creditworthiness, and the share of commitments with very poor creditworthiness is low. The portfolio is assessed to have limited sensitivity to economic downturns, which is largely due to the generally good creditworthiness. There are a number of significant concentrations in the portfolio, but the risk of large losses occurring among them is considered to be low. Other parts of the portfolio are well-diversified across many geographic areas and industries.

The concentrations mainly regard individual large commitments, a geographical concentration to Sweden (41.4 per cent) of which a very large part is student loans (75.4 per cent) and an industry concentration to telecom operators (11 per cent). The Debt Office assesses the risk of these concentrations leading to large losses to be low mainly because the creditworthiness is relatively high in the commitments accounting for the concentrations.

If large losses were to arise, despite a low risk level, they would most likely be caused by a deep and lengthy recession having a particularly strong impact on one or more of the portfolio's concentrations, at the same time as that recession causes higher losses in other parts of the portfolio. The currently good creditworthiness of the portfolio contributes to it being relatively resilient to normal economic downturns. If the pandemic does not become worse, its effect on the portfolio will likely be limited. The war in Ukraine has changed the security situation in Europe, and the future course of events remains uncertain as does what the effect could be on the real economy and the financial markets. The Debt Office is therefore closely monitoring the developments and maintaining an ongoing dialogue with other agencies and participants in the financial markets. The regular portfolio has limited exposure in Ukraine, Russia, and Belarus (see the section on geographic concentrations).

The relatively low level of risk in the portfolio is largely attributable to the principles and regulatory frameworks governing the central government's guarantee and lending operations. The central government's risk-taking is moderated by the limits placed on guarantees and loans in terms of amount and time, the fact that the expected cost is reported and financed at the time of decision, and that risk-limiting conditions are applied. This is described in further detail in Appendix 1.

Table 1. Credit risks in the regular portfolio

Risk factor	Risk of large credit losses (previous year)
Risk from changes in the general economic environment	Low (Low)
Name concentration (individual large commitments)	Low (Low)
Close connections between guarantee holders or borrowers	Low (Low)
Industry concentration	Low (Low)
Geographic concentration	Low (Low)

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

Moderate risk of large losses in the deposit insurance scheme

The Debt Office assesses the risk of large losses in connection with deposit insurance to be moderate.

For the major banks and other institutions deemed systemically important, the deposit insurance scheme may need to be utilised to provide consumer protection in resolution. However, those institutions would have to suffer significant losses for such a measure to be required. The Debt Office assesses the risk of that occurring to be low.

If a non-systemically important institution were to fail, the deposit insurance commitment would instead be fulfilled by the central government paying compensation directly to the depositors and then acquiring a claim on the institution. It would take the failure of one of the largest non-systemically important institutions or the failure of several institutions, for large losses to occur. The Debt Office assesses the risk of that occurring to be moderate. However, the risk of significantly greater losses than SEK 20 billion is considered to be low, because a relatively large number of them would have to fail for that to be the case.

Table 2. Risk by type of fulfilment

Type of fulfilment	Risk of large losses (previous year)
Direct fulfilment	Moderate (Moderate)
Fulfilment in resolution	Low (Low)

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

Flexible cash management provides low liquidity risk

The Debt Office's assessment is that the liquidity risks in the guarantee and lending portfolio remain low. These liquidity risks arise because it is not known if or when potential amounts would have to be paid out. The Debt Office's assessment is that such less-likely amounts can be borrowed on short notice. Although the borrowing cost would certainly be higher in some cases, it would only be in the short term and connected to individual payments.

Analytical framework

The Debt Office's risk analysis of central government guarantees and lending with credit risk is based on an analytical framework establishing basic premises, definitions, and methodology.

Scope of the risk analysis

The risk analysis contains both a credit risk analysis and a liquidity risk analysis. The credit risk analysis comprises the central government's portfolio of guarantees and loans with credit risk that, at year-end 2021, had been issued to parties outside central government. In addition to these guarantees and loans, the liquidity risk analysis comprises loan commitments in which a party has the right to borrow under certain terms and conditions from the central government but has not utilised this right.

The fact that the analysis is based on the commitments in the portfolio at the most recent turn of the year is indeed a simplification, as the contents of the portfolio are continually subject to change; for example, certain commitments are settled as others arise. A more dynamic approach, however, would increase both the complexity and the uncertainty in the analysis, partly because this would require making assumptions about decisions not yet taken.

Lending financed by appropriations, public enterprises' guarantees, the investor compensation scheme, and capital adequacy guarantees are excluded from the risk analysis. In this context, they constitute small amounts, or limited risks, and are accordingly excluded for practical reasons. The exceptions are not considered to affect the Debt Office's conclusions. See Appendix 2 for more information on these exceptions.

In regard to the scope of the risk analysis, it should also be clarified that it constitutes a limited portion of the central government's total balance sheet. If large losses were to occur within central government guarantees and lending, the central government would likely have higher expenditure and lower income in other areas simultaneously. This is because large losses are likely to arise in periods of economic crisis.

Credit risk analysis

The credit risk analysis covers the risk of losses of at least SEK 20 billion in the regular portfolio or for the deposit insurance scheme over the next five years.[4]

[4] In addition to the risk analysis presented in this report, the Debt Office has made a number of calculations with the aid of a quantitative portfolio model. The calculations pertain to simulations of expected and unexpected losses one year and three years ahead in the regular portfolio, excluding CSN's and Boverket's commitments. The portfolio model is used primarily to further understand the risks in the portfolio and to monitor potential changes in risk between different years, which could indicate a need for more in-depth analysis. See the focus report *Calculation of the risk of large losses in the central government's guarantee and lending portfolio*, the Debt Office, March 2017, for a more detailed description of the model.

The deposit insurance scheme, in terms of reported amount, accounts for more than half of the central government's aggregate portfolio. Given the large amount, and the complex regulatory frameworks that directly affect the risk in the deposit insurance scheme, that analysis is presented in a separate section. If there are large losses in one portfolio, there is an increased likelihood that the losses in the other portfolio are also higher than normal, even if the latter do not necessarily exceed SEK 20 billion. This is because large losses often occur during a deep recession which adversely affects both portfolios. However, the analysis is based on the same analytical framework as for the regular portfolio.

The risk of large losses is assessed on a scale of low, moderate, elevated, or high risk. The scale should be viewed primarily in terms of the need for a more in-depth analysis of the portfolio risks and covariance of losses. At a low risk level there is probably no such need, whereas moderate risks call for closer monitoring. A significant or high level of risk increases the need for analysis. At the same time, it may be relevant to analyse whether it is possible to limit the level of risk. Whether this would be appropriate is, in turn, a political decision.

Losses

The term losses is used in the credit risk analysis as a collective name for fulfilments of guarantee commitments and write-offs of loans, in the event of an established loss on lending.

Fulfilments of guarantee commitments affect both central government net lending and central government debt. Write-offs of loans only affect central government net lending because they do not involve any cash flows. In the analysis, the Debt Office also comments on the effects that reductions and suspensions of payment of student loans have on the central government's cash flow, even though these are not classified as losses in the analysis.

Even if the fulfilments involve a loss, in the sense that they have an immediate effect on central government finances, they do not necessarily have to ultimately lead to a loss if the state retroactively recovers, (gets back) the amount being fulfilled. In the credit risk analysis, the Debt Office therefore comments on the opportunities for recovery in the event of fulfilment. A large part of the recoveries can, however, be made beyond the five-year time frame of the analysis because the recovery process can often take many years to complete. The focus is thus mainly on the risk of fulfilments.

For the deposit insurance scheme, the central government also has the right to retroactively raise the fee charged if the losses become large enough to erode the fund used to cover them – that is, a retroactive right to cover losses in the long term.

Focus on large losses over five-year period

In the report, large losses refer to those that amount to at least approximately SEK 20 billion in the regular portfolio or for the deposit insurance over the next five years.[5]

[5] If the losses amount to a total of at least SEK 20 billion, the majority of them are assumed to occur in most cases during one, or a few, more critical years, while losses during the remainder of the five-year period are assumed to be at more normal levels.

From a risk perspective, it is not apparent what size of losses should receive the most focus. The size relevant for analysis can vary depending on the situation – specifically the financial position of the central government when the losses occur.

The Debt Office's assessment is that the risk analysis should focus on losses that significantly exceed expected losses and average historical losses, because such outcomes clearly limit the possibility of achieving fiscal and budgetary policy objectives, compared with an expected or historically normal outcome. Based on this, the Debt Office has chosen to focus on the risk of losses of at least SEK 20 billion over a five-year period. It should be emphasised that this represents a gross loss. The net effect of the losses is lower from the central government making recoveries and taking out fees in the same period. The average annual fee charged has, for example, amounted to SEK 1.8 billion for the regular portfolio and SEK 1.6 billion for the deposit insurance over the last ten years[6]. The historical flows for the operations – such as fees, recoveries, and fulfilments of commitments – are described in more detail in Appendix 3. In simplified terms, the annual fee withdrawal shall cover the few years when the operations yield a deficit. Over longer periods, the operations are therefore expected to yield a surplus, which is supposed to cover the large losses that can arise in economic crises.

A five-year period is intended to reflect a medium-term time horizon, or approximately one business cycle, in keeping with other economic forecasts and evaluation periods within central government. A limited time period is required for making a sufficiently relevant assessment of the risk of large losses. In the very long term, fees and recoveries from the guarantee and lending operations are to, in theory, correspond to the losses, similarly to what is described above, which is why the net effect on central government finances is intended to ultimately be balanced to zero (see Appendix 1). However, seen in terms of a limited time period, large losses have an adverse effect on central government finances. Choosing a short period of time (such as one year) instead would also compromise the relevance of the analysis. This is because credit risks often tend to be small in the short term.

With the designated timescale, the risk analysis is based on the size of the amounts that can be fulfilled by outstanding guarantee commitments over the next five years. This can, in some cases, differ significantly from the amounts in the central government's annual report, depending among other things on the fact that many guarantee commitments are not immediately fulfilled in their entirety but continually in pace with the guaranteed loans reaching maturity. However, unless otherwise stated, the size of the commitments is presented in the report based on the amounts in the central government's annual report, among other things to clarify the risk analysis' connection with the portfolio presented in that annual report.

Liquidity risk analysis

Guarantees and loan commitments entail a liquidity risk because it is not known beforehand whether or when payments connected to the undertakings will need to be made. However, in the lending, there is currently no such risk, because the central government has already paid out the loan amount.

[6] Not cleared for transfer of part of the fee to Finland and Denmark

The section on liquidity risk addresses the central government's ability to handle large unforeseen payments, including the risk that payments connected to guarantees and loan commitments lead to higher lending costs in the liquidity management operations. The liquidity risk analysis is based on the potential need for large amounts to be paid out as one-time payments or as several payments within a few days. In this sense, the analysis has a much shorter timescale than that of the credit risk analysis.

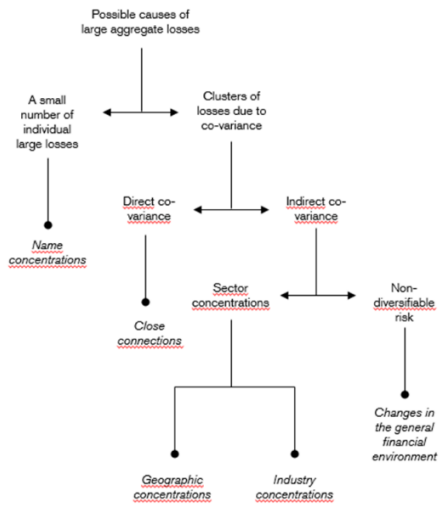
Risk factors

There are essentially two types of events that can result in large losses:

- a small number of losses for individual large guarantees or loans that form a significant proportion of the portfolio
- a group (cluster) of losses that collectively constitutes a large amount and is, as a rule, attributable to covariance.[7]

The risk analysis identifies and discusses circumstances – risk factors – that can give rise to these two events. The risk factors identified are: changes in the general economic environment, name concentrations, close connections between guarantee holders and borrowers, industry concentrations, and geographic concentrations. Chart 1 summarises the interrelationships between the identified risk factors.

Chart 1. Risk factors and their interrelationships



[7] Depending on, for example, the business cycle or changed conditions within a particular sector (either in an industry or geographic area), credit losses tend to coincide in time in so-called clusters. This can be interpreted to mean that the possibility for guarantee holders and borrowers to fulfil their commitments covaries. There are two types of covariance. "Direct covariance" means, in this context, that the credit risk in one guarantee or loan directly affects the credit risk in another. "Indirect covariance" means that one background factor affects the credit risk in several commitments.

Changes in the general economic environment

The risk factors described below pertain to the presence of concentrations in a portfolio. However, even in a perfectly diversified portfolio (without major concentrations) there is a risk of loss clustering due to indirect covariance. An economic shock such as a downturn in the economy that affects several industries and geographic regions can, for example, give rise to indirect covariance between different sectors, despite a lack of distinctly direct economic connections.

Name concentrations (individual large guarantees and loans)

The analysis of name concentrations is connected to the proportion of the portfolio that a particular commitment represents. If there are individual commitments that make up a significant share of the portfolio, a small number of defaults can induce large losses. This does not require the presence of covariance, because a small number of defaults could occur randomly at the same time from causes that are entirely unrelated to one another. Accordingly, the analysis of name concentrations differs from the analysis of other risk factors that are all due to covariance.

Close connections

If guarantee holders or borrowers have close financial or legal connections with one another, a default by one of these may lead to the others also defaulting on their commitments. Examples of such connections are when a number of companies belong to the same corporate group or are part of the same supply chain. In this way, close connections give rise to direct covariance that can lead to clusters of losses.

Concentrations in an industry or geographic region

Indirect covariance can arise in different sectors – for example, industries or geographic regions. This occurs because the creditworthiness of guarantee holders and borrowers in one sector is often affected by the same underlying factors, such as demand for a product that is manufactured by several companies within a certain sector. A negative shock, such as a drop in demand, can give rise to indirect covariance between companies within a sector and create clusters of losses.

Industry concentrations refers to low diversification regarding the affiliation that guarantee holders and borrowers have to a particular industry. This can occur because either the portfolio is exposed to only a few industries or because some individual industries represent a significant share of the portfolio.

Geographic concentrations entail that guarantee holders and borrowers in the same geographic region are affected simultaneously by adverse economic changes, such as a downturn or major changes in currencies or interest rates. Negative shocks can then lead to indirect covariance that gives rise to clusters of losses.

Credit risks in the regular portfolio

The Debt Office assesses the risk of large losses in the regular portfolio to be low. To some extent, the prolonged pandemic has had an adverse effect, mainly because the portfolio has grown, which is not unusual for a turbulent period. Large parts of the portfolio continue to have relatively good creditworthiness, and the exposure to commitments with high or very high credit risk is limited. There are a number of significant concentrations in the portfolio, but the risk of large losses occurring among them is deemed low. Other parts of the portfolio are well-diversified across many geographic areas and sectors. The war in Ukraine has changed the security situation in Europe, and the future course of events remains uncertain as does what the effect could be on the real economy and the financial markets. The Debt Office is therefore closely monitoring the developments and maintaining an ongoing dialogue with other agencies and participants in the financial markets. The regular portfolio's exposure in Ukraine, Russia, and Belarus is limited.

The regular portfolio

This section analyses the risk of major credit losses in the regular portfolio. In accordance with the delimitations presented in Appendix 2, the portfolio amounted to SEK 750 billion on 31 December 2021, compared with SEK 698 billion at the end of the preceding year.[8] Figure 11 in Appendix 3 shows how the volumes have changed in the period 1999–2021.

The increase in size is partly due to pandemic-related measures, which are presented in the section *Effects and measures regarding central government guarantee and lending operations in connection with the coronavirus pandemic.* The portfolio is divided into around 1,900 guarantees and close to SEK 1.7 million loans and contains:

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

The structure of the section follows the analytical framework. Based on the identified risk factors, an analysis is first made of the portfolio's sensitivity to the general development of the economy (systemic risk). Thereafter, the risk of large losses occurring from concentrations in the portfolio is analysed.

[8] An in-depth account of the amounts used in the risk analysis is provided in Appendix 3.

Commitments in the regular portfolio

Tables 3 to 7 show the total size of the central government's guarantees and loans in the regular portfolio on 31 December 2020 and 2021, respectively. At the turn of the year 2021/2022, the regular portfolio amounted to SEK 750 billion, compared with SEK 698 billion the preceding year.

Table 3. Housing guarantees

SEK million	31/12/2020	31/12/2021
Housing credit guarantees	2,731	4,376
Acquisition guarantees	0	0
Total	**2,731**	**4,376**

Boverket (the National Board of Housing, Building and Planning) issues, administrates, and reports on central government housing guarantees.

Table 4. Export credit guarantees

SEK million	31/12/2020	31/12/2021
Export credit guarantees	238,556	266,331

EKN (the Swedish Export Credits Guarantee Board), provides government export guarantees to promote Swedish export and the internationalisation of Swedish companies.

Table 5. Guarantees and credits within foreign aid and development

SEK million	31/12/2020	31/12/2021
Development credit guarantees	488	425
Independent guarantees	5,834	7,506
Total	**6,322**	**7,931**

Within the framework of Swedish foreign aid and development cooperation, there are several guarantees and loans managed by Sida (the Swedish International Development Cooperation Agency).

Table 6. Student loans

SEK million	31/12/2020	31/12/2021
Student loans[1]	237,736	249,309

A large part of the regular portfolio consists of student loans that are granted and managed by CSN (the Swedish Board of Student Finance).
[1] The amount refers to student loans that are financed by loans from the Debt Office.

Other

The central government also issues guarantees and loans for, among other things, infrastructure projects, commitments linked to the state's role as owner in various companies, membership in international financial institutions, and research and development (R&D) investments (see Table 7).

Table 7. Other commitments managed by the Debt Office and the Government Offices that are included in the regular portfolio.

SEK million	31/12/2020	31/12/2021
Credit guarantees within infrastructure	13,607	9,606
International commitments	1,081	1,712
Original capital commitments	405	405
Callable capital	169,402	182,961
Provision of capital	7,694	7,972
Pension guarantees	7,322	7,039
Other credit guarantees	1802	1281
Lending within infrastructure	819	804
Lending to R&D	70	55
Other lending	10,174	10,234
Total	**212,377**	**222,069**

Effects and measures regarding central government guarantee and lending operations in connection with the coronavirus pandemic

At an aggregate level, the pandemic has to some extent affected central government guarantee and lending operations, mainly through the volumes of outstanding guarantees and loans having increased more than in normal years. The volume increase in connection with the pandemic was, however, larger in 2020 than in 2021. The economic recovery that gained momentum as early as autumn 2020 led to large parts of the special measures implemented being phased out in 2021.

The Swedish National Debt Office

The Debt Office's guarantee and lending portfolio has grown during the pandemic by around SEK 11 billion, excluding so-called callable capital. The majority of the new commitments came about in 2020, and large parts of these remained at the end of 2021.

The Riksdag and the Government decided on, among other things, a guarantee scheme for small and medium-sized enterprises called the Government guarantee programme for companies. Under this programme, the Debt Office has guaranteed up to 70 per cent of a company's bank loan. The programme was extended several times but was ultimately discontinued for new guarantees on 30 September 2021. At the turn of the year, there were around SEK 1.3 billion in outstanding guarantees – a reduction corresponding to SEK 500 million compared with the turn of the previous year.

The aviation industry is one of the industries hit the hardest by the pandemic. The Debt Office was therefore given a mandate in 2020 to issue credit guarantees to certain airlines. The credit guarantees could not exceed SEK 5 billion in total. Two guarantees were issued: one to SAS for SEK 1.5 billion and one to Braathens Regional Aviation for SEK 180 million. SAS repayed the underlying loan in 2020 and its credit guarantee was thereby settled prematurely. In 2021, the Debt Office was assigned to provide SAS with a lending framework up to SEK 1.5 billion. This was a joint action with the Danish government, which made an equally large commitment.

Since 2009, the Debt Office has provided a lending framework to the Swedish Export Credit Agency. The line of credit amounted to SEK 200 billion at the turn of the year. In 2020, a borrowing requirement arose at the same time as the prospects for borrowing in the market decreased. The Swedish Export Credit Agency therefore utilised the credit for the first time and borrowed SEK 10 billion. The loan runs until 2022 March.

EKN (The Swedish Export Credits Guarantee Board)

In 2021, EKN's guarantee volumes increased by almost SEK 28 billion and amounted at the turn of the year to around

SEK 266 billion. Only a smaller part of the increase in 2021 can be attributed to the economic impact of the pandemic, as opposed to the year before when there was an increase clearly related to it.

Banks, other credit institutions, and export companies, have, in pace with the economic recovery, had a decreasing need for products and solutions that EKN introduced at the beginning of the pandemic. EKN has therefore in 2021 discontinued several of these special solutions. One such example is the working-capital credit guarantee to major companies, which under normal circumstances is only offered to small and medium-sized enterprises.[9] Between March 2020 and June 2021, EKN issued 41 of these guarantees at a total of SEK 61.2 billion, of which the largest share is in regard to 2020.

During the pandemic, EKN also offered small and medium-sized enterprises a guarantee for covering 80 per cent of existing working-capital credits, compared with, under normal circumstances, offering coverage of 50 per cent. This possibility expired on 30 June 2021.

To make it easier for otherwise stable companies to weather the difficulties brought about by the pandemic, EKN also introduced the opportunity to receive a payment respite. In 2021, 72 applications for respites were made, compared with 321 in 2020. Since demand clearly declined in 2021, EKN's assessment is that there is no longer a need for this measure.

CSN (The Swedish Board of Student Finance)

Education-related measures due to the pandemic have contributed to an increase in lending by CSN that is higher than in usual years. The measures were introduced mainly in light of the drastically deteroriated state of the economy in 2020, which led to higher unemployment and increased demand for education. In 2021, the outstanding loan volume increased by almost SEK 12 billion, which was slightly higher than in the previous year.

During the pandemic, a number of measures were imposed temporarily. One example of these is the removal of the so-called free amount that, under normal circumstances, regulates how high a student's income can be without there being a decrease in student aid. Even the possibility of writing off certain parts of student loans was introduced, for cases in which a course was cancelled or reduced to at least 50 per cent over a certain period. The extent of these write-offs has, however, been limited to small amounts.

Principal payments on student loans that are financed by loans with the Debt Office amounted to almost SEK 12.8 billion during the year. This was an increase of SEK 387 million compared with 2020.

Reductions of the annual amounts that are to be repaid by a borrower have also increased during the pandemic. During 2021, they amounted to almost SEK 1.7 billion. A reduction entails

[9] Working-capital guarantees to large companies were also offered as a temporary solution in conjunction with the 2008–2010 financial crisis.

that a repayment is postponed, for example because a borrower is studying or has a lower income than previously.

Sida (the Swedish International Development Cooperation Agency)

In 2021, Sida entered into seven new guarantee agreements, corresponding to a total guarantee amount of just over SEK 1.5 billion. Two of these guarantees are directly related to the pandemic. The focus of the first one is to contribute to the market for renewable energy systems outside the conventional power grid in Africa and Asia. The other is intended to make it easier for countries in need to finance health and medical products, including vaccines. At the end of 2021, work with around ten new guarantees was underway, in various stages. The primary focus of one of these is to counteract the adverse effects of the pandemic. Sida's total guarantee volume increased by around SEK 1.6 billion in 2021, which can be compared with a decrease of over SEK 200 million the year before.

In 2021, Sida was informed of potential damages cases in eight outstanding guarantees. Five of them concern lending in Africa. The others pertain to commitments in Columbia, Kosovo, and Palestine. Sida's guarantee portfolio as a whole, however, shows low loss levels.

Several guarantee holders have communicated to Sida that they have had a difficult time finding appropriate investment objects because of the pandemic. An increased focus on the green transition is also evident in the guarantee operations, and the demand for new guarantees is relatively high.

Boverket (the Swedish National Board of Housing, Building and Planning)

The pandemic has had a limited effect on Boverket's credit guarantee operations. Housing production and financing via creditors is assessed to have continued mostly as usual, aside from a short-lived lull in the market in the spring of 2020. Demand for credit guarantees during construction projects has continued to increase in 2021, which has contributed to a distinct increase in guarantee volumes during the year. The outstanding guarantee volume was around SEK 4.4 billion at the turn of the year.

Limited sensitivity to economic downturns

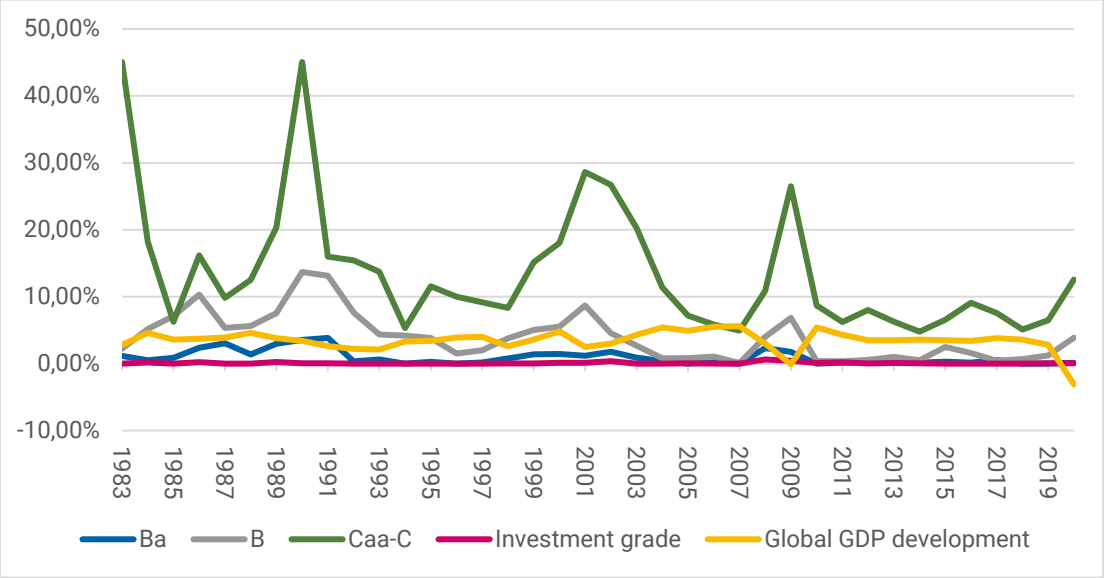
Changes in the general economic environment (business cycle) constitute a risk factor to which few guarantee holders or borrowers are immune. Therefore, diversification cannot remove this risk. The degree to which creditworthiness can be affected by an economic downturn varies for different categories of commitments. In general, it can be said that the sensitivity to variations in the business cycle is reflected in the creditworthiness (rating) of a commitment. Whether the effect is significant enough to lead to a default also largely depends on the commitment's creditworthiness before the economic downturn occurs, in addition to the magnitude of that downturn. The following section contains a review of historical relationships between economic downturns and defaults, as well as a description of the creditworthiness of the commitments in the regular portfolio.

Guarantee sensitivity to the general development of the economy

Figure 1 shows variations in global GDP development and default rates among companies that have had a rating from Moody's. The default rate among the two lowest rating categories in the figure (B and Caa-C) is significantly higher during economic crises such as the crisis of the early

1990s, the IT crash around 2001, and the 2007–2009 financial crisis. The pandemic has also meant more defaults for these categories. Companies with a higher creditworthiness (investment grade) have, however, a significantly lower frequency of default during the same crisis periods.

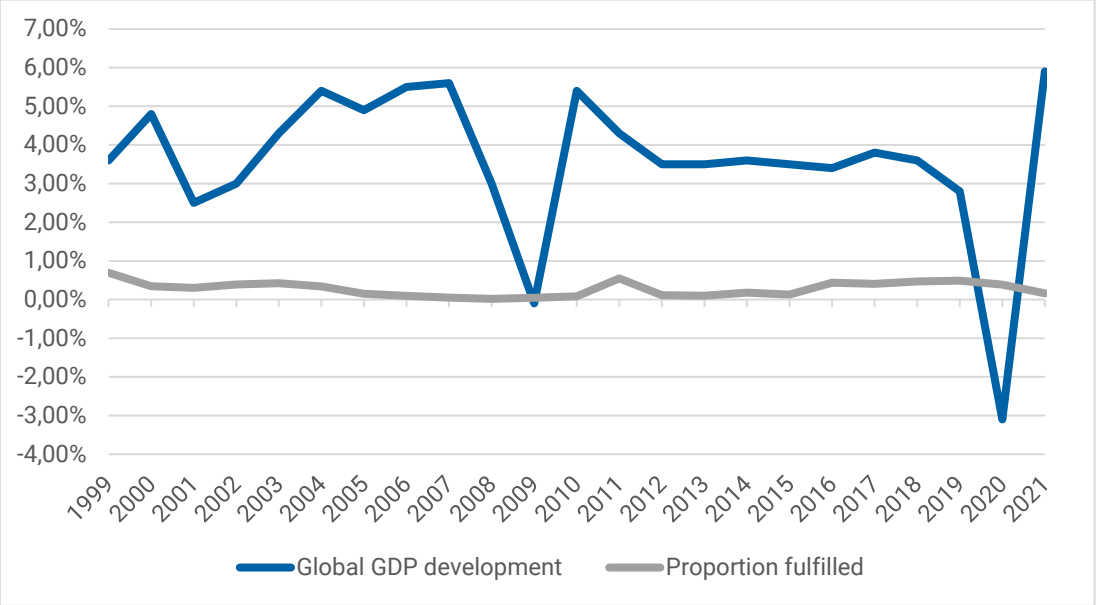
Figure 1. Default rates and global economic development



Moody's Annual Default Study Corporate Default and Recovery Rates 1920-2020, Exhibit 40–41 - Annual Issuer-Weighted Corporate Default Rates by Letter Rating, 1920–2019. IMF, 2021.

Figure 2 shows the proportion of the central government's guarantee undertakings in the regular portfolio fulfilled during the period 1999–2021. The economic downturns have not at all in the same way, as shown in Figure 1, caused significant increases in the share of guarantee commitments fulfilled. Rather, the proportion shows a uniformity over these years. The largest annual fulfilment during the 20-year period consisted mainly of the guarantee for Saab Automobile, which in 2011 amounted to SEK 2.1 billion.

Figure 2. Proportion of guarantee portfolio fulfilled and global economic development, 1999–2021



Data from EKN, Sida, Boverket and the Debt Office. GDP development from the IMF, 2021 (GDP for 2021 is an estimate by the IMF)

The Debt Office lacks data for aggregate fulfilments during the period before the end of the 1990s. That period includes, for example, the financial crisis in the beginning of the 1990s and the oil crisis of the 1970s. Above all, Latin American and African countries were affected by the economic consequences of the oil crisis, which led to the debt rescheduling that took place in what was known as the Paris Club. For EKN (the Swedish Export Credits Guarantee Board), this entailed a large amount of guarantee commitments being fulfilled in the 1980s, peaking at SEK 1.7 billion in 1987.[10] The Swedish shipbuilding crisis also resulted in guarantee losses that mostly occurred in the 1980s. In Sweden, this sector experienced a deep recession during the 1970s and 1980s, and for which a large amount of state guarantees were issued in response. The Debt Office's guarantees to the sector amounted to at most SEK 64 billion in 1983. In the most critical period, 1983–1987, T the fulfilments amounted to over SEK 4.5 billion.

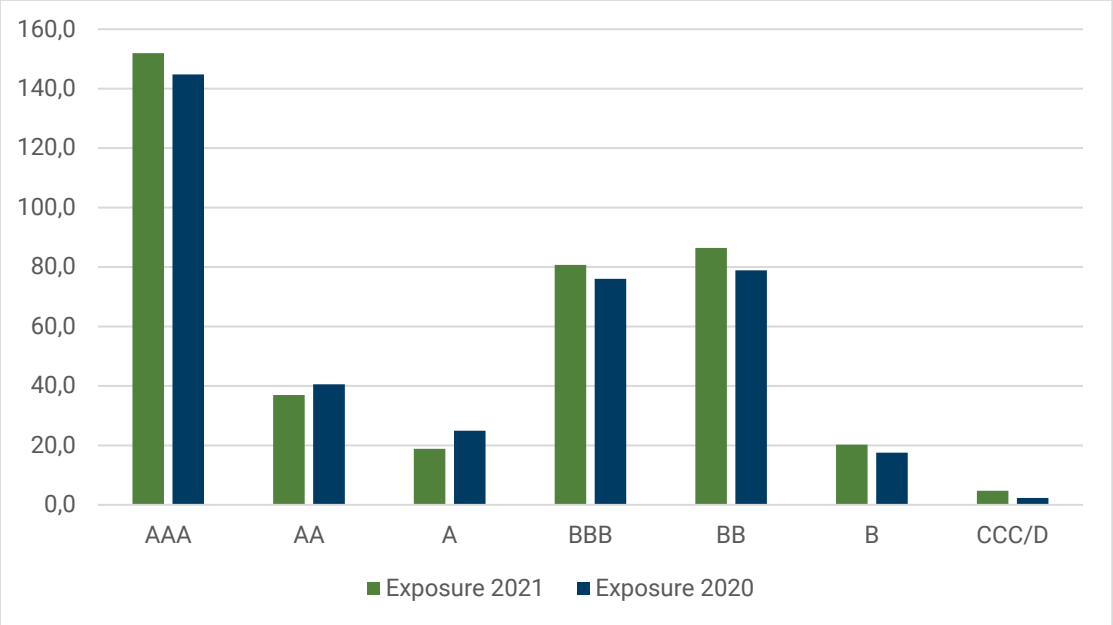
EKN's and the Debt Office's aggregate fulfilments during a few years of the 1980s would, at today's monetary value, amount to around SEK 20 billion. But these losses are due more to geographic and industry concentrations than to a downturn in the general economy, even though the latter was not insignificant.

[10] Large parts of these amounts paid out from EKN were recovered in the long term.

This historical pattern indicates that there has been limited sensitivity to business cycles in the guarantee portfolio. A likely partial explanation is that the proportion of guarantees with high credit risk has been relatively small.

Figure 3 shows the creditworthiness in the guarantee portfolio's volumes on 31 December 2021, compared with the previous year. This is done with the help of a division of different rating categories. The predominant share consists of guarantees in which creditworthiness corresponds to a so-called investment grade rating (rating categories AAA to BBB). The share of so-called speculative grade (rating categories BB to CCC/D) has, however, increased to a certain degree during the pandemic, mostly within the rating category BB. That this share increases during a crisis is not unusual, as some existing commitments receive a lower rating but also because new guarantees are often issued to industries in distress, which generally have poorer creditworthiness. Figure 3 also shows that the volumes for companies with a high or very high credit risk (rating categories B to CCC/D) are limited. At a more finely divided level, these guarantees consist of around 570 commitments of which most are relatively small and none are large enough to constitute a name concentration (see Table 8 in the next section about name concentrations).

Figure 3. Distribution of the guarantee portfolio by credit rating category, SEK billion



Volumes are based on amounts than can be fulfilled over the five-year time horizon of the risk analysis.

The creditworthiness of a portfolio's commitments varies from year to year. But the value of analysing historical defaults in the portfolio is less for a portfolio with creditworthiness that differs significantly from previous periods. Given that a portfolio has a growing exposure to

guarantee holders with poor creditworthiness, the risk of large losses would likely increase and vice versa.

Detailed information on the development of the exposures' creditworthiness over longer periods is lacking, but the Debt Office's assessment is that the creditworthiness has likely not deteriorated over time. Rather, the inception of the central government guarantee model at the end of the 1990s is an indication that the issuance of new guarantees, and the risk management of existing ones, has become more restrictive from a risk perspective.[11] In recent years, this guarantee model has been augmented to also include central government lending. The majority of the model's requirements contribute to decision-makers' awareness of risks and to central government subsequently taking these risks into account. Other requirements are intended to ensure that the state avoids taking on certain types of undesirable risks and that the level of risk-taking is, to a reasonable extent, reduced.

Lending sensitivity to the general economic environment

Central government lending with credit risk consists mainly of 1.7 million student loans corresponding to SEK 249 billion. In addition, there are a few loans at the Debt Office amounting to around SEK 11 billion.

For student loans, no assessment of individual borrowers' creditworthiness is made because the conditions for lending are governed by study-related criteria as opposed to the borrower's economic situation. It is therefore not possible to assess the sensitivity of student loans in relation to economic downturns based on the creditworthiness of the individual borrowers. At an aggregate level, however, there is reason to presume that student loan holders have a relatively good creditworthiness, mainly in light of the comparatively high level of education, which reduces the risk of unemployment.

There is also much to indicate that the size of annual write-offs of student loans does not, to any significant degree, depend on prevailing economic conditions. The student loans mostly subject to write-offs are those held by borrowers who have reached the age at which this is done as a matter of course. The size of these depends mainly on demographic factors and the financial situation of these borrowers until the age at which the loans can be written off automatically. In the next five years, this entails a maximum of SEK 2.4 billion in loans written off due to the borrower's age. The write-offs can also be due to the event of death, so-called qualifying studies or other exceptional reasons. It is the Debt Office's assessment that such write-offs also do not vary significantly in relation to prevailing economic conditions.

What can vary more in relation to economic conditions, however, is the proportion of the annual amount CSN charges student loan holders that is paid in. A reduction in this proportion does not necessarily lead to increased write-offs, but it has a direct effect on the central government's cash flows and thereby the central government debt. These variations will be addressed in the following sections.

Concentration risks are likely the most relevant to analyse

The Debt Office's assessment is that the regular portfolio has limited sensitivity to the general development of the economy. This assessment is primarily due to the portion of commitments

[11] Appendix 1 includes a description of the central government guarantee and lending model.

with the lowest creditworthiness (rating categories B to CCC/D) being small. The historical outcome regarding losses also indicates a limited sensitivity to business cycles. The inception of the central government guarantee model in the 1990s has also resulted in a reduced risk of many, and large, commitments being added to the portfolio. This indicates that the credit quality of the portfolio has been strengthened, from a longer-term perspective, thereby limiting the sensitivity to the general development of the economy.

Owing to the above, the Debt Office assesses that the risk of large losses occurring solely as a result of systemic risk to be low. Such a scenario would probably require a very deep and lengthy economic crisis.

It is important to emphasise that the conclusion is not that the general development of the economy lacks relevance for the risk analysis. If large losses arise, it is likely in connection with an economic crisis of some kind. However, possible causes and backgrounds for such a crisis are not analysed in this context, although previous crises may serve as plausible examples. The pandemic and the unease and uncertainty in the surrounding world in regard to conflicts and refugee situations are other more pressing examples of such a situation. During events of this kind, it is likely that large losses could primarily derive from one or several of the portfolio's concentration risks. This refers to an economic crisis scenario in which, at the same time as the level of fulfilments and suspensions of payment are higher than normal in other parts of the portfolio, its largest guarantee commitments are fulfilled or an industry concentration is hit particularly hard. To understand and asses the risk of large losses, these particular concentrations need to be analysed.

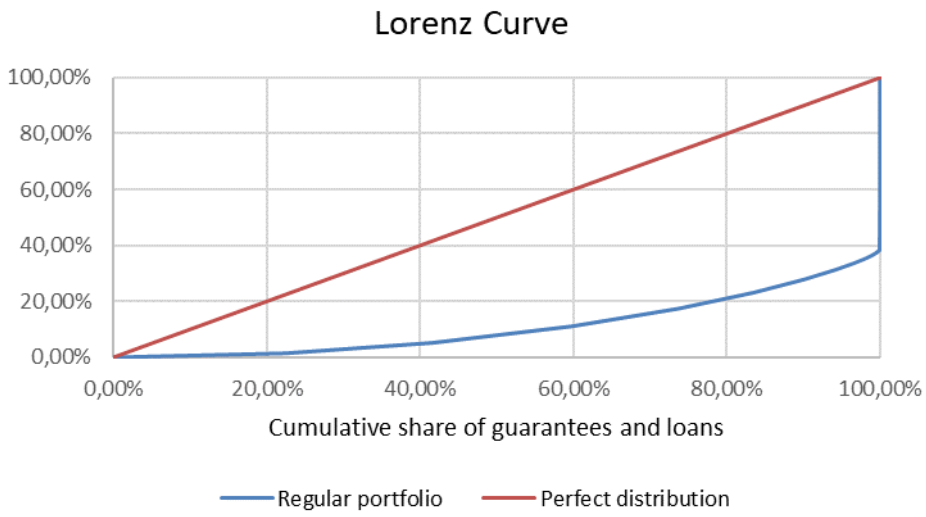
Low risk of large losses despite concentrations

The regular portfolio contains a number of large name concentrations, an industry concentration to the telecom sector, and a geographic concentration to Sweden mainly consisting of student loans. The Debt Office assesses the risk of large losses occurring among the identified concentrations to be low. Other parts of the portfolio are considered to be relatively well-diversified.

Name concentrations – good creditworthiness in individual large commitments

The regular portfolio consists of a large number of commitments, most of which are student loans. The latter comprises 99.9 per cent of the total number of commitments but only 33 per cent of the total amount. In addition, there are a number of commitments that individually account for a significant proportion of the portfolio in terms of their amount. These are called name concentrations. For a portfolio with a large number of commitments, the presence of name concentrations can be illustrated with a Lorenz curve (see Figure 4).

Figure 4. Lorenz curve demonstrating the amount distribution in the regular portfolio



Data from EKN, Sida, CSN, Boverket, and the Debt Office, on 31 December 2021.

The share of the portfolio's total amount is shown along a y-axis and the share of the commitments in the portfolio is depicted by the x-axis. The straight line in the figure represents a portfolio in which all commitments are of the same size. The more a portfolio deviates from the straight line, the more uneven the distribution of amounts of the various commitments is. Figure 4 shows that the distribution of the regular portfolio is considerably uneven.

The largest individual commitments

The 15 largest commitments are shown in Table 8. These constitute 44 per cent of the total portfolio, compared with 46 per cent the previous year. The right-hand column presents the maximum fulfilment over the time horizon of the analysis. For the second-largest guarantee, there is a significant difference between the size of the commitment and how much can be fulfilled in the next five years. This is because only a small portion of the guaranteed loans have been paid out.

In order to provide a more accurate picture, the amounts for guarantees or loans issued to the same counterparty have been consolidated. This is because a guarantee holder or borrower that is unable to honour its commitments will usually default on several or all of its commitments simultaneously.

Table 8. Size of the 15 largest commitments in the regular portfolio on 31 Dec 2021, SEK billion

	Total guarantee undertakings	Number of guarantees/loans	Fulfilment amount[1]
Callable capital EIB	80.0	1	80.0
Credit guarantee[3]	51.5	1	8.7
Callable capital AfDB	32.8	1	32.8
Credit guarantee[3]	28.9	1	23.6
Callable capital NIB	26.6	1	26.6
Callable capital IBRD	22.5	1	22.5
Credit guarantee[3]	21.3	1	17.9
Credit guarantee[3]	11.6	1	8.5
Lending SEK	10.0	1	10.0
Credit guarantee[2 ÖSK]	9.4	1	9.4
Credit guarantee[3]	7.5	1	7.5
Credit guarantee[3]	7.2	1	7.2
Other guarantee	6.8	1	6.8
Credit guarantee[3]	6.0	1	6.0
Callable capital EBRD	5.5	1	5.5
Total	**327.8**		**273.1**

[1] Fulfilment amount is the maximum amount that can be fulfilled within the five-year time horizon of the analysis.

[2] The Swedish state and the Danish state jointly stand surety for all Öresundsbro Konsortiet (Öresund Bridge Consortium) loans. Therefore, the extent to which the Swedish state's undertaking is to be utilised in its entirety, or up to 50 per cent of outstanding amounts, is not given. In the table, a strict formal assessment has been made with the entire amount reported. This also corresponds with how the undertaking is reported in the central government's annual report.

[3] Refers to credit guarantees issued by EKN – the majority of which, in the interest of confidentiality, cannot be named.

Data from EKN, Sida, CSN, Boverket, the Debt Office, and the Government Offices.

Low credit risk in large individual commitments

In most cases, the Debt Office retrieves assessments of creditworthiness, and recovery given default, from the agency that has issued a guarantee or loan. Alternatively, externally published credit ratings are used, from the three major international ratings institutions Standard & Poor's (S&P), Moody's Investors Service (Moody's), and Fitch Ratings (Fitch).

Table 9 shows the aggregate creditworthiness of the name concentrations that are shown in Table 8, with the exception of callable capital, which is analysed separately in the next subsection. The majority of the large individual commitments are considered to have good creditworthines, called *investment grade*. The commitments with a weaker creditworthiness, called *speculative grade*, are assessed to be in the rating category BB, which is the strongest category within *speculative grade*.

Table 9. Creditworthiness assessments for individual large credit guarantees and loans (excluding callable capital) on 31 Dec 2021, SEK billion

	High expected recovery (≥ 60%)	Normal expected recovery (25,–60%)	Low expected recovery (≥,25 %)
Minimal to limited credit risk (AAA/Aaa – BBB-/Baa3)1[1]	19.4	31.2	17.9
Elevated to very high credit risk (BB+/Ba1 – C/C)2[2]	6.8	30.4	-

[1] Investment grade rating
[2] Speculative grade rating

The amount that can be fulfilled within the five-year time horizon of the analysis. Data from EKN and the Debt Office.

In light of the fact that the majority of the exposures are to commitments with minimal to limited credit risk, and that there is no exposure to the lowest rating categories (B to C), the Debt Office assesses the risk of major losses arising solely from these name concentrations to be low.

Credit risk in the callable capital that constitutes large individual commitments

Sweden is a member of a number of international financial institutions (multilateral development banks), which through their lending activities contribute to the objectives agreed upon by the member countries. Membership can be equated with partnership, since each member country contributes a portion of the institutions' equity. This consists of both paid-in capital and callable capital. The callable capital entitles the institutions to additional capital contributions from the member countries, up to the guaranteed amount. The size of Sweden's callable capital commitments to international financial institutions is shown in Table 10.

Table 10. Sweden's callable capital commitments to international financial institutions on 31 Dec 2021, SEK billion

	Callable capital
European Investment Bank	80.0
African Development Bank	32.8
Nordic Investment Bank	26.6
World Bank Group	22.5
European Development Bank	5.5
Inter-American Development Bank	4.9
Asian Infrastructure Investment Bank	4.6
Asian Development Bank	4.4
Council of Europe Development Bank	1.3
Eurofima	0.4
Total	**183.0**

Data on 31 December 2021 from the Government Offices of Sweden and Trafikverket (the National Transport Administration).

To date, capital has never been called 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's assessment is that the callable capital commitments would only need be fulfilled if an institution were to find itself in an extraordinary situation involving an acute need for capital infusion due to financial difficulties. In such a situation, the member countries could also opt to make capital contributions that don't involve fulfilling callable capital commitments. No member country has, however, committed to any such capital contributions. Instead, this is done through new agreements between the member countries and the institutions. The risk analysis only focuses on the capital contribution commitments to which the state has committed explicitly and which could potentially entail fulfilment.

The Debt Office assesses the probability of callable capital commitments being fulfilled to be low. This is mainly because the institutions have a high underlying creditworthiness, attributable in part to their role as preferential creditors.[12] The underlying creditworthiness, as opposed to a

[12] The good underlying creditworthiness can also be explained by the fact that dividends are generally not distributed. NIB (Nordic Investment Bank), however, normally distributes an annual dividend corresponding to 25 per cent of profit

rating, takes into account the institutions' creditworthiness, providing that they did not have 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 range of aa- to aaa. This high underlying creditworthiness is also based on the fact that the member countries have a history of contributing capital, when required, for example when an institution's lending is to be increased.[13]

Table 11. Creditworthiness of international financial institutions of which Sweden was a member on 31 Dec 2021

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

Close connections are limited – low risk of problems spreading

The guarantee holders and borrowers in the regular portfolio have a few connections to one another that could give rise to what is known as default contagion. However, these financial relationships, which occur for example through participating interests and group affiliation, are small in terms of amounts. They therefore entail a low risk of large losses.

Industry concentrations – exposure to telecom operators

The regular portfolio consists of commitments in a number of various industries, presented in Table 12. The most prominent industry concentration is in telecommunications. It amounts to SEK 81.2 billion, or 11 per cent of the portfolio. This consists mainly of export credit guarantees linked to the sale of telecommunications equipment, for which the state's credit risk lies with the purchasers (telecom operators).

The exposure to telecom operators increased in absolute terms to SEK 81.2 billion, from SEK 70.9 billion the previous year. The share of industry concentrations in the regular portfolio constituted 11 per cent compared with 10.2 per cent the previous year. As in the previous year,

to the member countries. In most of the other institutions, however, distributions have never occurred and they are not expected to occur in the future.

[13] The member countries are, however, not obligated to make such capital contributions and they also involve small amounts that are paid in under normal circumstances.

a number of guarantees within the telecom industry are large enough to also constitute individual name concentrations (see the section on the largest individual commitments).

Table 12 shows that only a small share of the portfolio, 22.9 per cent, can be categorised by industry affiliation. The remainder of the portfolio consists mainly of student loans and callable capital.

Table 12. The regular portfolio's exposure to companies on 31 December 2021, by industry

	SEK billion[1]	Share in per cent
Telecommunications	81.2 (70.9)	11.0
Transport	32.6 (41.8)	4.4
Power supply	31.7 (17.7)	2.4
Industrial goods and metals	17.6 (20.1)	4.3
Properties	4.4 (2.8)	0.1
Energy and natural resources	1.5 (1.4)	0.6
Healthcare and chemicals	0.8 (0.0)	0.2
Total	**169.8 (154.7)**	**22.9**

[1] The previous year's amount is in parentheses.
Industry distribution based on the Global Industry Classification Standard (GINS) developed by Morgan Stanley Capital International (MSCI) and S&P. Data from EKN, Sida, CSN, Boverket, the Debt Office, and the Government Offices.

Concentration to telecom operators

The Debt Office assesses the risk of the industry concentration to telecom operators giving rise to large losses to be low. The industry continues to be relatively stable with a limited probability of negative shocks that could create clusters of losses.

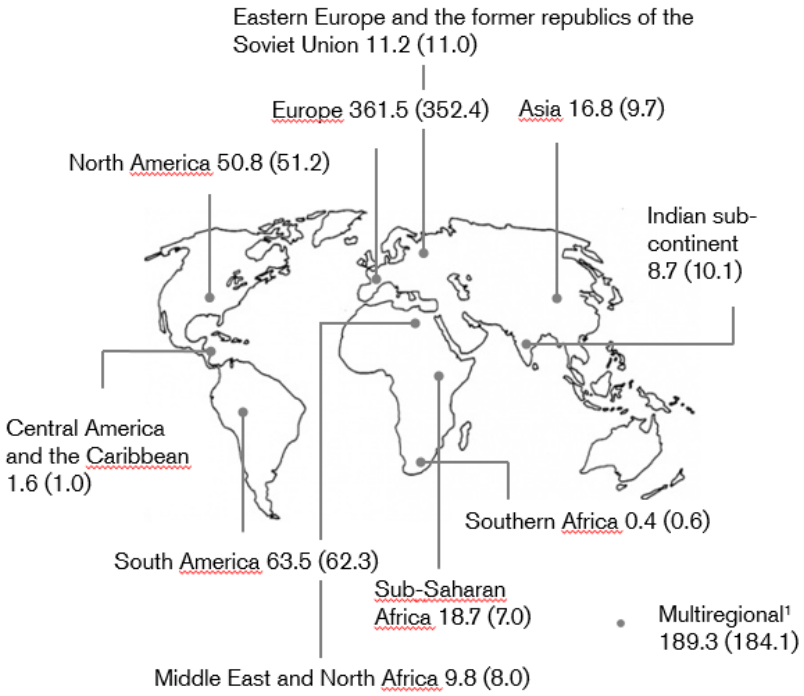
The central government's exposure to telecom operators consists of export credit guarantees. Historically, these have mainly been issued for export transactions to more risk-laden countries, while in recent years a displacement towards low-risk countries has occurred. The creditworthiness in the telecom portfolio has thereby improved compared with previous years. The guarantees issued chiefly concern companies with strong positions in their respective domestic markets.

The Debt Office assesses the state's opportunities for recovery after fulfilment to be normal in most cases, corresponding to a recovery rate of about 50 per cent of the fulfilled amount.

Geographic concentrations

Commitments in the regular portfolio have a distinct geographic concentration to Sweden. The commitments in the regular portfolio are distributed across a large number of countries, which is mainly attributable to the export credit guarantees issued by EKN and the central government's commitments with international financial institutions. Chart 2 shows the portfolio's composition in terms of geographic regions, with 2020 figures in parentheses.

Chart 2. Regular portfolio distribution by geographic region on 31 Dec 2021, SEK billion



[1]The multi-regional category includes callable capital commitments to international financial institutions. The common denominator of the commitments in this category is that they contribute to the geographic distribution of the portfolio.

The categories correspond to those used by Moody's to analyse geographic concentrations in the structured products. Moody's Approach to Rating Corporate Synthetic Collateralised Debt Obligations. Exhibit 9: Classification of Countries by Contagion Region (2015). Figures in parentheses refer to 2020. Data from EKN, Sida, CSN, Boverket, the Debt Office, and the Government Offices.

High geographic concentration to Sweden

The geographic distribution of the portfolio in Chart 2 is supplemented in Table 13 with data on the ten largest exposures to individual countries. The latter also describes how external assessors view the country risk in these countries. The country risk takes the degree of economic and political stability into account and can be considered an indicator of the risk of negative economic shocks.[14]

Table 13 shows that there is a clear geographic concentration to Sweden, where just over 41 per cent of the guarantees and lending portfolio are.

[14] The country risk of a particular country is not be confused with a state's creditworthiness. Even though these two risk assessments largely take into account the same risk factors, there are also key differences between them.

Table 13. The ten largest country exposures in the regular portfolio on 31 Dec 2021, SEK billion

	Country Risk Classification[1]	Country Risk Rating[2]	Amount	Percentage
Sweden	0	Aaa/Aaa	310.3	41.4
USA	0	Aaa/Aaa	55.9	7.4
Brazil	4	Baa1/Baa2	55.6	7.4
UK	0	Aaa/Aaa	17.1	2.3
Japan	0	Aaa/Aaa	11.8	1.6
Angola	7	B1/B3	5.0	0.7
Turkey	5	Ba3/B2	4.7	0.6
India	3	A2/A3	4.1	0.6
Spain	0	Aa1/Aa1	4.1	0.5
Ghana	6	B1/B2	4.1	0.5
Total			**472.7**	**63.0**

[1] Refers to EKN's country risk classification, in which category 0 represents the lowest risk and category 7 the highest risk.
[2] Refers to Moody's "country ceiling" for debt instruments in local and foreign currencies, respectively. Moody's (2022) Sovereign and Supranational Rating List.

Low risk of large losses for Swedish student loans

The Debt Office assesses the risk of large losses for student loans resulting from the concentration to Sweden to be low. The largest part of the concentration, 75 per cent, corresponding to SEK 234 billion, consists of student loans to borrowers residing in Sweden.

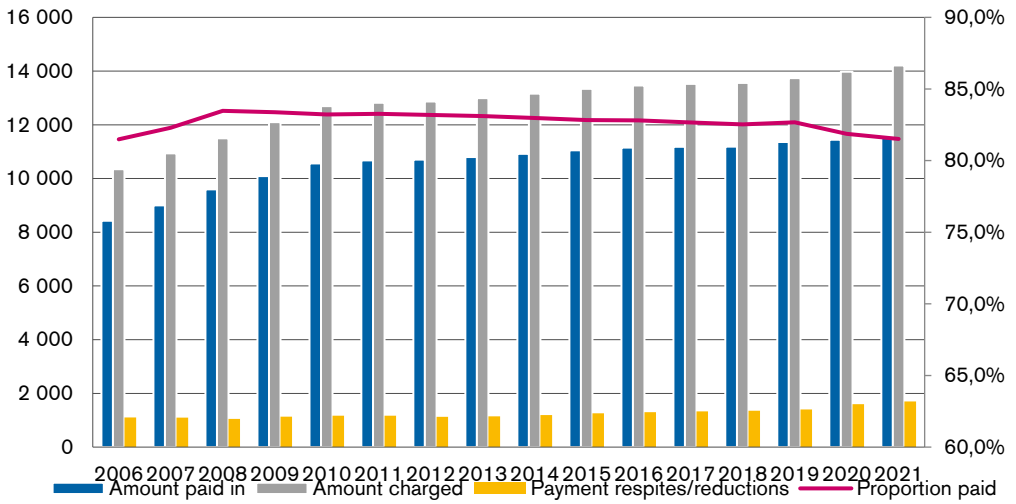
Student loans have been issued under two distinct systems: student loans and annuity loans. Both types of loans have similar characteristics, such as long maturities and in part "soft" conditions involving the option to reduce the borrower's annual payments during periods of compromised income. The student loans can therefore be compared to conditional loans, for which the extent and rate of repayment to the central government depends on the borrower's future income growth. As stated in the above section, *The Analytical Framework*, a reduction is, however, not classified as a loss in this analysis. Rather, a loss does not occur until the actual write-off of a loan.

The Debt Office's assessment is that the risk of large write-offs is low. Write-offs due to age cannot exceed SEK 2.4 billion over the coming five years given the state of the loan portfolio. Other significant reasons for write-offs, such as death and qualifying studies, are not deemed to have a significant effect on the economic development in the country. Therefore, there is a low likelihood of these reaching significant amounts during the analysis' horizon.

Low likelihood of significant deterioration in cash flows from student loans

The analysis of large write-offs is mainly relevant because they have an adverse effect on central government net lending. However, only analysing the risk of write-offs provides a limited picture of how student loans can affect central government finances. Doing so does not address the effect that reduced payments on loans during certain periods have on the central government's cash flows. Given the size of the payments received annually, a drastic reduction of payments on student loans would have distinctly adverse effects on cash flows. Therefore, although reduced payments are not classified as losses, the risk is relevant to analyse. Figure 5 shows both the size of the annual amounts paid in on student loans and the amounts that were charged, as well as the relationship between them.

Figure 5. Amounts paid in and charged annually, SEK million



Data from CSN.

The difference between the amounts charged and received annually is mainly in the form of reductions of the annual amount and the amounts that the borrowers were obligated to pay but still failed to pay (suspension of payments). A reduction means that borrowers will postpone repayment, and it is still assumed that they will pay back the loan in full. If a reduction is made for annuity loans, corresponding amounts are therefore added to future payments. Decisions on reduction can be made several years in a row. If a debt remains due to a reduction, it is written off when the borrower becomes eligible for a write-off based on age. The write-off does not necessarily have to correspond to the sum of all reductions and suspensions of payments. A reduction of the “same lent krona” can be made several years in a row but can only be written off once. An increase in reductions and suspensions of payment, however, entails a corresponding increase in the central government debt and budget balance, all else being equal.

The fact that reductions and suspensions of payments increase over time in terms of volume is, as described, a result of increased lending by CSN. However, if the increases are particularly high during certain periods, the possibility of payment is lower than usual during these periods. All else being equal, this leads to poorer cash flows for the central government.

As a proportion of the total amount paid in, even the most significant increases during the years in focus have been relatively limited. One such example is during the pandemic, mainly in 2020.[15] A likely explanation for the fact that the reductions and suspensions of payments have not increased more during the different economic crises that Sweden has experienced since the 1990s is that, overall, student borrowers had good creditworthiness and thereby the capacity to pay despite those crises. The borrowers' relatively high level of education reduces the risk of unemployment, and the presence of unemployment insurance and other insurance systems mitigates the effect of unemployment on borrowers' incomes. Student loans are well-diversified because the borrowers are employed across a variety of industries. It reduces the risk of payments on student loans sharply decreasing if only individual industries were to be affected by economic shocks.

The proportion of the population registered with an unemployment benefit fund has decreased since the year 2000, although the pandemic led to a sharp increase in 2020.[16] A continued decline in this proportion could lead to sharper increases in reductions and suspensions of payments than previously, in a scenario in which many student borrowers lose their jobs. Another factor that may entail sharper increases, primarily in suspensions of payments, than in previous economic crises, is if many borrowers are at a significantly higher level of indebtedness.

Limited geographic concentration in relation to the war in Ukraine

The war in Ukraine during the first quarter of 2022 has led to an in-depth analysis of the commitments that have a direct connection to Ukraine, Russia, and Belarus. This is because the war caused a significant increase in the risk level for the guarantees issued to companies in these countries.

At the turn of the year, the aggregate exposure in these three countries amounted to almost SEK 4.7 billion divided among around 80 guarantee commitments, of which approximately SEK 3.4 billion can be fulfilled within the five-year time horizon of the risk analysis. This corresponds to approximately 0.6 per cent of the regular portfolio. The largest individual guarantee commitment can be fulfilled at a maximum of SEK 1.5 billion in the next five years. In addition to this guarantee, there are about ten guarantees with a volume of between SEK 100 and 300 million.[17] The rest of the commitments are small.

There will likely be losses in this sub-portfolio, due to the war and because several commitments already had a higher-than-average risk level for the regular portfolio to begin with.

[15] In its annual report, CSN defines the rate of repayment as deposited annual amounts after reductions. In this report, the Debt Office uses deposited annual amounts including reductions, of which there is a deviation in the rate of repayment.

[16] https://iaf.se/statistikdatabasen/statistikdatabas/arbetsloshetskassornas-medlemsantal/ 3 March 2022.

[17] For three of these guarantees, only a smaller part of the outstanding guarantee framework is utilised, and it is currently unlikely that additional guarantee amounts will be used. In practice, the overall exposure is therefore approximately SEK 700 million lower than stated in the paragraph above.

But, given the small volumes overall, the Debt Office's assessment is that they can only to a limited extent contribute to large losses arising in the regular portfolio as a whole.

The war in Ukraine has changed the security situation in Europe, and the future course of events remains uncertain as does what the effect could be on the real economy and the financial markets. The Debt Office is therefore following the development closely and maintaining an ongoing dialogue with other agencies and participants in the financial markets.

Consolidated assessment of risk factors

On the basis of this analysis of identified risk factors, the Debt Office assesses the risk of large losses arising in the regular portfolio to be low, even if the risk level has to some extent increased, mainly because the portfolio grew during the pandemic.

The portfolio's sensitivity to economic downturns is considered to be limited, although a very deep and lengthy recession could cause large losses. A more extensive economic crisis than what has so far resulted from the pandemic could thereby affect the overall assessment. This is especially true if such a recession were to strike one or more of the concentrations in the portfolio particularly hard at the same time as the losses in the rest of the portfolio were higher than normal.

Large parts of the portfolio have a relative good creditworthiness (see Figure 3) and the commitments with high or very high credit risk (rating categories B to CCC/D) are limited. The more risk-laden commitments have a relatively good distribution, in terms of amount, in which the number exceeding SEK 1 billion is limited to a handful. None of them are included in the name concentrations presented in Table 8. The overall good creditworthiness in itself indicates that there is good resilience to economic downturns. Existing portfolio concentrations are currently only considered to give rise to a low level of risk.

What would primarily lead to a higher risk of large losses, however, is if the creditworthiness in the portfolio were to diminish and there were a distinct increase in commitments with high to very high credit risk. This is especially true if the commitments with low creditworthiness were to be particularly sensitive to economic fluctuations and/or active in an industry or geographic area undergoing a significant structural transition that could cause a number of companies to be edged out.[18]

[18] Examples of losses occurring in the wake of major transitional periods include guarantees to the Swedish shipbuilding industry in the 1980s, export credit guarantees to, among others, Latin America during the same period and the guarantee to Saab Automobile after the most recent financial crisis.

Credit risks in the deposit insurance scheme

The Debt Office assesses the risk of large losses in the deposit insurance scheme to remain at the same moderate level as in the previous year. For the major banks and other institutions deemed systemically important, the deposit insurance scheme may need to be utilised to provide consumer protection in resolution. These institutions often have a debt structure with an extensive amount of liabilities with lower priority rights than those of guaranteed deposits, which means that very significant losses would have to occur before the deposit insurance scheme would need to be activated. If a non-systemically important institution were to fail, the deposit insurance commitment would be fulfilled by the state paying compensation directly to the depositors and receiving a claim on the institution. For large losses to arise from direct fulfilments of this kind, one of the largest non-systemically important institutions, or several of them, would have to fail. The Debt Office assesses the risk of that occurring to be moderate.

Commitment to consumer protection and financial stability

Deposit insurance is a form of consumer protection for money in accounts at banks, credit market companies, and certain investment firms, collectively referred to here as institutions.[19] The maximum compensation amount is SEK 1,050,000 per person and institution. Deposit insurance is a form of consumer protection. It also reduces the risk of many depositors withdrawing their funds at the same time – so-called bank runs – which can threaten financial stability.

Deposit insurance is the single-largest central government guarantee in terms of reported amount. On 31 December 2020, the total guaranteed deposits amounted to SEK 1,917 billion distributed among 106 institutions.[20]

[19] Most institutions authorised to accept deposits from the public are covered by deposit insurance, in accordance with the Deposit Insurance Act (1995:1571). There are exceptions, however, such as so-called deposit-taking companies.

[20] Guaranteed deposits are reported once a year, and the volumes on 31 December 2021 had not yet been received at the time of this report. The amount is therefore not adjusted for changes in 2021.

Different function depending on type of crisis management

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

If an institution with guaranteed deposits encounters problems that lead to bankruptcy or if Finansinspektionen (the Swedish Financial Supervisory Authority) decides that the deposit insurance scheme should be activated, a so-called direct fulfilment of the deposit insurance commitment occurs.[21] This means that the central government pays out compensation to the institutions' depositors and acquires the depositors' claims on the institution in bankruptcy.

If a failing institution is deemed systemically important[22] and therefore to be managed through resolution, the central government assumes control (but not ownership) of the institution in order to restructure it or wind it up in orderly manner.[23] The main principle of resolution is that shareholders and lenders have their claims written down and/or converted into share capital on the basis of a predetermined order of priority – the write-down of liabilities, or "bail-in".

Guaranteed deposits, however, are exempt from the write-down of liabilities. Any losses or recapitalisation requirements for which the depositors would have been responsible, had they not been exempted, are covered instead by the deposit insurance fund. The contribution for a single institution, however, may never exceed 200 per cent of the minimum level of the fund. This means that the fund can contribute a maximum of SEK 30.7 billion per institution (see the fact box Payments from the deposit insurance fund). This is done 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 fulfilment
- Deposit insurance contributions in resolution

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[21] Section 8 of the Deposit Insurance Act (1995:1571) states that decisions by Finansinspektionen are based on the circumstance that a deposit fallen due for payment has not been repaid by the institution and that the inability to pay is attributable to the institution's financial situation and not merely temporary.

[22] "Systemically important" refers in this report to the Debt Office's classification of an institution as having operations that, were they to cease, would likely lead to a serious disruption of the financial system.

[23] Resolution is a restructuring procedure for institutions that cannot be wound up through bankruptcy, as this would create serious disturbances in the financial system. The purpose of resolution is to give the state an opportunity to maintain the institution's critical functions (accounts, payment processing, access to capital, etc.) without taxpayers having to bear the costs. As with bankruptcy, the intention is for shareholders and lenders to bear the costs of an institution's failure. The Debt Office is the Resolution Authority responsible for both the preparatory work and management of institutions in crisis. Resolution is regulated under the Resolution Act (2015:1016) and the Resolution Ordinance (2015:1034). These are based on EU Directive 2014/59 and the Commission Delegated Regulation (EU) 2016/778.

In accordance with this division, the institutions have been separated into different categories.

Different categories of institutions

The relevant institutions in the analysis of the deposit insurance scheme have been divided into four categories on the basis of the different modes of functioning for the deposit insurance scheme (see Table 14). The institutions assessed to be subject to resolution are placed in categories 1 and 2.

Institutions that are instead considered subject to direct fulfilment in the event of their failure are included in categories 3 and 4. The division is based on the Debt Office's resolution-planning decision from December 2021, entailing that eight deposit-taking institutions carry out functions deemed critical to the financial system.[24] The decisions are based on an assessment of whether the individual institution, if it were to risk failure, could be managed through bankruptcy/winding up or whether resolution measures would be required. If the conditions change, the decision may be reconsidered. For example, an institution in category 1 or 2 could be deemed non-systemically important at default and thus subject to direct fulfilment instead of resolution. Conversely, it could be judged necessary to employ resolution for institutions in categories 3 and 4 – for example, in a situation involving a more widespread and general threat to financial stability. This circumstance does not appreciably affect the conclusions of the analysis.

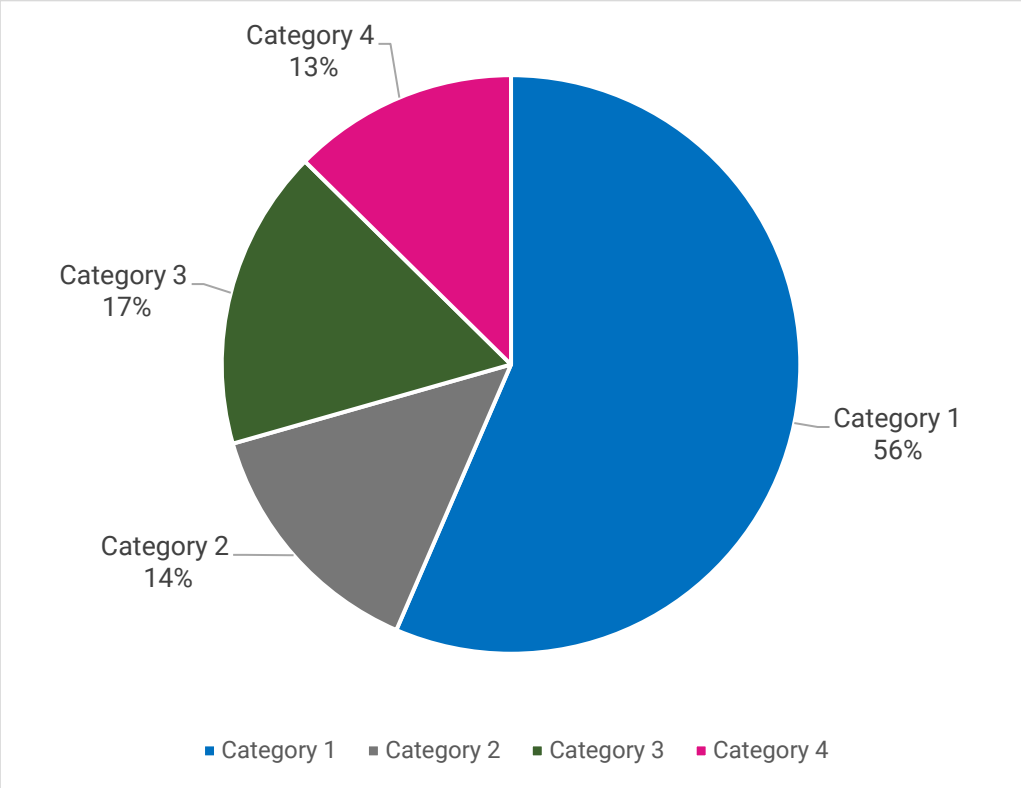
Table 14. Categories of institutions according to the analysis in this report

Institution categories	Resolution	Bankruptcy/liquidation (direct fulfilment)
Category 1: Major banks that, in the event of a crisis, cannot be managed by means of bankruptcy proceedings.	- Skandinaviska Enskilda Banken - Svenska Handelsbanken - Swedbank	
Category 2: Other institutions that, like the major banks, are not deemed suitable for bankruptcy proceedings.	- Landshypotek Bank - Länsförsäkringar Bank - SBAB - Skandiabanken - Sparbanken Skåne	
Category 3: Institutions considered subject to direct fulfilment of the deposit insurance scheme and that have guaranteed deposits of more than SEK 10 billion.		16 institutions
Category 4: Institutions considered subject to direct fulfilment of the deposit insurance scheme and that have guaranteed deposits amounting to less than SEK 10 billion.		Approx. 80 institutions

[24] SEK (the Swedish Export Credit Corporation) is also subject to the same decision by the Debt Office, but this institution has no guaranteed deposits.

As shown in Figure 6, the guaranteed deposits are unevenly distributed among the various institutions. The three major banks (category 1) account for 56 per cent while the smallest institutions, in category 4 – approximately 80 institutions – account for only 13 per cent combined.

Figure 6. Total guaranteed deposits by category on 31 Dec 2020



Distinguishing risk factors for the deposit insurance scheme

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

The first such event is if one, or a few, sufficiently large institutions were to fail independently of one another and thus by their size alone generate large losses (name concentrations). There are a number of large name concentrations within the first two categories of institutions. There are also smaller name concentrations in category 3 that include the 16 institutions deemed subject to direct fulfilment and that have guaranteed deposits in excess of SEK 10 billion.

The other such event is if many of the institutions were to fail, together causing large losses. A high degree of default could almost exclusively be attributed to them having been in some way dependent on one other, i.e. that they covary. Covariance can be direct or indirect (see Chart 1).

The fact that different groups of institutions have similar business models can also generate covariance of default risk. If institutions have similar lending portfolios, there is for example an increased probability of large credit losses within a specific area of lending affecting several institutions. An example of a business model shared by many institutions is the issuance of loans to parties with lower creditworthiness. In the event of a persistent recession, for example, this customer group is more likely to have payment problems. When they are unable to pay off their loans, several institutions consequently suffer higher credit losses. In the worst case, this could lead to a cluster of defaults.

Another risk factor for the financial system is that the institutions are, to varying degrees, interconnected. One such connection is the occurrence of financial connections between certain institutions. The institutions have varying degrees of credit exposures to one another in the form of both secured and unsecured lending. This means that financial problems affecting one institution will spread to other institutions through their ownership of securities in, and lending to, the first institution. If the institutions affected by these spillover effects fail to manage the losses that occur, there may in turn be additional spillover effects.[25]

The fact that these institutions are interconnected also entails the risk that one institution's credibility problems will spread to other institutions. The spread of credibility problems mostly concerns institutions that have a similar risk profile or are active in the same markets. An example of this was when money laundering accusations in 2018 and 2019 towards a couple of banks operating in the Baltic market also led to suspicions of other institutions with activities in the Baltic region. The fact that credibility issues can spread in this way could exacerbate problems for an institution that is already in a difficult situation for other reasons.

As with mainly student loans in the regular portfolio, the deposit insurance scheme also has a geographic concentration to Sweden, even if many major institutions have significant operations in other countries. An overall deterioration of the state of the Swedish economy would thereby increase the risk of direct fulfilments of the deposit insurance commitment. In regard to the war in Ukraine, and the worsened security situation in Europe, it should be noted that the Swedish credit institutions have limited direct exposure to Ukraine and Russia.

Moderate risk of direct fulfilments causing large losses

As previously explained, direct fulfilment only applies to institutions in categories 3 and 4, because institutions in categories 1 and 2 are expected to be managed through resolution. Large losses as a result of direct fulfilments of the deposit insurance commitment could arise from two different events. The first is if one of the largest institutions in category 3 were to fail, or if more than one of the institutions were to fail independently of one another (name concentrations). The other such event is if several of the institutions were to fail as a result of covarying factors.

[25] Riksbank (2021). Financial Stability 2021:2. p. 3.

The risk that the name concentrations in category 3 would lead to large losses depends mainly on the likelihood of default among the individual large institutions and the size of their guaranteed deposits. The 16 institutions in category 3 have around SEK 322 billion in guaranteed deposits. Given that the institutions in category 4 each have a smaller amount of guaranteed deposits, the risk in this category of large losses due to defaults independent of one another, is considerably lower.

It should be noted that the likelihood of a direct fulfilment of the deposit insurance commitment is lower than the likelihood of an institution failing. This is mainly because some of the problems that could lead to a default would not necessarily result in a direct fulfilment. An example of this is if Finansinspektionen were to revoke an institution's authorisation (which would be classified as a default) and the institution were subsequently wound up through another actor acquiring all or parts of the institution (including its stock of deposits).[26]

The likelihood of default can be estimated by assessing an institution's creditworthiness, for example, by means of a credit rating. This has been used in the analysis of those institutions that have a public rating. For the most relevant institutions, among those lacking such a rating, the Debt Office has made its own creditworthiness assessment based on the methods of the international credit rating institutions.[27]

In general, institutions in category 3 have a lower creditworthiness than institutions in categories 1 or 2. The probability of such institutions failing is worth considering but even though the institutions in category 3 entail a comparatively higher risk level, only a limited number of them have weak creditworthiness. The assessments for these institutions have not changed appreciably from previous years.

The analysis of covariance of defaults includes both categories 3 and 4. Category 4 consists of approximately 80 smaller institutions that together have guaranteed deposits totalling approximately SEK 242 billion. Altogether, both categories amount to about a hundred institutions with a total volume of almost SEK 564 billion.

As previously mentioned, the financial sector is characterised by a number of risk factors that can contribute to covariance of default, which also applies to the institutions in categories 3 and 4. The vast majority have either all or parts of their operations in Sweden, i.e., a geographic concentration. Many are savings banks with similar business models in the form of deposits and lending at the local level, even if these have a large geographic distribution across the country.

One risk factor is that certain institutions have a significant part of their lending to the customer segment with relatively low creditworthiness. This business model entails an enhanced risk of credit losses in the institutions because the creditworthiness of borrowers in similar sectors also tends to be affected by the same background factors, such as the general development of

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

[27] Moody's (2018) Rating Methodology: Banks. S&P (2011). Banks. Rating Methodology and Assumptions.

the economy. An economic shock, for example a deep recession that leads to a sharp increase in credit losses in the financial sector, could therefore cause large losses for this group.

Altogether, the Debt Office's assessment is that there is a moderate risk of large losses, from direct fulfilments, that are due to name concentrations or covarying defaults. However, the risk of significantly larger losses than SEK 20 billion is considered low, because a large number of them would have to fail for that to be probable.

Lower recovery with direct fulfilment than in resolution

In the Debt Office's assessment, the recovery of paid-out funds in most cases is lower with direct fulfilment of the deposit insurance commitment than when deposit insurance is utilised in resolution. The degree of recovery can, however, vary widely between compensation cases.

The difference in recovery is due to these institutions largely being funded by deposits, which leads to a capital structure usually involving a limited volume of liabilities that are written down before guaranteed deposits. The positive effect of the right to a higher order of priority for guaranteed deposits is thus limited for the institutions deemed subject to direct fulfilment.

At the same time, it should be pointed out that larger fulfilments, which erode available funds in the deposit insurance fund, lead to an increase in future fees paid by the institutions that are affiliated to the deposit insurance scheme (see the fact box Payments from the deposit insurance fund). This retroactive fee is distinct from the regular portfolio fee and contributes to the entire loss being borne by the institutions. However, depending on the situation that arises, this long-term cost coverage may be beyond the time perspective in this risk analysis.

Large share of deposits affects recovery rate

In conjunction with the EU Bank Recovery and Resolution Directive being transposed into Swedish law in 2016, guaranteed deposits were assigned a general right of priority.[28] This entails a preferential claim on any dividends from bankruptcy in in comparison with claims that have no priority right (so-called non-preferential claims). The preferential arrangement must also be respected in resolution.

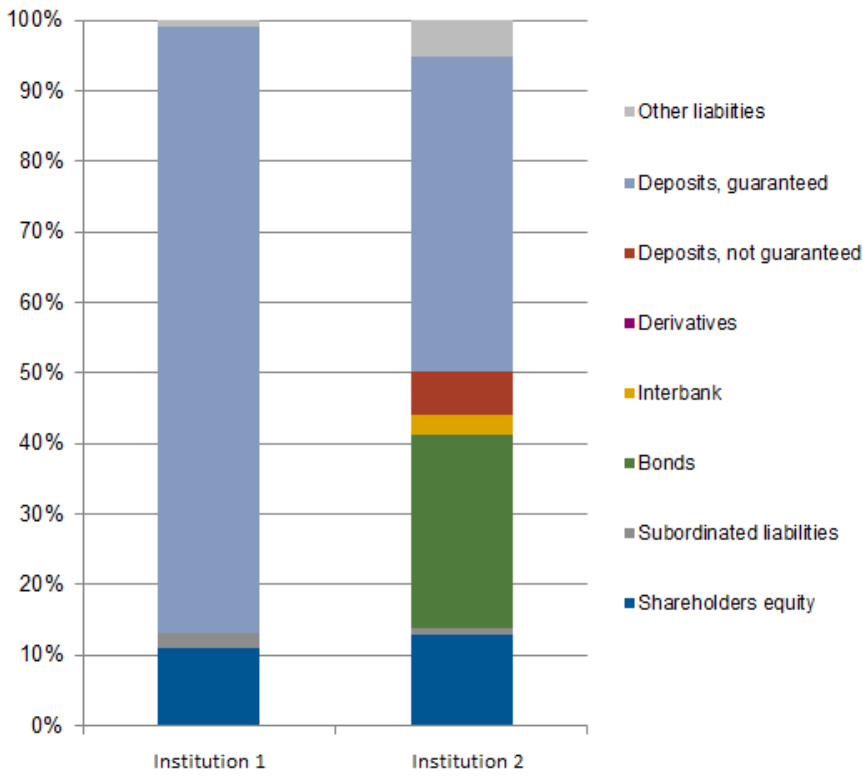
The prioritised position of guaranteed deposits entails a lower risk of losses for the deposit insurance scheme both in the case of direct fulfilment and resolution. However, this positive effect is judged to be limited for institutions that finance their operations extensively via deposits from the general public (with the majority of those deposits protected by deposit

[28] See Section 13 a of the Rights of Priority Act (1970:979). The amendment entered into force on 1 February 2016.

insurance). This is because these institutions lack a large quantity of claims with lower priority rights than guaranteed deposits.

While the capital structure of the institutions presumed to be subject to direct fulfilments (categories 3 and 4) does in fact show differences, the share of deposits is significantly higher overall than in the institutions in categories 1 and 2. Some institutions fund their activities almost exclusively with deposits, while others employ more diversified financing that also includes non-preferential capital market borrowing. The share of deposits covered by deposit insurance is, on average, 85 per cent for institutions in category 3.[29] For a number of institutions, however, that share is over 90 per cent.[30]

Figure 7. The balance sheet for two types of institutions considered subject to direct fulfilment on 31 Dec 2020



[29] As a result of the large number of institutions in category 4, only an average has been calculated for category 3.

[30] Certain types of debt have the same priority rights. These include non-preferential debt such as short-term capital market borrowing, interbank borrowing, bond loans, and derivatives.

Figure 7 illustrates the two institutions in category 3 that are the extremes in regard to capital structure. Institution 1 is the one that finances its activities to the largest extent through deposits, and institution 2 is the one with the largest share of non-preferential capital market borrowing.

An institution's capital structure could change if financial problems arise, which would lead to an increased risk of losses under the deposit insurance scheme. Such dynamic capital structure changes are explained in more detail in the next section on the deposit insurance scheme's contribution in resolution.

Low risk of large losses for deposit insurance in resolution

In the Debt Office's assessment, there is a low risk of large losses resulting from potential deposit insurance contributions in resolution.

If resolution intervention were nevertheless required, there would have to be significant losses in the institutions to merit activating the deposit insurance scheme. In the event that the deposit insurance fund would need to be utilised in resolution, the contribution for a single institution may, however, never exceed 200 per cent of the minimum level of the fund. This means the most the fund can contribute is around SEK 30.7 billion (see the fact box Payments from the deposit insurance fund).

In most cases, the potential for recovering funds paid out under the scheme is good. The analysis covers the institutions that would presumably be subject to resolution if they were to fail. These include the major banks (category 1) and five other deposit-taking institutions (category 2).

Probability of resolution intervention

The probability of resolution intervention depends on the likelihood of an institution failing.

All institutions in category 1 or 2 have a rating of A3 or higher according to the Moody's scale. Thus, all the institutions have an *investment grade rating* as shown in Table 15. This implies a low probability of default and resolution intervention.

Table 15. Rating and probability of default

	No. of institutions	Probability of default for individual institutions[1] per cent
Minimal to limited credit risk (AAA/Aaa – BBB-/Baa3)2	8	0.1-2.1
Elevated to very high credit risk (BB+/Ba1 – C/C)3	-	-

[1]For a five-year time horizon
[2] Investment grade rating.
[3] Speculative grade rating

Moody's Annual Default Study 2020, Exhibit 43 – Average Cumulative Issuer-Weighted Global Default Rates by Alphanumeric Rating, 1983–2019.

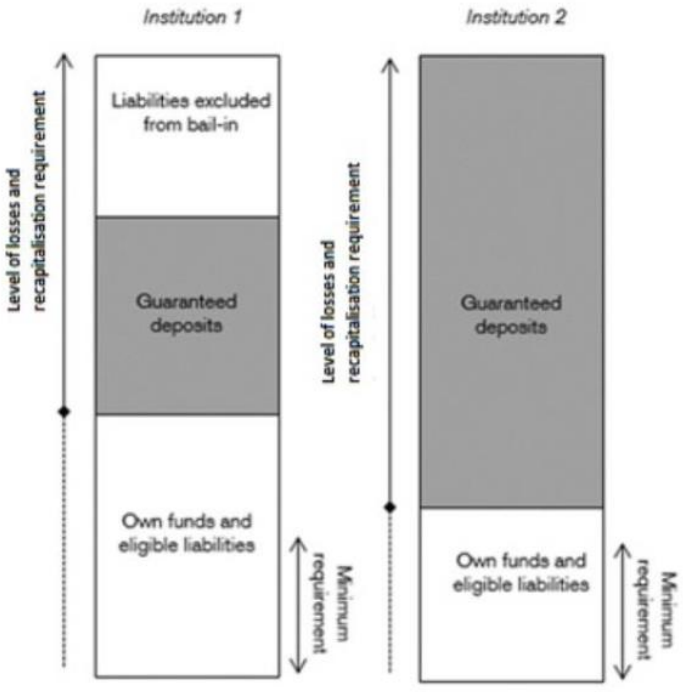
Likelihood of deposit insurance being utilised in resolution

In the Debt Office's assessment, the institutions would have to experience significant losses in order for it to become necessary to activate the deposit insurance scheme in resolution. This is because guaranteed deposits have a high rank in the capital structure given the general rights of priority.

There are two primary factors that affect the risk of the deposit insurance being utilised in resolution. The first is the size of the losses in an institution and thus the need for loss absorption and recapitalisation. The other is the institution's capital structure, i.e. the amount of own funds and eligible liabilities with lower priority rights than those of guaranteed deposits.

Chart 3 describes the schematic level of the losses that would have to occur before the deposit insurance scheme would need to be utilised in resolution, depending on the capital structure of the institution. The likelihood of such a contribution is particularly low for institutions with own funds and eligible liabilities that exceed MREL. If we compare the institutions in Chart 3 below, the level of losses required to activate the deposit insurance scheme in resolution is lower in institution 2 than in institution 1.

Chart 3. Illustration of loss level required to activate deposit insurance scheme in resolution



The Minimum Requirement for Own Funds and Eligible Liabilities (MREL)

To ensure that resolution can be carried out without requiring the use of state funds, the Debt Office imposes specific demands on the capital structure of financial institutions, called the minimum requirement for own funds and eligible liabilities (MREL). The requirement is to ensure that the institutions always have a certain amount of own funds and liabilities with lower priority rights than those of guaranteed deposits.

MREL shall reflect the assessed loss absorption and recapitalisation requirements for every individual institution in the event of default. MREL therefore consists of two subcomponents: a loss-absorption amount that is to essentially correspond to the firm's capital requirements, and a recapitalisation amount that is to correspond to the amount needed to restore capital to the requirement levels that will apply for the institution after resolution.

In December 2021, the Debt Office decided on the MREL requirements that will apply for the institutions. MREL will apply in full as of 2024.[31]

Analysis of the major banks' capital structure

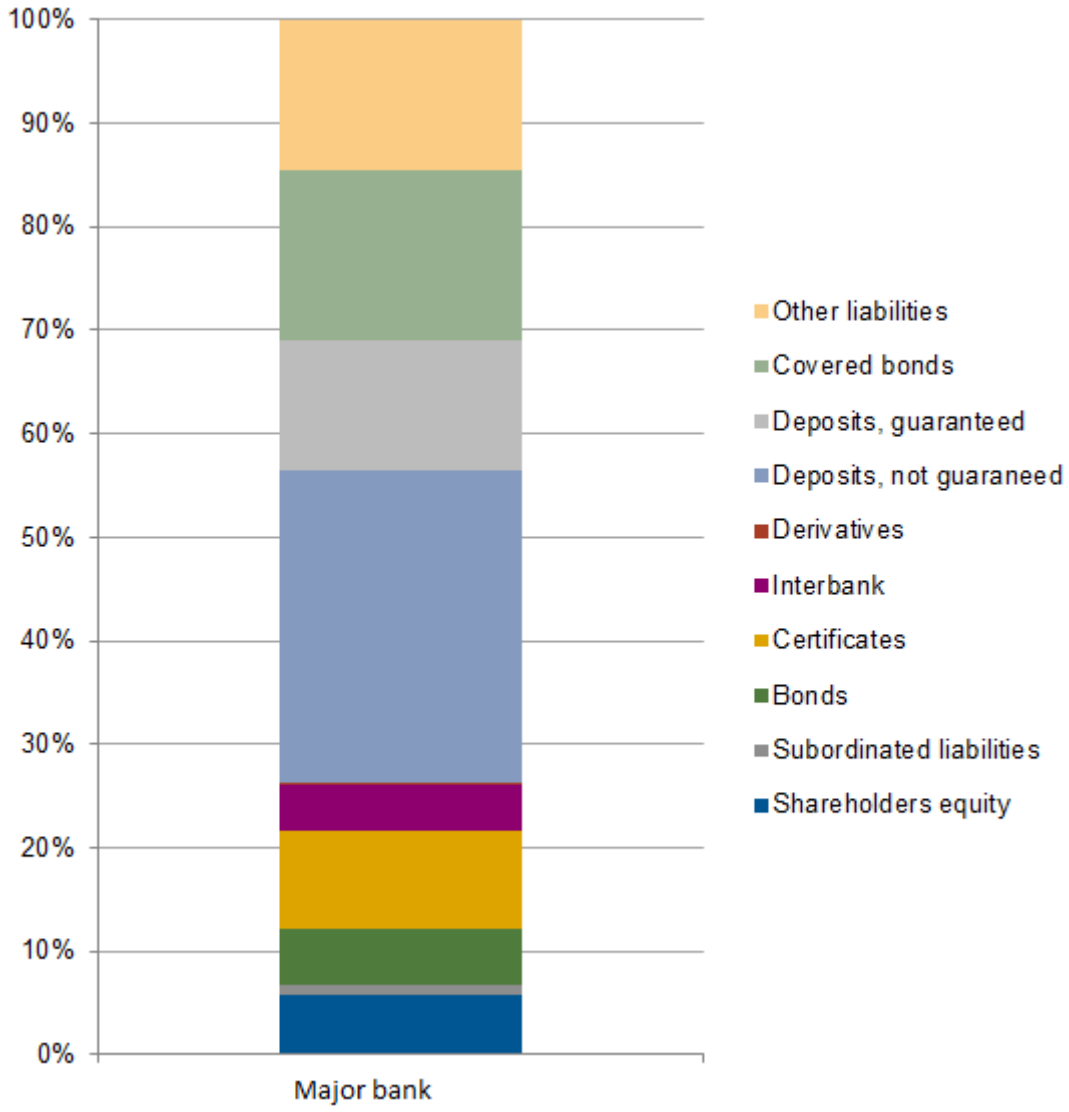
Figure 9 shows the average capital structure of the three major banks at year-end 2020. For the major banks, the share of liabilities with lower priority rights than those of guaranteed deposits amounts to an average of almost 56 per cent of total liabilities and own funds.[32]

Excluding certificates, interbank borrowing and derivatives (see the section Dynamic capital structure changes), the proportion of liabilities with lower priority rights than those of guaranteed deposits was around 42 per cent. Even taking into consideration the risk that the extent of non-preferential deposits may decrease, the proportion of liabilities with priority rights lower than those of guaranteed deposits is therefore significant and exceeds MREL by an average of approximately 36 percentage points.

[31] See the Debt Office's *MREL policy: Minimum requirement for own funds and eligible liabilities (MREL)* from 13 October 2021 (Reg. no. RGR 2021/26).

[32] There is currently no data on the proportion of major banks' deposits that consist of non-preferential deposits from large companies and institutions.

Figure 8. Average capital structure of the major banks (category 1) on 31 Dec 2020



Due to MREL, the major banks' capital structure will be gradually adapted so that a significant proportion of their existing loan financing will need to be replaced with subordinated debt instruments.[33]

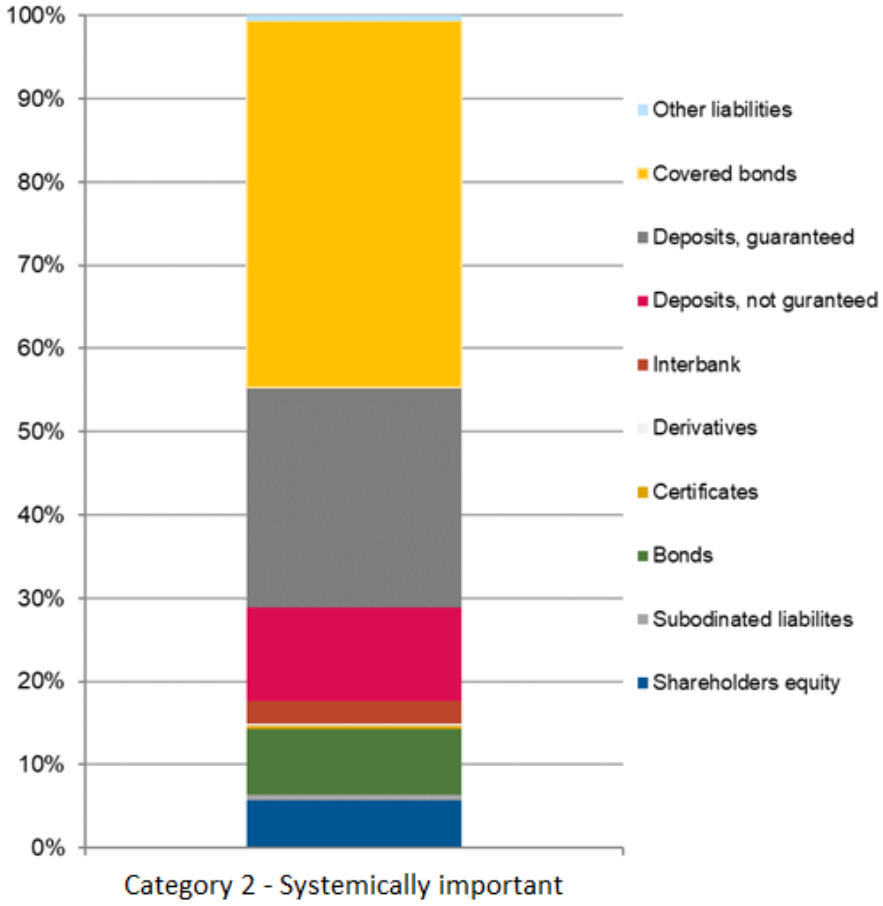
Capital structure of other systemically important institutions

The average capital structure for deposit-taking institutions in category 2 institutions is illustrated in Figure 9. For this category, the proportion of liabilities with lower priority rights is

[33] In December 2019, the Debt Office calculated that the major banks must issue subordinated bond loans totalling approximately SEK 300 billion up until 2024.

less than 29 per cent. Excluding certificates, interbank borrowing and derivatives, the share is 26 percent.

Figure 9. Average capital structure of other systemically important institutions (category 2) on 31 Dec 2020



It can be concluded that the capital structure of these medium-sized institutions does not differ significantly from that of the major banks in terms of own funds and liabilities with lower priority rights than those of guaranteed deposits. This applies particularly if short-term borrowing and

interbank borrowing are excluded, as these account for a comparatively larger proportion of the major banks' capital structure.[34]

However, the categories differ regarding their proportions of deposits versus secured financing. The proportion of deposits covered by deposit insurance also varies: the average for the major banks was 29 per cent in guaranteed deposits, whereas the average proportion for category 2 was 70 per cent. Both of these proportions are lower than the average of 85 per cent for the institutions deemed subject to direct fulfilment. Even for institutions in category 2, the likelihood that the deposit insurance will be need to be utilised in resolution is therefore considered to be low.

Dynamic capital structure changes

It is also necessary to clarify potential changes in the volume of liabilities that are to bear losses before guaranteed deposits in resolution. Types of debt with lower priority rights than those of guaranteed deposits can, for example, decline in scope when the creditworthiness of an institution worsens.[35] The risk of this happening increases the shorter the maturity of the debt is and the lower its priority rights are.[36]

There is a risk that maturing short-term borrowing in the form of borrowing in certificates and unsecured interbank borrowing will not be renewed or replaced with secured borrowing – and thus receive a higher priority than that of guaranteed deposits. There is also a risk that the part of the wholesale deposits not covered by deposit insurance will decrease because it constitutes a non-preferential claim that is largely immediately callable.

Altogether, this increases the likelihood that the deposit insurance scheme will be need to be utilised in resolution. In this context, it is worth noting that MREL is a cap on the size of the capital structure changes that can occur.

Discretionary exceptions

Under certain circumstances, in resolution a need could arise to exempt liabilities from write-down (discretionary exceptions).[37] Since a departure from the regular priority rights can be made in such cases, these exceptions may entail an increased risk of having to utilise deposit insurance in resolution. However, because of the Debt Office's requirement that MREL is to be

[34] The medium-sized institutions obtain a significantly smaller proportion of their funding from short-term borrowing. The medium-sized institution with the highest proportion is Sparbanken Skåne with 1.2 per cent of its funding from certificates, compared with Handelsbanken at 16.3 per cent.

[35] Adjustments of priority rights that pose a disadvantage to a certain type of debt at the expense of other types of debt can also lead to such changes, without an institution's creditworthiness having deteriorated.

[36] Experience from the US, among others, 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.

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

met chiefly with own funds and subordinated liabilities, the need for such exceptions is assessed to be small.

Historical losses in banks

The overall likelihood of the deposit insurance scheme being activated in resolution is considered to be low, given the significant losses that would require that to happen and the specific requirements that are placed on institutions. The level of such losses can be compared to historical loss levels in bank defaults.

A review of a number of studies on the size of losses at default indicates that a loss absorption and recapitalisation capacity corresponding to MREL would have been sufficient to cover losses arising in most cases.[38] Supposing that, in a resolution intervention, the institutions studied would have had own funds and eligible liabilities exceeding MREL, as in the capital structure analysis above, the studies show no loss levels that would lead to activating the deposit insurance scheme in resolution.

Relatively good potential for recovery in resolution

The contribution from the deposit insurance scheme in resolution is the amount that the scheme needs to contribute to cover losses or recapitalise an institution.[39] To the extent that the contribution from deposit insurance is used to recapitalise an institution, the deposit insurance fund receives an asset in the form of shares in that institution. This constitutes compensation for the deposit insurance contribution to recapitalisation and entails a good potential for recovery for the central government.

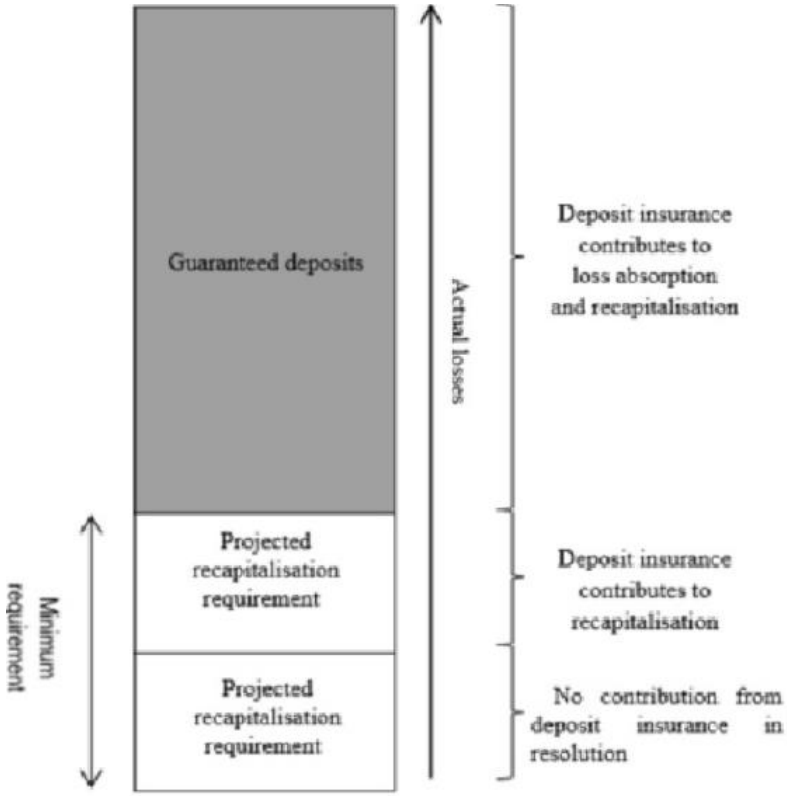
If, instead, the deposit insurance contribution is used to absorb losses, there is no chance for recovery. This is because, in the case of loss absorption, no claim that could generate a recovery arises, which is equivalent to what happens to a lender's claim when liabilities are written down in a bail-in.

However, it is more likely that activating the deposit insurance scheme for an institution undergoing resolution would be in regard to recapitalisation rather than loss absorption. This is because the level of losses required to activate the scheme in order to absorb losses would be higher than that required for recapitalisation (see Chart 4). This aspect works in favour of the central government's long-term potential for recoveries.

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

[39] As previously described in regard to direct fulfilments, the central government is to take out retroactive fees if losses occur that are large in relation to the funds in the deposit insurance fund. This is also described in further detail in a fact box in the next section on liquidity risks.

Chart 4. Illustration of loss levels that would require deposit insurance to contribute to recapitalisation and loss absorption in resolution



Liquidity risks associated with central government guarantees and lending

Guarantees and loan commitments entail a liquidity risk because it is not known beforehand whether or when payments connected to the undertakings will need to occur. These liquidity risks are assessed to be low and the amounts can be borrowed on short notice. Although the borrowing cost would certainly be higher in some cases, it would only be in the short term and connected to individual payments.

Basic assumptions for the liquidity risk analysis

Liquidity risks arise when it is not known in advance whether or when payments must be made. Therefore, guarantee and loan commitments involve a liquidity risk. If a government guarantee commitment is fulfilled, or a loan commitment is utilised, funds are paid out and the government borrowing requirement increases. The borrowing requirement must, in turn, be met in the long term through planned issuance of government securities and in the short term via the liquidity management operations.

The central government's long-term borrowing is planned on the basis of forecasts of the total borrowing requirement over two years. An important strategy for minimising long-term borrowing costs is to keep the supply of regularly issued government securities stable and predictable. Short-term fluctuations in the borrowing requirement are handled within liquidity management. This applies to both anticipated fluctuations and unforeseen payments such as when a guarantee commitment is fulfilled or a loan commitment is utilised. If the payment entails a permanent increase in the borrowing requirement, it is then gradually phased into the long-term borrowing.

The liquidity risk analysis begins by comparing the size of the outgoing payments that central government guarantees and loans can give rise to and the flexibility in the liquidity management operations. The purpose of the comparison is to address the issue of whether potential payments can be managed within these operations. The analysis then describes the risk of the payments leading to higher liquidity management costs. This risk is determined in part by the size of the payments as well as how quickly and in which currency they are to be made.

Potential payments are not too large to manage

The larger the guarantees and loan commitments, the larger the payments can be. Table 16 shows the largest undertakings in the regular portfolio together with the deposit insurance scheme's largest commitments within each category of institution.[40] The amounts may seem

[40] The financial institutions that have guaranteed deposits are divided into four categories in the section Credit risks in the deposit insurance scheme, Different categories of institutions.

large, but deficits (borrowing requirements) of sometimes more than SEK 100 billion are financed within the central government's liquidity management operations on a daily basis.

Granted, if several sizeable guarantees or loan commitments had to be fulfilled within a few days, even larger deficits could arise. However, these flows are also deemed manageable within the framework of the day-to-day liquidity management. At the same, the likelihood of such an outcome is very low and the need for quick payments is, in practice, lower than the amounts shown in the table below. This is because the entire amount is rarely to be paid out at the same time. That assessment has not changed during the pandemic, nor have outgoing payments in connection with guarantees and loan commitments deviated from the usual during the year.

Table 16. Undertakings over SEK 10 billion on 31 Dec 2021

	SEK billion
Lending framework for SEK (the Swedish Export Credit Corporation)[1]	200.0
Callable capital EIB	80.0
Credit guarantee[2]	51.5
Callable capital AfDB	32.8
Deposit insurance – categories 1 & 2[3]	30.7
Credit guarantee	28.9
Deposit insurance – category 3[4]	28.1
Callable capital NIB	26.6
Callable capital IBRD	22.5
Credit guarantee	21.3
Credit guarantee	11.6
Deposit insurance – category 4[5]	10.0

[1] SEK, max SEK 50 billion can be paid out at once
[2] The maximum fulfilment amount over 5 years is SEK 8.7 billion
[3] The deposit insurance scheme's contribution in resolution may never exceed 200 per cent of the target level of the deposit guarantee (see the box Payments from deposit insurance fund).
[4] A direct fulfilment of the deposit insurance commitment for an institution in category 3 can amount to a maximum of approximately SEK 28.1 billion. This amount is based on the mean of the five institutions in category 3 that have the highest volumes of guaranteed deposits.
[5] A direct fulfilment of the deposit insurance commitment for an institution in category 4 can amount to a maximum of a SEK 10 billion.

Usually a time frame between fulfilment and payment

A review of the contractual terms that apply to the undertakings presented in the table shows that the potential liquidity strain is often significantly lower than what the amounts imply. Either circumstances dictate that the central government need not fulfil the entire commitment at one time, or there is in practice a time limit during which payments can be planned systematically. In certain cases, it may still be necessary to rapidly fulfil the commitment in its entirety. This mainly applies to subscribed callable capital and deposit insurance.

There is no contractual payment period for the callable capital. In a few cases, however, it has been communicated that, if necessary, the state must pay out a capital contribution within one week but that the time allowed will be adapted according to the size of the payment. A larger amount provides an opportunity for a longer period and vice versa.

For the deposit insurance scheme, the law states that compensation to affected depositors must be available within seven working days. The deposit insurance scheme shall also be able to contribute funds in resolution. There are no stated time frames for payments from the scheme made to an institution in conjunction with resolution, but the Debt Office's assessment is that such a payment may be required on short notice. The time frame depends on how long it takes to carry out the resolution transaction in question. Payments connected to the deposit insurance scheme shall be made primarily from the deposit insurance fund. If the fund's amount is insufficient, the central government can borrow what is required (see the box in the last chapter).

Considerable flexibility in the liquidity management operations

The liquidity management operations are designed to ensure that central government payments are always carried out on time. All payments to and from central government agencies are collected in a central account, meaning that only the net of these payments is handled by the liquidity management operations. On days when outgoing payments exceed incoming payments, the Debt Office borrows to finance the deficit in the account. Conversely, when incoming payments exceed outgoing payments, the surplus is invested. The result is that the balance of the central account is zero at the close of the day.

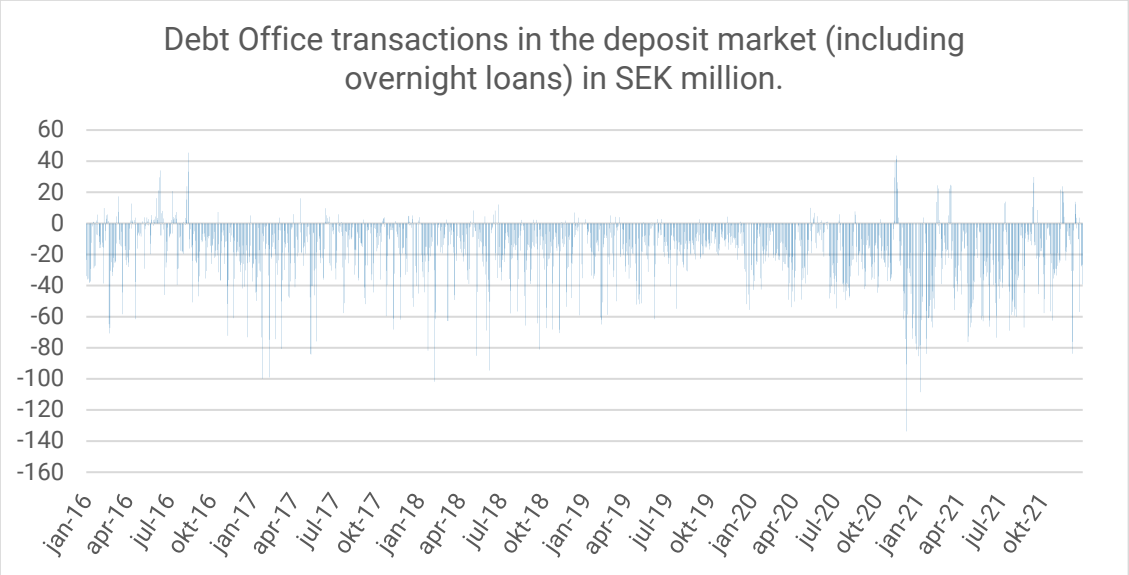
In order to ensure effective liquidity management, the Debt Office plans according to daily borrowing and investment needs. At the same time, the management must be flexible in order to appropriately handle unexpected payment flows. For example, the Debt Office is able to choose instruments, maturities and counterparties (within the framework of applicable regulations and guiding principles).

Access to several different instruments

The Debt Office can employ several instruments in its liquidity management operations. If large unexpected payments arise with a few days' notice, borrowing can begin in advance in the money market. This is mainly done through deposits – standardised agreements on depositing and lending between market participants. If the unforeseen payment must be made on the same day, the deficit is funded with an overnight loan, which is the most short term type of deposit.

In the overnight market, the liquidity requirement in kronor is balanced to zero each day between the market participants and the Swedish payment system. If the central government has a deficit to finance overnight, there is always one or several market participants with a corresponding surplus to invest. This is because the money paid out by the Debt Office has gone elsewhere in the payment system. The system is thus set up so that it is always possible to fund deficits (and invest surpluses) in kronor overnight. Figure 10 illustrates the variation in the daily flows that the Debt Office handles with deposits.

Figure 10. Debt Office transactions in the deposit market (including overnight loans) in SEK million.



A minus sign refers to loans, a plus sign to investments.

If the increased borrowing requirement resulting from the payment is expected to persist for some time, the Debt Office can instead issue commercial paper in foreign currency. This borrowing instrument works much like a bond but with a shorter maturity. 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 additional cost is short term and isolated

When a large payment is funded short term with commercial paper instead of by utilising deposits, the borrowing cost can be slightly higher (or lower) depending on the price of the included currency derivative. An additional cost would, however, be isolated to the specific payment and disappear within a short time as the initial short-term borrowing is phased into the continual issuance.

In the event of payment connected to a guarantee or loan in foreign currency, the Debt Office borrows in the same way as for a payment in kronor and makes an exchange simultaneously. If there is a need to exchange large amounts on small foreign exchange markets, where liquidity is limited, there is a risk that the transaction will be more costly than usual. Currently, however, there is no exposure to smaller currencies among the portfolio’s major undertakings.

Payments from the deposit insurance fund

Disbursements under the deposit insurance scheme are financed by the deposit insurance fund. As opposed to the regular portfolio's guarantee reserves, which are accounts at the Debt Office, this fund consists of securities in the form of Swedish government bonds. This means that the fund must sell government bonds when the compensation is to be paid out. If there are not sufficient assets in the fund, the Debt Office has unlimited credit in order to raise new debt to cover the amounts required (see Deposit Insurance Act (1995:1571) for more detailed information).

Deposit insurance is financed by fees

The deposit insurance fund is built up by a statutory and risk-differentiated fee that the institutions covered by the deposit insurance scheme pay. The fees shall amount annually to a sum corresponding to 0.1 per cent of the institutions' aggregate guaranteed deposits at the end of each year. The fund, which is administered by Kammarkollegiet (the Swedish Legal, Financial and Administrative Services Agency) by commission of the Debt Office, amounted at year-end 2021 to SEK 47.8 billion. This corresponds to approximately 2.49 per cent of the guaranteed deposits.

By law, the fund must amount to at least 0.8 per cent of the guaranteed deposits. If the fund falls below two-thirds of this level, the amount must be restored within six years. Therefore, when necessary, the fees can become higher than the 0.1 per cent normally charged.

Limited contribution from deposit insurance in resolution

According to resolution regulations, the deposit insurance fund may also be utilised to protect depositors in resolution. The contribution for a single institution, however, may never exceed 200 per cent of the minimum level of the fund. The fund can thus contribute a maximum of 1.6 per cent of guaranteed deposits, which corresponds to SEK 30.7 billion based on guaranteed deposits on year-end 2020.

However, the fact that the deposit insurance contribution in resolution is limited in its amount does not mean that the protection for depositors is limited. Any additional funds (above SEK 30.7 billion per institution) required for resolution shall come initially from the resolution reserve.[41]

Sales of government bonds may entail additional costs

From a liquidity risk perspective, it is worth noting that assets in the deposit insurance fund must be realised at the time of disbursement. A large volume of government bonds

[41] The resolution reserve 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 (2015:1016). A payment from the reserve, which is an account at the Debt Office, affects the central government's borrowing requirement and the central government debt.

may then need to be sold in a short time, which may adversely affect the selling price. Although this has no direct effect on the central government's borrowing costs, it entails additional costs for the deposit insurance scheme.

Appendix 1: Central government guarantee and lending operations

The management of central government guarantees and lending is based on distinct principles and regulations designed to clarify the associated financial risks and costs (the guarantee and lending model). The aim is to avoid undesirable risks for the central government. These principles and regulations are described below because they have an inherently favourable effect on the risk level of the central government guarantee and lending portfolio. There are also commitments regulated separately from the collective model – for example, parts of the student-loan system and the deposit insurance scheme.

The central government guarantee and lending model

In the mid-1990s, a model for managing central government guarantees was adopted by the Riksdag 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 in accordance with the new model. As of 2002, the principles of the guarantee model have therefore also been applied to guarantees issued before the model was introduced.

The revised Budget Act (2011:203) further clarified the principles for issuing central government guarantees. At the same time, it was decided that corresponding principles should also be applied to central government lending with credit risk. More detailed provisions can be found in Regulation (2011:211) on lending and guarantees. The result is uniform and distinct rules for both guarantees and lending with credit risk.

Overall, the central government guarantee and lending model is based on a number of regulations intended to foster both responsible and cost-effective management of financial risks. Most of the regulations help ensure that decision makers are aware of the risks and that the central government makes provisions for those risks. Others are intended to ensure that the central government avoids undesirable risks and minimises risk-taking in general.

The primary rule is to ensure the following: that guarantees and loans are to be limited in amounts and 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 include adequate conditions for limiting risk. In addition, the authorities that issue guarantees and loans will regularly analyse, limit, and report the credit risk of commitments issued. This approach serves to reduce the likelihood that the portfolio will become too large or contain risks that are inappropriately high or difficult to assess. The principles and regulations on which this model is based are thereby significant in forming the assessment that there is a low overall risk of large losses in the regular portfolio.

Long-term cost recovery principle

One of the fundamental principles for central government is 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 shortened to expected loss) and the administrative costs associated with the commitment.

The expected loss arises from the probability that the recipient of a guarantee or loan will not be able to fulfil its commitment, which in most cases results in a credit loss for the 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)

The central government charges a fee to cover this expected cost. The expected cost for the state is thus matched by a predetermined income. Accordingly, the state's financial position is, in theory, unaffected at the time of decision to issue a central government guarantee or loan.

If the guarantee or loan recipient is allowed to pay a fee lower than the expected cost, a state 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 entails that a sum corresponding to the subsidy is charged to an appropriation. This, in turn, means that the expenditure for the subsidy must be weighed against other expenditure in the central government budget and therefore competes for inclusion 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 – are allocated equal to the state's expected costs involves an actuarial cost-reimbursement 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 in the operations 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, in which fees from a large number of no-claims commitments are expected to cover the costs related to a small number of claims (credit losses).

Central government is marginally risk-neutral

In accordance with the fundamental principle in the Budget Act, central government does not charge a risk premium – unlike the situation in insurance operations. In theoretical terms, this can be seen as central government being marginally risk-neutral and therefore not requiring a return to cover the risk that follows from guarantees and lending, i.e. deviations from the long-term expected outcome. One significant reason for this is that the state has an extensive and strong balance sheet underpinned by its right of taxation. As a result, the 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 the central government is only marginally risk-neutral, that is, for risks that are not excessive in relation to the entire central government balance sheet.

Outcomes are recorded in notional reserve accounts

The design of the guarantee and lending model entails that fees and costs are handled outside the income headings and appropriations in the central government budget. Fee income – including appropriated funds to cover any subsidies – is not entered in the income heading but are instead reported against notional reserve accounts. Accordingly, even credit losses and any recoveries are recorded in these reserve accounts as well.

Unlimited borrowing is authorised for each reserve account. This addresses the budget-technical issue of how to finance and report credit losses that exceed the accumulated funds in the reserves, allowing for a negative balance 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, for example the deposit insurance fund.

One reason for mainly having notional reserve accounts instead of special asset and liquidity portfolios is that such portfolios could add risks rather than reduce them. Therefore, it is normally not a question of either earmarking or accumulating money in an actual fund. Instead, fee income recorded in the notional reserve accounts is included in the central government's continual cash flow. A paid-in fee thus improves the budget balance and reduces central government debt.

The total assets in the guarantee and lending operations do not consist solely of the balance in the notional reserve accounts that the responsible agencies have at the Debt Office. Other significant assets are the recourse claim that arises when a guarantee commitment is fulfilled as well as the remaining value of outstanding claims following realised defaults on loans issued. 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 operations.

Guarantees and lending that are regulated separately

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

The student aid system

The Student Aid Act (1999:1395) regulates the management of student loans. The Act contains stipulations regarding who can receive student loans and grants, interest, repayment, and recovery. These differ in several respects from how lending is handled under the guarantee and lending model. However, new student loans granted after 2013 are managed in accordance with the guarantee and lending model in the sense that appropriated funds corresponding to expected losses are transferred to a notional reserve account. For the remainder of the loans, realised credit losses are financed as they arise by appropriations.

Deposit insurance and investor protection

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

The investor compensation scheme provides loss protection for investors' financial instruments and funds held with an investment firm, fund manager, or an asset management company. Any costs for central government following activation of the scheme are paid retroactively by the remaining institutions covered.

Lending funded 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 funded by appropriations, there is no reserve account to manage losses on these loans. Amortisation and interest payments are reported under an income heading.

Callable capital to international financial institutions

The 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 model. However, to clarify that these guarantees and the risks associated with them exist, a specialised notional account with credit has been set up at the Debt Office. Any charge to this account has to be cleared with appropriated funds from the central government budget.

Public enterprise commitments

Following decisions by the Riksdag and the Government, public enterprises can also issue guarantees and provide loans linked to their activities.

Similarities and differences between credit guarantees and lending

Credit guarantees and lending are regulated in a similar way because the credit risk, and thus the expected cost, is the same for the two types of commitments. Both guarantees and lending require approval by the Riksdag and are treated similarly in the central government budget process. However, the state must consider the differences when it decides whether to issue a guarantee or loan for funding purposes.

Lending is more transparent than guarantees

When the state grants a loan, it is financed by the central government. 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 both the central government borrowing requirement and debt at the time the loan is granted. In the case of a guarantee, the borrowing requirement increases only if a guarantee commitment is fulfilled. Guarantees can thus be seen as contingent government debt.

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

Losses can have different effects on central government net lending

Normally, a fulfilled guarantee commitment entails a corresponding immediate effect on central government net lending. The effect of a corresponding default on a loan will normally have no immediate effect on central government net lending. In the case of loans, the effect on central government net lending normally arises when the loss is realised in conjunction with write-off.

Lending is normally less expensive than guarantees

The state's cost for expected loss and administration is normally about as high when funding is provided through direct loans from the central government as it is when provided through a state guaranteed loan from a private actor. The total cost of funding through direct lending includes the central government borrowing cost. The cost of funding through a central government guarantee, on the other hand, includes the private lender's cost for borrowing and administration.

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

Loans involve more restrictive management

A difference in the regulation of guarantees in relation to loans is that only loans with low expected losses can be funded with borrowing at the Debt Office. In practice, this means that loans with high expected losses are funded through appropriations. There is

no corresponding regulation for guarantees. Consequently, the Budget Act stipulates a more prudential treatment of lending with high credit risk.

Lending sometimes involves less complicated management

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

Advantages of guarantees may outweigh the disadvantages

Although in most cases lending is preferred over issuing guarantees, there are several examples of situations in which the advantages of a guarantee outweigh the disadvantages.

One argument in favour of guarantees is that they can facilitate risk distribution, which is usually preferred, by the central government guarantee covering less than the whole amount of the underlying loan. In addition, guarantees can be more effective than loans. In situations in which there are a large number of potential beneficiaries, the banks' existing networks, systems and administrative routines might, for example, lead to greater efficiency than if the central government were to engage in direct lending. Guarantees can also entail a lower degree of intervention in the retail market compared with loans, as central government lending in some cases risks crowding out private lenders.

Appendix 2: Commitments excluded from the risk analysis

The Debt Office has chosen to exclude the following from the risk analysis: lending financed by appropriations, guarantees and loans issued by public enterprises, capital adequacy guarantees and the investor compensation scheme. This is primarily for practical reasons but also because they involve either small amounts or limited risks. These exclusions only marginally limit transparency and are not considered to affect the Debt Office's conclusions in the risk analysis.

Lending funded by appropriations

Unlike lending funded by central government borrowing, lending funded by appropriations is included under the expenditure ceiling. Such funding thus falls outside the guarantee and lending model (not pursuant to Chapter 6, Section 3 of the Budget Act). Lending funded by appropriations can be viewed as a transfer with repayment conditions. Potential credit losses can therefore be assumed to have been subject to the customary political discussion of expenditure prioritisation in the central government budget, which is why this lending is excluded from the risk analysis.

Lending funded by appropriations amounted to SEK 3.1 billion on 31 December 2021. Most of the amount consists of older student loans and home improvement loans.

Public enterprises

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

On 31 December 2021, the public utility Svenska kraftnät's (Swedish National Grid) loans issued totalled SEK 161 million.

Capital adequacy guarantees

Trafikverket has issued one capital adequacy guarantee to Arlandabanan Infrastructure AB (Arlandabanan) and one to Svensk-Danska Broförbindelsen AB (Svedab). The scope of the capital adequacy guarantees is not explicitly limited, making it difficult to assess the credit risk. Trafikverket's capital adequacy guarantee to Arlandabanan is also designed in such a way that the risk of fulfilment is not linked to credit risk. The capital adequacy guarantees are therefore excluded from the analysis.

Capital adequacy guarantees from Trafikverket to Arlandabanan and to Svedab amounted to SEK 1,724 million and SEK 4,943 million, respectively, at year-end 2021.

Investor protection

The investor compensation scheme protects securities holders whose securities are held on deposit by a securities firm. The guarantee is activated if such a firm goes bankrupt and has not held customers' assets separate from its own assets, for example as a result of negligence or criminal activity. The probability of the investor compensation scheme being utilised is therefore significantly lower than that of an institution going bankrupt.

The size of the central government's undertaking under the investor compensation scheme is not known. As fees are only charged retroactively to recover compensation paid out under the scheme, the scope of the assets protected has only been established on one occasion, in connection with one case of compensation. At that time, the securities firms' aggregate assets protected by the scheme were estimated at around SEK 93 billion. However, this figure referred to 31 December 2004, the year of the bankruptcy that led to the compensation case.

There are many indications that the central government's cost for the investor compensation scheme is small. Since the scheme was introduced, there has only been one small case in which it was utilised. In addition, as the central government retroactively charges fees to the remaining institutions – recovering the full cost of any compensation paid out – the credit risk that the investor compensation scheme entails is limited. This presumes that the amount paid out will be restored within a relatively short amount of time by the fees paid in from the other institutions, which the Debt Office deems likely. Therefore, the investor compensation scheme is excluded from the risk analysis.

For the deposit insurance scheme, the central government is also entitled to charge fees retroactively to cover losses if retained fees prove insufficient. The potential amounts are, however, larger for the deposit insurance scheme, and the retroactive fees would likely come in at a slower pace than they would for the investor compensation scheme.[42]

[42] This applies as long as the losses exceed the extra fee of 0.5 per cent of the institutions' total deposits that the guarantee authority is entitled to take out. Section 13 a of the Deposit Insurance Act (1995:1571).

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

The in-depth disclosure in this appendix is intended to further increase transparency in regard to central government guarantees and loans with credit risk. The appendix is a supplement to both the risk analysis in the report and to the central government's annual report. The amounts presented in the appendix pertain to the commitments included in the risk analysis.

Size of the guarantee and lending portfolio

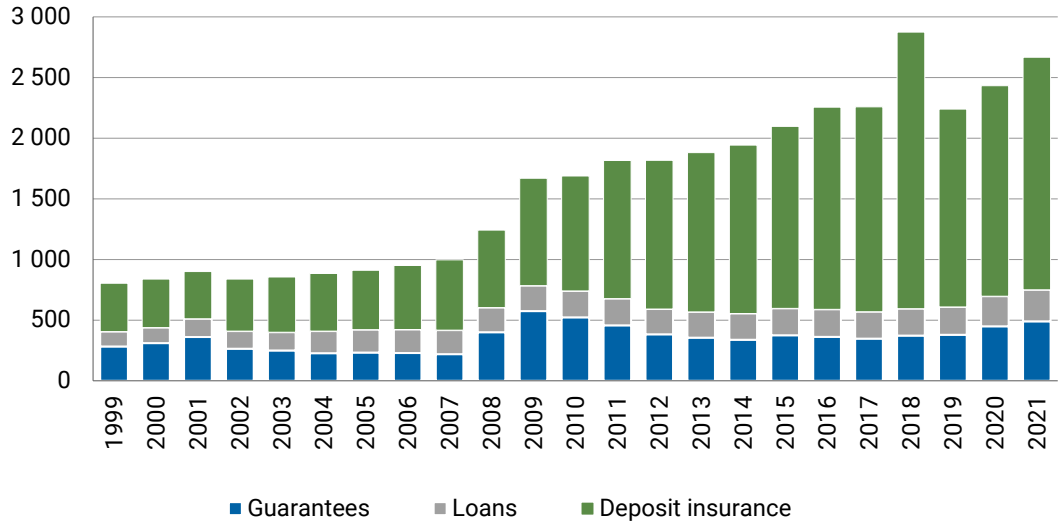
Table 17 presents the size of the central government portfolio of guarantees and lending at year-end 2021, in both absolute and relative terms with certain major central government financial events. This shows the development since 1999.

Table 17. Size of the guarantee and lending portfolio as at 31 December 2021

	SEK billion[1]
Guarantees and loans to companies and private individuals	750 (698)
Deposit insurance[2]	1,917 (734)
Total	**2,667 (2,432)**
Share of GDP	50% (49%)
Percentage of central government debt	233% (200%)
Share of central government total assets	121% (119%)

[1] Previous year's amount in parentheses.
[2] The amount referring to the deposit insurance is from year-end 2020, as the 2021 figure was not available when the report was written.
Data From EKN, Sida, CSN, the Debt Office, the Government Offices, the ESV (Swedish National Financial Management Authority) and own computations.

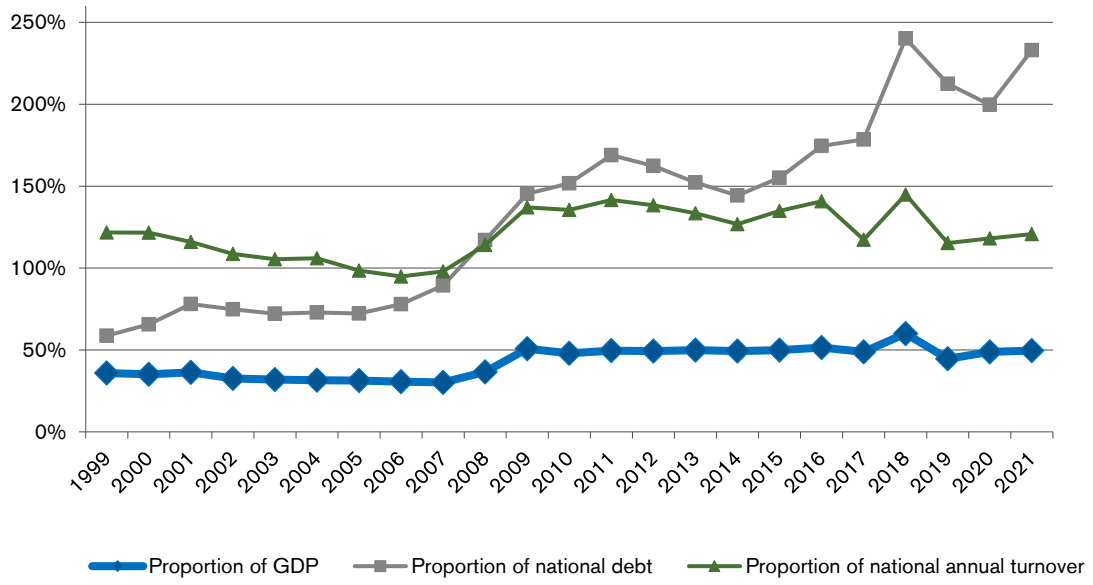
Figure 11. Historical data on the size of the portfolio 1999-2021, SEK billion



The central government's annual report, information for that annual report compiled by the Debt Office, and own computations. Note that the 2020 deposit insurance figure is used as an approximation of the 2020 figure, as the 2021 information was not available when the report was written.

In Figure 12, similar historical data are presented in relation to Sweden's GDP, the central government debt and the central government's balance sheet total.

Figure 12. Historical data on the relative size of the guarantee and lending portfolio 1999-2021

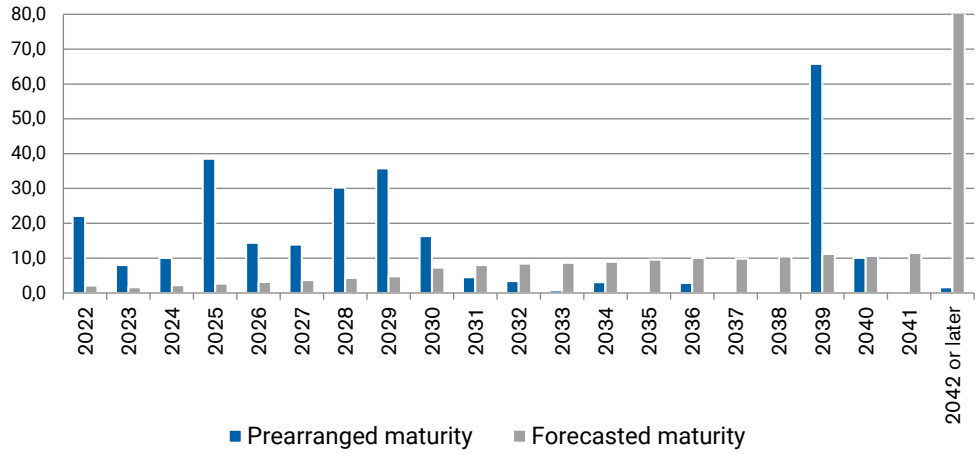


The central government's annual report, information from ESV and SCB, and own computations.

Maturities

A large part of the central government's portfolio (81 per cent) contains guarantees with no time limit, for example the deposit insurance scheme and the callable capital provided to international financial institutions. In the remaining cases, the maturity is predetermined in an agreement or as the result of the development of underlying factors (for example, earnings development for loans with conditional repayment). For the latter, there is instead a forecast for the maturity. The maturity structure for the guarantees and loans with an agreed or forecast maturity is shown in Figure 13.

Figure 13. The guarantee and lending portfolio's maturity structure on 31 Dec 2021, SEK billion.



Excluding guarantees that are without a time limit (SEK 2,119 billion). Data from EKN, Sida, CSN, Boverket and the Debt Office.

Currencies

The loans issued by the central government and the undertakings guaranteed are in different currencies. Table 18 shows the corresponding value in kronor for the ten largest currency exposures in the central government's guarantee and lending portfolio.

Table 18. The ten largest currency exposures in the guarantee and lending portfolio on 31 Dec 2021, SEK billion

	Amount	Share
SEK	2305.9	86.44
EUR	155.1	5.82
USD	145.9	5.47
Special drawing rights[1]	37.2	1.39
JPY	11.7	0.44
GBP	10.4	0.39
Schweizerfranc	0.9	0.03
Guatemala quetzal	0.5	0.02

[1] Special drawing rights correspond to a group of currencies used in international trade and finance (EUR, GBP, JPY and USD).

Data from EKN, Sida, CSN, Boverket, the Debt Office, and the Government Offices

Approaches to financing the credit risk of commitments

The commitments in the portfolio are managed differently in terms of cost recovery. Table 19 illustrates these differences.

Many of the commitments are managed on the basis of the central government guarantee and lending model. A key part of this model is that the expected loss of the guarantee or loan is financed at the time of issuance, generally with fees charged to guarantee holders and borrowers and in exceptional cases by appropriations. The fees are booked against a notional reserve account, for which there is an unlimited mandate to raise new debt in order to deal with losses that exceed the size of the reserve.

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

The management of the deposit insurance scheme is also regulated separately. All institutions covered by the scheme 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 with its own assets. Deposit insurance payouts are financed primarily with money from this fund. If the fund's assets are insufficient, there is unlimited authorisation to borrow.

In addition, there are outstanding guarantees and loans with credit risk that are managed separately on the basis of individual decisions. Among these are the central government's callable capital commitments to international financial institutions of which Sweden is a member. Payments under these guarantees are funded as they arise by appropriations.

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

Table 19. The portfolio divided by approach to financing credit risk of commitments, on 31 Dec 2021, SEK billion

Order	Expected loss	Actual loss	Amount	Share
Guarantee and lending model	Fees/appropriations	Reserve	317.5	11.9
Deposit insurance scheme	Fees[1]	Reserve	1917.0	71.9
Student aid system:				
New student loans	Appropriations	Reserve	140.5	5.3
Old student loans[2]	-	Appropriations	108.8	4.1
Other management:				
Callable capital	-	Appropriations	183.0	6.9
Individual loans	Fees/-	Unknown	0.9	0.0
Total			**2,667.6**	**100**

1 Fees for the deposit insurance are not set on the basis of expected loss. The statutory fee is taken out at 0.1 per cent of the institution's aggregate guaranteed deposits at the end of the most recent year.
2 Student loans granted prior to 2014.
Data from EKN, Sida, CSN, Boverket, the Debt Office, and the Government Offices

Problem commitments

For problem guarantees and loans, a credit loss is deemed likely. These are commitments for which a negative credit event – such as delayed payment or non-payment of interest or amortisation – has already occurred (see Table 20). Alternatively, there are other good reasons to doubt whether a loan issued or guaranteed will be repaid in time.[43]

Table 20. Problem guarantees and loans on 31 Dec 2021, SEK billion

	Amount	Share
Problem commitments	7.3	0.3
Performing commitments	2667.0	99.7

Data from EKN, Sida, CSN, Boverket and the Debt Office.

Difficulties in determining expected loss

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 model. There are, however, circumstances that make it more challenging to reliably estimate the expected loss for a guarantee or loan. That being said, it is important to stress that such guarantees and loans are

[43] Problem commitments do not include the following two of CSN's criteria for losses on lending: reservation based on security rules in respect of repayment, and reservation with respect to future losses due to death.

not necessarily unjustified or ill-advised. In essence, the issuance of central government guarantees and loans is a political decision. The objectives that form the basis for the decisions often contain other positive effects that outweigh the difficulties in managing the commitments. Reporting these commitments is done to promote transparency in regard to the uncertainty entailed in them.

The data in Table 21 shows 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 regulations). This mainly relates to guarantees and loans with very long maturities or for which the maturity or amount is not limited.

Unlimited undertakings

A typical example of challenging characteristics for determining expected loss is guarantees or loan commitments without time and/or amount restrictions. Such commitments involve a certain arbitrariness in the risk assessment, which often applies primarily where there is no limit on the amount involved. In those cases, it is not possible to unequivocally determine the scope of the central government's undertaking.

Guarantees or loans with long maturities

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

Table 21. Commitments with challenging characteristics, on 31 Dec 2021, SEK billion

Challenging characteristics	Amount
Guarantees or loans with unlimited maturity[1]	7.9
Guarantees or loans with unlimited maturity and amount[2]	9.4
Guarantees or loans with an original maturity exceeding 20 years	51.9
Total	**69.2**

Excluding the deposit insurance scheme (SEK 1,917 billion), callable capital (SEK 183 billion), student loans granted prior to 2014 (SEK 109 billion) and royalty- and conditional loans (SEK 0.9 billion) for which expected loss is not calculated.
[1] Outstanding amounts for guarantee undertakings with unlimited maturities. This mostly refers to guarantees managed by the Debt Office as well as guarantees with Boverket.
[2] Outstanding amounts for guarantee undertakings with unlimited maturities and amount. Refers to guarantees managed by the Debt Office.

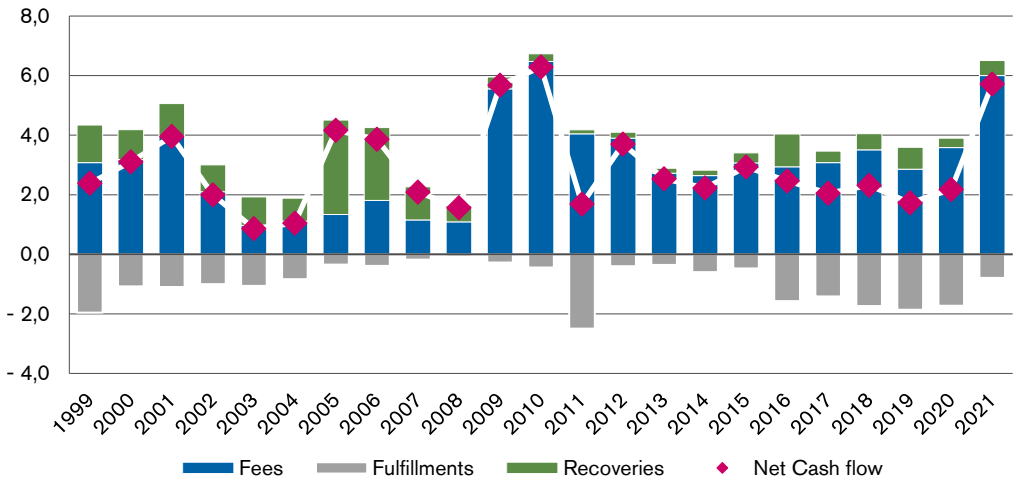
Historical cash flows

Guarantees

For guarantees, there are mainly three types of cash flows: incoming payments of fees, outgoing payments due to guarantee commitments being fulfilled, and recoveries from previous

fulfilments. These inflows and outflows vary over time, for example because there tend to be greater fulfilments during economic crises and several years can elapse between fulfilment and recovery. Consequently, it is natural for the size of inflows and outflows to differ during individual years and for the net flow to be positive in most years.

Figure 14. Historical inflows and outflows in the guarantee portfolio 1999-2021, SEK billion



The central government's annual report, information for the 2021 annual report compiled by the Debt Office, and own computations.

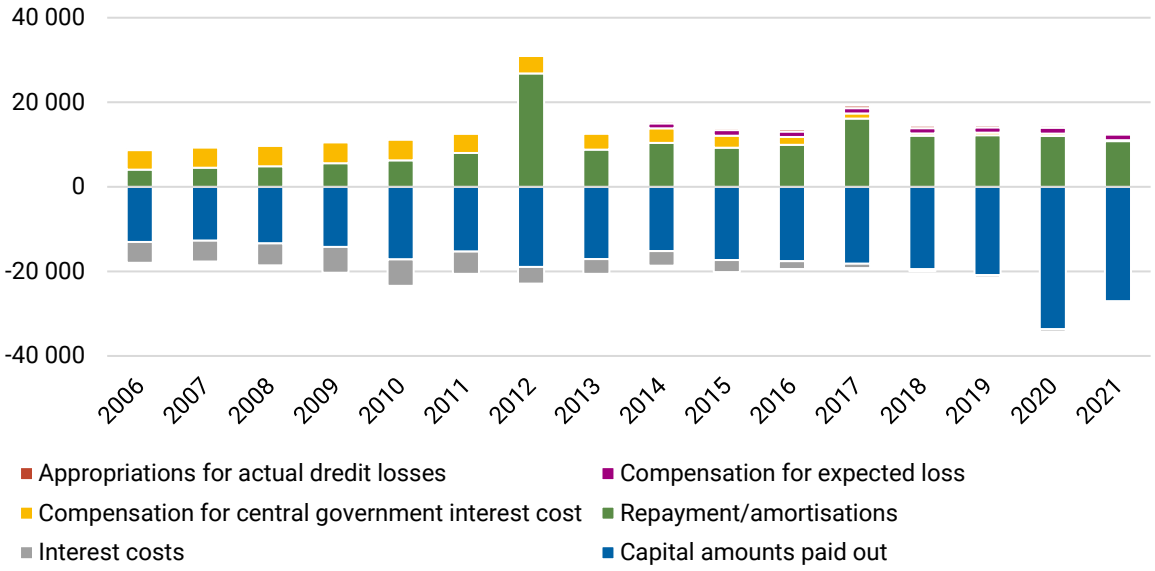
Lending with credit risk

Central government lending with credit risk is dominated by the Swedish Board of Student Finance's (CSN) student loans but also includes lending by the Debt Office. SEK borrowed SEK 10 billion in 2020, which accounts for the increase in borrowing compared with previous years. The large amortisation for 2012 refers to a loan to the Bothnia Line issued by the Debt Office.

The compilation of historical flows concerning central government lending in Figure 15 consists of capital amounts paid out, interest costs, repayment/amortisation, compensation for central government interest cost, compensation for expected loss, and appropriations for actual credit losses for the 2006–2021 period.

Flows relating to royalty loans are excluded from the figure.

Figure 15. Historical cash flows in the central government lending portfolio 2006-2021, SEK billion



Data from CSN and the Debt Office.

The Swedish National Debt Office is the central government financial manager and the national resolution and deposit insurance authority. The Debt Office thus plays an important role in the Swedish economy as well as in the financial market.

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