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## Annex

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DEPARTMENT: The Markets Department

# Financing of the foreign exchange reserves – consequences for the Riksbank’s balance sheet and financial risks

This document describes the advantages and disadvantages of changing over to entirely self-financed foreign exchange reserves and phasing out the current financing with currency loans via the Swedish National Debt Office. The advantage of self-financed foreign exchange reserves is that the refinancing risk in currency borrowing is eliminated. Moreover, it leads to a clearer separation of the Riksbank’s balance sheet from that of the state. The disadvantage with self-financed foreign exchange reserves is that the financial risks on the Riksbank’s balance sheet increase. This can entail increased variation in the Riksbank’s annual results. However, this is not necessarily a problem, given that the Riksbank has sufficient loss-absorbing equity.

The document describes the potential consequences for the Riksbank’s balance sheet, future results and financial risks if the Riksbank changes over to self-financed foreign exchange reserves. This is analysed through a scenario analysis that is based on the National Institute of Economic Research’s long-term scenario and through Monte Carlo simulations with a macrofinancial time series model.

## Background

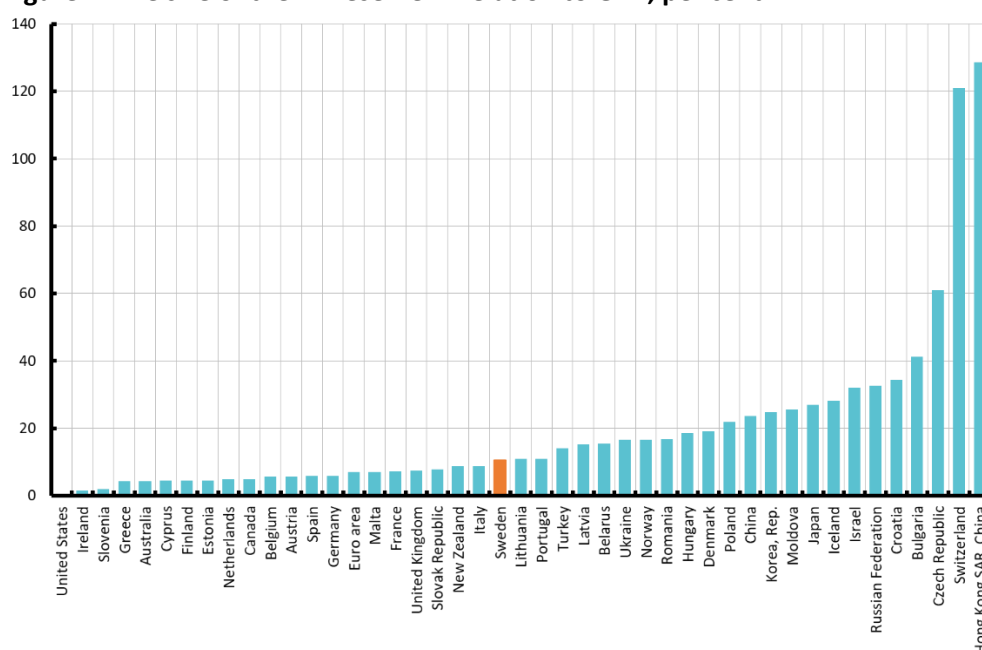
The Riksbank, like most central banks, has gold and foreign exchange reserves. On 31 December, the gold and foreign exchange reserves amounted to SEK 437 billion and they are central to monetary policy and to contributing to financial stability. The Riksbank’s capacity to supply liquidity in both Swedish krona and foreign currencies is a question of ensuring that the monetary policy transmission mechanism functions smoothly, and that financial stability is maintained. The foreign exchange reserves are also needed to meet international obligations towards, in particular, the International Monetary Fund (IMF).

The foreign exchange reserves are currently financed in two different ways: partly through the Riksbank’s own financing, which can be said to comprise a mixture of

equity, banknotes and coins issued and deposits from the banks, and partly through loans in foreign currency on the international capital market via the Swedish National Debt Office. Foreign currency loans finance around half of the foreign exchange reserves.

It is unusual for central banks to fund such a large part of the foreign currency reserves by borrowing foreign currency, and it is also unusual for central banks to borrow from their countries' debt offices. Most central banks instead have completely self-financed foreign exchange reserves in the magnitude of 10–12 per cent of GDP.<sup>1</sup> The Riksbank's foreign exchange reserves currently amount to around 8 per cent of GDP, of which almost 4 per cent is self-financed.

**Figure 1. The size of the FX reserve in relation to GDP, per cent**



Sources: The IMF, the World Bank and the Federal Reserve.

Note. Observe that the figure shows the whole of the Riksbank's foreign exchange reserves, not just the self-financed part.

Currency borrowing arose when the Riksbank, on a couple of occasions, needed to rapidly strengthen the foreign exchange reserves. This took place the first time in 2009, with SEK 100 billion, against the background that the Riksbank had lent some of its foreign currency reserve to Swedish banks and due to increased commitments to other central banks and international organisations. The second time was a decision by the Riksbank in 2012. On this occasion, too, the reinforcement was SEK 100 billion, and because the Riksbank assessed that the uncertain situation abroad entailed a higher risk level in the Swedish financial system, at the same time as the commitments to the IMF increased.

The Riksbank's current assessment is that the size of the gold and foreign exchange reserves is appropriate with regard to the Riksbank's so-called contingency needs, that is, what the Riksbank needs to hold in foreign currency to be able to meet its

<sup>1</sup> The median of the countries' foreign exchange reserves in relation to GDP in Figure 1 is 11 per cent.

commitments. The last time the size of the foreign exchange reserves was altered was in 2019, when the Riksbank decided it could be reduced somewhat as a result of changes in the banks' balance sheets and Nordea's relocation to Finland, for instance. For this reason, the Riksbank allowed three foreign currency loans to fall due in 2019. Borrowing in foreign currency via the Swedish National Debt Office currently amounts to around SEK 178 billion as of 31 December 2020, given the applicable exchange rates.

## **Advantages of self-financed foreign exchange reserves**

The Riksbank's task requires that the assets in the foreign exchange reserves are liquid and have a low financial risk measured in foreign currency. In this way, the Riksbank has a good preparedness for converting assets to liquid funds at short notice. The way the foreign exchange reserves are financed also needs to be assessed from a contingency planning perspective, as well as considering the advantages and disadvantages of other alternatives.

From a contingency perspective, there are disadvantages to financing through currency loans on the international capital markets. The bonds that the Swedish National Debt Office issues usually have a maturity of three years. Somewhat simplified, this means that one third of the currency loans mature each year. This means that the loans need to be regularly refinanced, which entails refinancing risks. This means the risk of the loans maturing not being replaced with new loans other than at much higher costs, or that it will take a long time to obtain a loan. In extreme cases, it could also mean that the loans cannot be refinanced at all.

Although the refinancing risk is normally low, not least given Sweden's high credit rating as borrower, there is a risk that a conflict of interests could arise in more extreme crisis situations, if a currency loan falls due at the same time as other state borrowing in foreign currency is at a high level and public finances are strained. In such a situation, there is a risk that a need could arise to prioritise between on the one hand the needs of the Riksbank to refinance the foreign exchange reserves, and on the other hand the need for the state to borrow in foreign currency for other purposes. A scenario where these considerations need to be made would be problematic for the Riksbank from a contingency preparedness perspective, as it is probable that such a situation would occur on an occasion when the foreign exchange reserves had been used. If, in this situation, it was not possible to refinance the foreign exchange reserves, or further reinforce them, this would be a threat to financial stability and the Riksbank's independence. With self-financed foreign exchange reserves, the refinancing risk would disappear completely, as the Riksbank has bought the foreign currency and is thus not dependent on regularly borrowing it. The increased deposits from banks on the Riksbank's balance sheet that follows from the purchases do not entail any refinancing risk in that the monetary policy counterparties must always hold the reserves in Swedish krona that arise when the deposits increase.

A further disadvantage with the current system, where the Riksbank borrows foreign currency from the Swedish National Debt Office, is that the currency loans are included in the official measures of the national debt and the Maastricht debt, which is the debt measure most often used in international comparisons. This borrowing thus leads to a conflation of the Riksbank's balance sheet and that of the state. This disadvantage would disappear if the Riksbank were to change over to entirely self-financed foreign

exchange reserves. The Riksbank's deposits from banks would increase the liability side of the Riksbank's balance sheet, but not be included as a liability for the public sector.<sup>2</sup>

## Consequences of self-financed foreign exchange reserves

The changeover to self-financed foreign exchange reserves would be achieved by the Riksbank buying foreign currency on the foreign exchange market and paying in Swedish kronor. This means that the banks' deposits increase on the Riksbank's balance sheet. At the same time, the currency loans the Riksbank has taken via the Swedish National Debt Office will not be refinanced when they mature.

The currency loans consist of six loans in US dollars that amount to a total of USD 14.5 billion and two loans in euros that amount to EUR 5.5 billion. This corresponds to a total of SEK 178 billion. To replace the currency loans with self-financing of the foreign exchange reserves, the Riksbank must purchase foreign currency equivalent to this amount. As the purchases do not have any monetary policy purpose, it is important that the changeover to self-financed foreign exchange reserves is managed in a way that minimises the effect on the Swedish krona exchange rate. The Riksbank has therefore assessed that the purchases should be spread over a three-year period – from February 2021 to the end of December 2023. This gives a pace of exchange of on average SEK 5 billion per month, which is a small amount in relation to the turnover on the foreign exchange market. On the global spot market, an average of SEK 160 billion SEK is exchanged every trading day between EUR and SEK, and SEK 150 billion is exchanged between USD and SEK.<sup>3</sup> The transactions will be made with due caution and taking into account the conditions on the market, such as depth, flows and stability. This means that the volumes can vary on individual dates, even though the Riksbank will endeavour to attain an even pace of exchange every month.

The Riksbank has analysed what consequences a changeover to self-financed foreign exchange reserves could have for the Riksbank's balance sheet, future results and financial risks. The calculations are based on interest rate and exchange rate scenarios in the National Institute of Economic Research's main scenario from September 2020, hereinafter referred to as the "NIER scenario".<sup>4</sup> It is not possible to know how interest rates and exchange rates will develop in the future, but the advantage of using the National Institute of Economic Research's main scenario is that they come from an external and independent actor and extend to the end of 2029. The calculations below are made for two alternatives: wholly self-financed foreign exchange reserves and foreign exchange reserves that are financed with currency loans in the same way as today.

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<sup>2</sup> If the currency loans are replaced with self-financing, the national debt would in the long run decline by an amount equivalent to the size of the foreign currency loans. At present, the currency loans amount to SEK 178 billion, or almost 4 per cent of GDP.

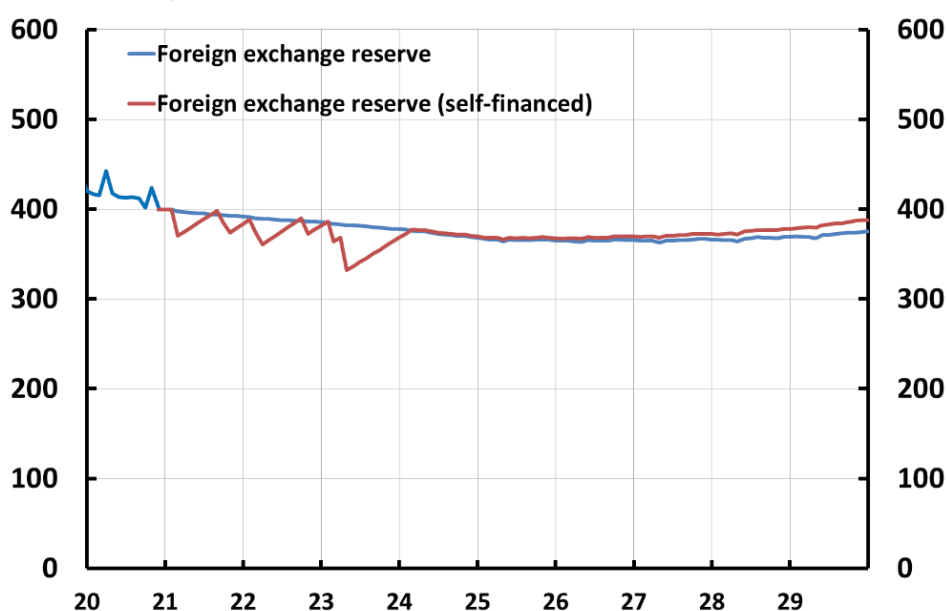
<sup>3</sup> Bank for International Settlements (2019), "BIS Triennial Central Bank Survey of Foreign Exchange and Over-the-counter (OTC) Derivatives Markets in 2019". This report presents data on global trading. According to the Riksbank's reporting of turnover statistics on the foreign exchange market, which only covers the Riksbank's counterparties, the daily turnover was on average of SEK 80 billion between EUR and SEK and SEK 81 billion between USD and SEK in 2019.

<sup>4</sup> In more concrete terms, the calculations are based on interest rate scenarios for Sweden and abroad, both policy rates and government bond yields, as well as the scenario for the Swedish krona exchange rate in KIX terms. The scenarios for interest rates on covered bonds, municipal bonds and corporate bonds are based on our assumption that the yield spread is constant for the respective bond type in relation to the respective government bond yields at the same maturity.

## Consequences for the Riksbank's balance sheet

The currency loans mature at specific points in time, which means that the foreign exchange reserves decline by the amount of the individual currency loan. The purchases of foreign currency will be made in small amounts and spread out evenly over time. This means that the size of the foreign exchange reserves will vary somewhat during the changeover to self-financed foreign exchange reserves; see Figure 2. A changeover to self-financed foreign exchange reserves is assessed as having a very small effect on the Swedish krona exchange rate. The calculations for the two financing alternatives are therefore based on the same exchange rates.

**Figure 2. The size of the foreign exchange reserves for different financing alternatives, NIER scenario, SEK billion**



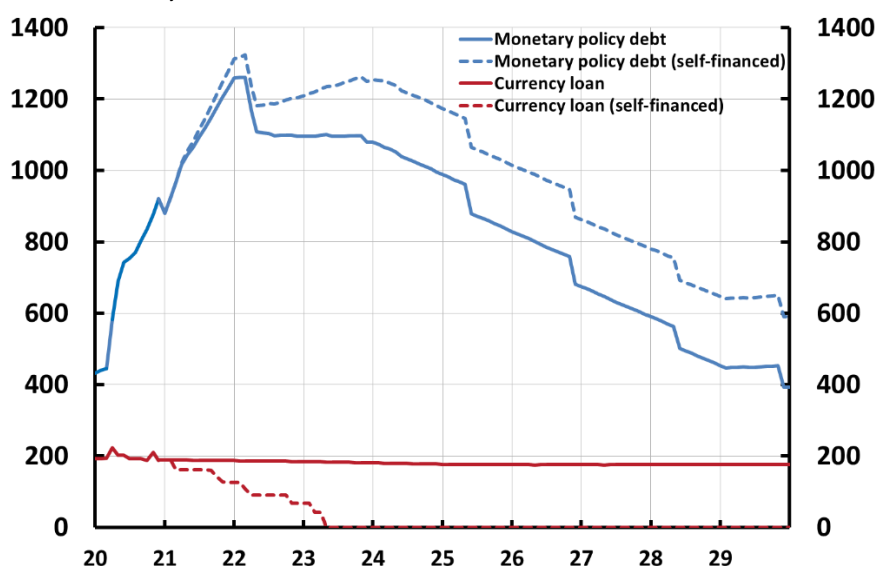
Regardless of the financing method used, the size of the foreign exchange reserves will be affected by interest rates rising and the Swedish krona appreciating in the NIER scenario, which explains why the size of the foreign exchange reserves (in SEK) will decline according to the calculations up to December 2029. However, with self-financing, the foreign exchange reserves are estimated to become somewhat larger than when the foreign exchange reserves are financed through currency loans, primarily because the interest income for the reserve in foreign currency will not be used to pay interest expenses for currency loans.

If the Riksbank buys foreign currency and pays with Swedish krona, the deposits from the banks will increase on the Riksbank's balance sheet. This item is also referred to as monetary policy deposits or monetary policy debt. To calculate how the monetary policy debt will develop for the two different financing alternatives, we assume that the Riksbank executes previously decided securities purchases in Swedish kronor until the end of 2021 (see Monetary Policy Report, November 2020). We also make the technical

assumption that the holdings of Swedish securities will be kept unchanged until the end of 2023 (after which these securities will gradually mature).<sup>5</sup>

Figure 3 shows how, regardless of financing method, the monetary policy debt will decrease over the analysis period due to the assumption that the securities portfolio in kronor will not be reinvested after 2023. However, it will be SEK 205 billion higher at the end of 2029 if currency loans are replaced with self-financed foreign exchange reserves instead of refinancing the currency loans. Of this amount, about SEK 190 billion can be attributed to the replacement of currency loans, while a large part of the remaining SEK 15 billion is due to compounded interest on the costs of the monetary policy debt. Figure 3 also shows how currency borrowing is phased out as the present currency loans mature. The final currency loan matures in April 2023.

**Figure 3. Monetary policy debt and currency loans for various financing alternatives, NIER scenario, SEK billion**



The changed balance sheet will affect the Riksbank's future results and financial risks. Firstly, currency exposure will increase from about SEK 200 billion at present to the size of the entire foreign exchange reserves, SEK 374 billion. Secondly, interest rate risk will increase in that there will be a lower correlation between interest income and interest expenses. Today, a large part of currency loans have a similar maturity to the assets, which limits total interest rate risk on the Riksbank's balance sheet. With self-financing, the maturity for financing would be shorter than the maturity for the assets. The possible consequences of these changes for the development of the Riksbank's earnings is described below.

<sup>5</sup> Other important assumptions for these calculations are: 1) interest expenses for currency loans will be paid using funds from the foreign exchange reserves; 2) interest expenses on monetary policy debt as well as profit allocations will be paid with an extended monetary policy debt; 3) profit allocations will be made according to the principle that currently applies; 4) banknotes and coins, as well as IMF-related items are assumed to stay constant over the coming years. In addition, the calculations have been simplified through the assumption that the entire holding of government bonds consists of nominal government bonds. This removes the need for explicit forecasts of inflation-linked bond yields; 5) the interest rate for deposits in kronor is always the repo rate (implicitly, this means that all deposits occur via issues of Riksbank Certificates).

## Consequences for the development of the Riksbank's earnings

The effect of a transition to self-financed foreign exchange reserves on the Riksbank's earnings depends on the future development of the interest rate and exchange rate. To illustrate this, the Riksbank has made calculations based on the NIER scenario and four alternative scenarios. These scenarios are described briefly below:<sup>6</sup>

1. **NIER scenario:** The analysis is based on the National Institute of Economic Research's long-term scenario, published on 30 September 2020. The scenario runs until December 2029 and includes short-term and long-term interest rates for Sweden, the euro area and United States, as well as the KIX krona index. In this scenario, the Swedish krona gradually strengthens until 2025 and both Swedish and international policy rates start to rise in 2024.<sup>7</sup> However, interest rates rise at a relatively slow rate and the repo rate does not reach two per cent until 2029.
2. **Rapid recovery:** In this scenario, the Swedish krona is strengthened by a further five percentage points compared with the NIER scenario. The rise in interest rate starts one year earlier and then takes place at a faster rate. The repo rate reaches a level of two per cent in 2026.
3. **Very rapid recovery:** This scenario has the same development for the Swedish krona exchange rate as the scenario "Rapid recovery", but has an even faster increase in interest rates. The repo rate already reaches two per cent in 2024.
4. **Limited recovery:** This is a scenario in which the Swedish krona appreciation and interest rate rises take place over a longer period and to a highly restricted extent. The repo rate has only reached 0.75 per cent by 2029.
5. **No recovery:** This scenario shows a long period in which policy rates and market rates remain unchanged at the current low levels. This scenario also includes a Swedish krona depreciation of five per cent to illustrate a possible return to the weak levels we saw in 2018–2019.

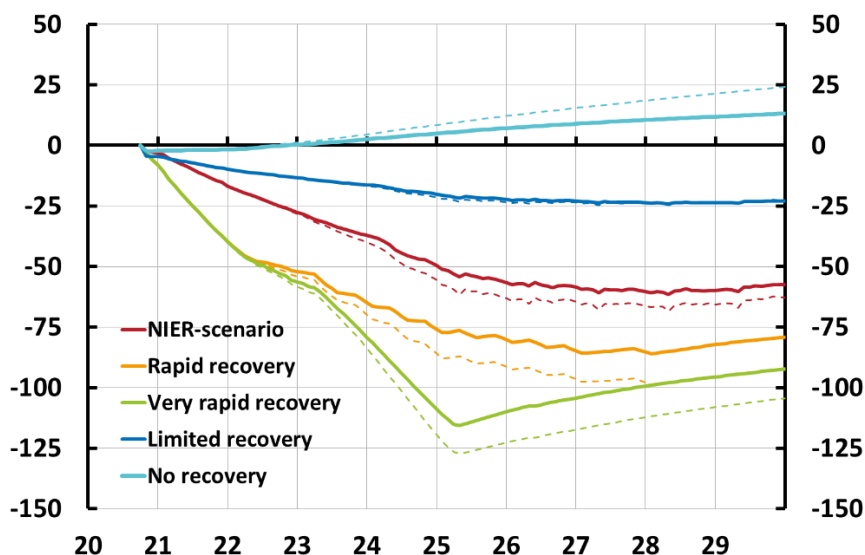
Figure 4 shows the gradually accumulated development of earnings in the different scenarios, both for continued financing with currency loans (solid lines) and for a transition to self-financing with deposits in kronor (broken lines).

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<sup>6</sup> The various scenarios are shown in more detail in the appendix.

<sup>7</sup> Note that we base this on the NIER's KIX scenario, not the scenarios for bilateral exchange rates. This means that the exchange rate is moving just like the KIX. When EUR/SEK and USD/SEK move in the same way, this means that EUR/USD are a constant in the scenarios.

**Figure 4. Accumulated result for various scenarios and financing alternatives, SEK billion**



Note. The figure shows the development of earnings for continued financing with currency loans (solid lines) and for a transition to self-financing with deposits in kronor (broken lines).

The scenario analysis shows that, regardless of the financing method, all scenarios except for scenario 5 “No recovery” will lead to losses as interest rates rise and the Swedish krona appreciates. This means that the assumptions of the future development of the economy are significantly more important for the development of earnings than the foreign exchange reserves financing is. In the NIER scenario, the accumulated losses will be, at most, SEK 60 billion using the current financing method. With self-financed foreign exchange reserves, the losses will be slightly higher, SEK 67 billion at most. The net interest income for self-financed foreign exchange reserves is slightly better in this scenario, however. One contributory factor for this is that the yield spread is positive between US government bond yields and the repo rate. This favours the Riksbank’s net interest income, as the funding costs are linked to the repo rate.<sup>8</sup> Another contributory factor is that financing with currency loans means that, on average, the lending rate is 10–20 basis points higher than the return on corresponding investments in the same currency, which could entail a cost of up to SEK 400 million per year. However, the improved net interest income is not sufficient to counteract the negative exchange rate effect in this scenario.<sup>9</sup>

In scenarios 2 and 3, “Rapid recovery” and “Very rapid recovery”, the rise in interest rates becomes faster and the Swedish krona appreciates more, making losses greater than in the NIER scenario. Once again, the losses are greater with self-financed foreign exchange reserves. The difference against continuing to finance the foreign exchange

<sup>8</sup> Note that, even if the yield spread at present were to contribute to a more positive result for the Riksbank, the yield spread could also make a negative contribution going forward.

<sup>9</sup> Note that currency losses do not affect the dividend-qualifying result, which could contribute to periods in which the current dividend principle means that the Riksbank distributes interest-related profits at the same time as it makes large currency-related losses. In the reverse situation, the Riksbank does not need to pay dividends over the periods in which it makes currency-related losses.



reserves with currency loans is approximately SEK 13 billion, at most, in both scenarios. Because part of the Swedish krona appreciation will take place before the entire transition to self-financed foreign exchange reserves has taken place, the exchange rate losses will be limited to some extent.

In scenario 4, “Limited recovery”, the accumulated losses are smaller in that the Swedish krona only appreciates to a limited extent. At the same time, the net interest income becomes positive. Overall, the maximum loss is SEK 25 billion, which applies to both financing alternatives. Of course, the appreciation of the Swedish krona leads to a slightly larger negative exchange rate effect under self-financing, compared with financing by currency loan, but this effect is so small that it is neutralised by the better net interest income for self-financed foreign exchange reserves (see the reasoning above).

In the fifth and final scenario “No recovery”, the accumulated earnings rise gradually as the Swedish krona depreciates. With continued funding by currency loans, the positive result becomes SEK 14 billion and, if the Riksbank moves over to self-financed foreign exchange reserves, it will be SEK 25 billion, that is SEK 11 billion greater.

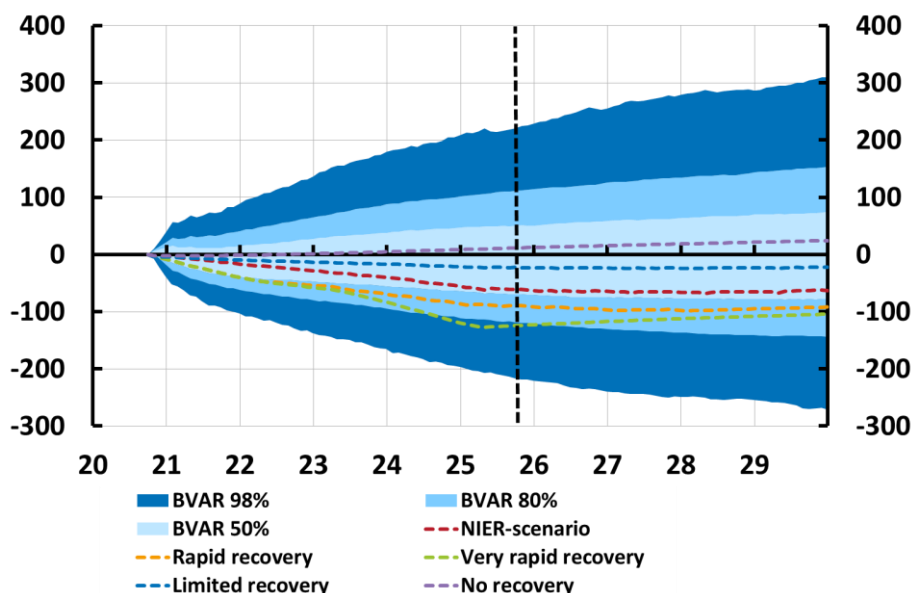
Overall, the analysis of the scenarios shows that, in scenarios where the Swedish krona appreciates or interest rates rise, there will be losses, regardless of how the foreign exchange reserves are financed. With self-financed foreign exchange reserves, the losses become greater when the appreciation of the Swedish krona is stronger. However, the differences in earnings are not particularly great between the two financing alternatives, SEK 13 billion at most.

## Consequences for the Riksbank’s risk exposure

To quantify further how the financial risk may be affected by a transition to self-financed foreign exchange reserves, the scenario analysis has been complemented by a macrofinancial time series model. By using a macrofinancial time series model in the form of a BVAR model, we can simulate thousands of scenarios for interest rates and exchange rates (together with macro variables). This makes it possible to gain a view of how large the spread may be for the development of the Riksbank’s earnings under the various financing alternatives for the foreign exchange reserves. This also gives an indication of the probability of different outcomes for the Riksbank’s earnings and equity.

Figure 5 again shows the accumulated development of earnings for the five scenarios (the broken lines), but, unlike in Figure 4, only the earnings for the self-financing alternative are shown. Figure 5 also shows how earnings relate to the distribution of the development of earnings generated by the simulation of the BVAR model.

**Figure 5. Gradual accumulated result from self-financing, different calculation approaches, SEK billion**



Note. The probability band is calculated on the basis of the percentiles for all simulated scenarios over each time horizon. For example, the outer 98 % band at the broken vertical line shows the 1st and 99th percentiles respectively, five years ahead.

Figure 5 shows that the five scenarios only form isolated examples of future outcomes for the development of the Riksbank's earnings, while the calculations made using the BVAR model provide more information on possible future outcomes. The simulations show that the future outcomes could be both better and worse than the previously reported scenarios.

From a risk perspective, the lower part of the distribution is the most interesting to study, as it shows how large the potential losses could be, given different levels of probability. Here, we focus on a medium-term risk perspective and a five-year time horizon, which, in Figure 5, is marked by the vertical broken line. It has already been noted that, in the worst-case scenario for earnings, the loss will be a maximum of SEK 13 billion greater with self-funded foreign exchange reserves, compared with continued financing with currency loans. Based on the simulations with the BVAR model, the difference in loss five years ahead will be SEK 14 billion between the financing alternatives for the 99th percentile.

The calculation with the time series model above has been made for the transition phase to self-financed foreign exchange reserves. This means that potential risks will not have a full impact over the period, as the transition is spread over a three year period. It is also appropriate to analyse how the risks look with another starting point for interest rates and exchange rates. The analysis has therefore been supplemented with a further simulation which assumes that the transition has already taken place and that interest rates are on levels that are compatible with long-term equilibrium levels. This captures the increase in risk that self-financed foreign exchange reserves may mean in the longer

term. The result shows that the difference in earnings increases to just over SEK 60 billion between the two financing alternatives for the 99th percentile.<sup>10</sup>

Overall, the calculations using the time series model confirm the results of the scenario analysis, namely that, if the Swedish krona appreciates, there will be losses, regardless of how the foreign exchange reserves are financed. However, the losses will be greater with self-financed foreign exchange reserves, even if the difference in earnings in the medium term is limited. Even so, in the long term, the analysis shows that the financial risks become even greater with self-financed foreign exchange reserves, which is important to consider.

## Conclusions

The Riksbank's overall assessment is that the advantages of a completely self-financed foreign currency reserve outweigh the disadvantages, but that the financial risks on the Riksbank's balance sheet increase. The increased financial risk must be balanced against the refinancing risks, in which the economic costs may be significant, for example, if it is not possible to refinance parts or all of the loan financing during a financial crisis. The self-financed foreign exchange reserves will amount to slightly less than 8 per cent of GDP when the transition has been completed.

Self-financed foreign exchange reserves would eliminate the refinancing risk, which is positive from a contingency perspective and would therefore strengthen the Riksbank's possibilities to act in a financial crisis. Self-financed foreign exchange reserves also mean there would be no conflation of the Riksbank's balance sheet with that of the state. At the same time, the central government debt, all other things being equal, will decrease by an amount corresponding to the size of the loans of SEK 178 billion.

If the Riksbank moves over to self-funded foreign exchange reserves, the analysis above shows that there may occur increased losses in the future if the development of the interest rate and exchange rate follows the NIER scenario. But the difference in earnings does not differ decisively between the two alternatives for the financing of the foreign exchange reserves, not even in the worst case scenarios during the transition period. However, if the Swedish krona strengthens more than in the NIER scenario, the losses will increase more with self-financed foreign exchange reserves. Calculations using the time series model confirm this conclusion, with the addendum that the potential losses may be greater over the longer term.

The increased financial risk has no significance from a contingency perspective, in the sense that it does not affect how much foreign exchange the Riksbank holds. It is only the foreign exchange reserves measured in Swedish kronor that vary due to exchange rate changes. On the other hand, it may entail increased variation in the Riksbank's annual results. This needs not be a problem as the Riksbank's tasks are not fixed in time,

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<sup>10</sup> The much larger scale of the potential losses compared with Figure 5 (and the scenario analysis) is partly due to the increased risk exposure being built up gradually over the first years, which is also the period when the greatest exchange rate changes occur in the various scenarios. Another reason is that the simulated scenarios that are impacted by larger negative (positive) effects with self-financing are scenarios that have relatively good (poor) development of earnings in the case of financing via currency loans, meaning that the net effect of the entire probability distribution will not be as strongly affected during the transition phase.

which is to say that there is no future time point at which the foreign exchange reserves are to be phased out.

However, a higher financial risk on the Riksbank's balance sheet would increase the probability of the Riksbank's equity being low in the following period. Excessively low equity would make the Riksbank's financial independence weaker, which could ultimately be negative for the Riksbank's ability to fulfil its tasks. In the Riksbank's assessment, the increased financial risk entailed by self-financed foreign exchange reserves is not a long-term problem, given that the Riksbank has sufficiently large loss-absorbing equity to safeguard the Riksbank's long-term earnings capacity.

## Appendix

### Figure A1a–d. Different scenarios for interest rates and exchange rates

Figure A1a. The repo rate

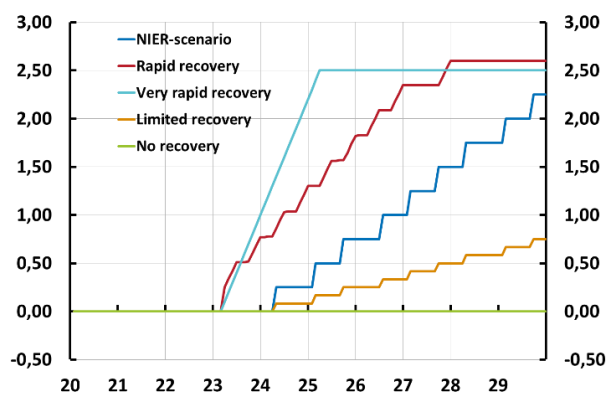


Figure A1b. Exchange rate (Nominal KIX)

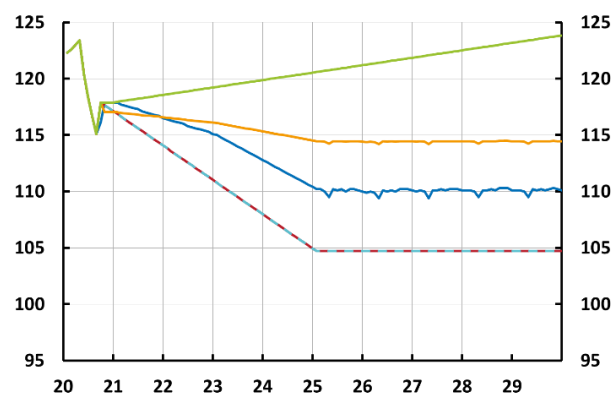


Figure A1c. Policy rate USA

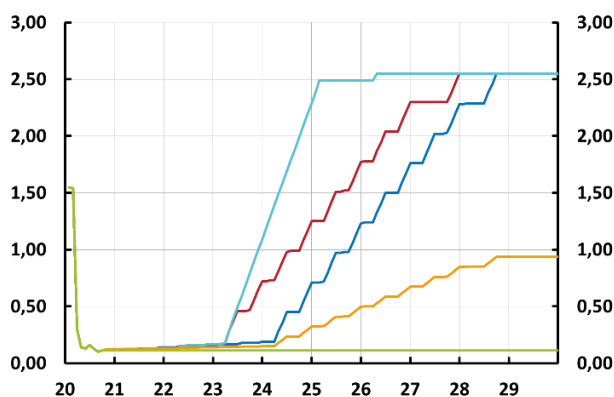
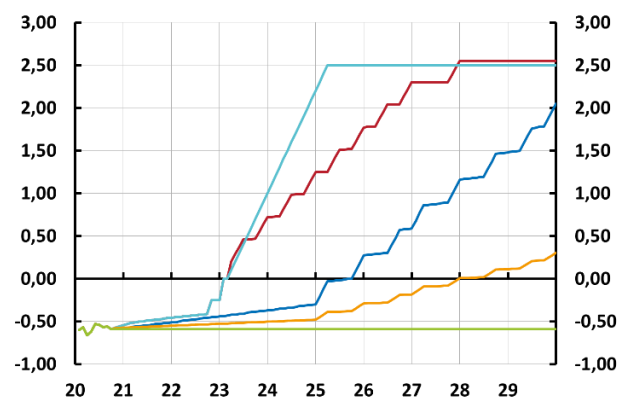


Figure A1d. Policy rate euro area



### Simplified assumptions for the calculations

- Payments to the Treasury are financed by increased monetary policy debt, at the same time as all revenues in foreign exchange are reinvested after any interest expenses in foreign exchange are paid (which is how this has worked in recent years, although the Riksbank may choose to change approach).
- Interest on the monetary policy debt is paid using an increased monetary policy debt (this is how it has been in recent years, although the Riksbank may choose another approach).
- The holding of real government bonds in kronor is approximated by extending the holding of nominal government bonds by the equivalent market value.
- The banknote and coin stock is assumed to be unchanged.
- The size of the holding of government securities in kronor is not affected in scenarios where the short-term rate becomes more negative than the current level (there is no rule for further purchases).
- Only EUR/SEK and USD/SEK, and the respective interest rate curves, are included in the model. However, the exchange rates move precisely like the KIX (which is to say, the exchange rate EUR/USD is not adjusted in the scenarios).