Instructions for reporting interest rate statistics (MIR)

SCB

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1. Introduction

The collection is regulated by Riksbank regulations (RBFS 2021:2), which contain general information about the requested data, as well as information on the duty to report data. The interest rate statistics are a sample survey and the Riksbank decides ahead of each year which MFI (*monetary financial institution*) and UBA (*housing credit institutions and alternative investment funds engaged in lending*) respondents are to report.

The statistics are published monthly on Statistics Sweden's website and are delivered to organisations including the European Central Bank (ECB) and the Bank for International settlements (BIS). The information is used by analysts, researchers and the mass media. The data is used by the Riksbank for statistical purposes and both the Swedish Financial Supervisory Authority and the Riksbank may use the data for oversight and supervision of the financial markets[4].

2. Reporting of MIR

2.1. Frequency and submission dates

Interest rate statistics are reported using the Excel form, which Statistics Sweden must receive no later than the eleventh business day after the end of the reference period[5]. A schedule with the relevant dates for the year is provided at www.scb.se/mir. The current version of the form is also provided on the respondent page.

2.2. Submission

The form is submitted through Statistics Sweden's online portal, in the same way as reporting of MFI and UBA. Separate instructions for submitting data *(Instructions for submitting Excel forms over Statistics Sweden's online portal)* are provided at www.scb.se/mfi.

2.3. Reporting in the Excel form

Interest rates are reported in percent with four decimal places, and stocks in thousands of Swedish kronor. Cells without values shall be left blank, and no zeros shall be reported apart from in the case of a zero interest rate.

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[3] The ECB is responsible for the statistics at the European level, and has a more detailed manual for reporting (Manual on MFI interest rate statistics, https://www.ecb.europa.eu/pub/pdf/other/manualonmfiinterestratestatistics_201701.en.pdf). In cases where Statistics Sweden's instructions differ from the ECB's manual, Statistics Sweden's instructions apply.

[4] According to the Database for the Monitoring and Supervision of Financial Markets Act (2014:484).

[5] See section 3.1.

Before submitting the form, check that it is consistent and does not contain any summing errors. This can be done in the Controls tab. If there are any summing errors in the form, these *must* be remedied before the form is sent to Statistics Sweden.

The MIR reports must be consistent with MFI or UBA reporting. Assistance with reconciliation is provided at www.scb.se/mir.

3. Concepts and definitions

This section goes through the main components of the interest rate statistics.

Unless otherwise stated in these instructions, the definitions in the interest rate statistics are identical to those in the guidelines in the MFI form. A general difference from the MFI form is that the interest rate statistics only include lending and deposits in Swedish kronor (as the denomination currency[6]) for Swedish counterparties. Lending and deposits through foreign branches shall be excluded.

3.1. Reference period

For reporting interest rate statistics, the reference period for which the statistics are collected is one month, but the reporting differs depending on whether outstanding amounts or new agreements are reported:

- **For outstanding amounts** stocks and interest rates at the end of the month are reported.
- **For new agreements** interest rates shall be reported as the average of agreed interest rates during the month. Stocks of new agreements shall refer to all new agreements during the month. Interest rates and stocks of new agreements that are no longer in place at the end of the month shall thus be included.
- For the **overnight loans and transaction accounts with credit** that are reported under new agreements, the reporting shall concern outstanding amounts at the end of the month.

Section 5 addresses interest rate calculations.

3.2. Collateral breakdown

For collateral, the definition is the same as in the MFI report. The breakdowns sometimes vary, however; for example, single-family dwellings and condominiums are consolidated in MIR but reported separately in MFI.

[6] In cases where the denomination currency and the disbursement currency differ, it is the denomination currency that is reported.

3.3. Maturity breakdown

3.3.1. Lending by original and residual maturity

In cases where lending is broken down by different maturities, it is the latest negotiated rate fixation period (original maturity) that shall be reported.

- A loan shall be reported in the same maturity interval throughout the entire agreed rate fixation period.
- If different interest rate fixation periods are set for a loan agreement, each component shall be considered as a loan in its own right and be reported according to the agreed rate fixation period.
- "Up to three months inclusive" includes the floating rate and fixation periods of up to three months inclusive.
- A loan that is renegotiated at the end of the rate fixation period shall be reported according to the new rate fixation period.

Note that there are two tables in the "Assets, outstanding amounts" tab, where *outstanding* rate fixation period – that is, how much time remains of the latest negotiated (current) rate fixation period – shall be reported.

3.3.2. Deposits and borrowings with agreed maturity and notice period

For new liabilities during the period, deposits with agreed maturity are reported. For outstanding amounts, deposits and borrowings with agreed maturity and with notice period are reported.

Deposits and borrowings with agreed maturity refer to deposits that:

- cannot be withdrawn in cash over the agreed maturity, or
- can be withdrawn in cash only in return for a fee or a deterioration in the interest rate terms and conditions.

Deposits and borrowings with notice period refer to deposits that:

- cannot be withdrawn in cash prior to the end of the notice period, or
- can be withdrawn in cash prior to the end of the notice period only in return for a fee or a deterioration in the interest rate terms and conditions.

3.4. Transaction accounts with a credit line including revolving credits

Transaction accounts with a credit line including revolving credits are reported under outstanding assets. These assets differ, in somewhat simplified terms, from other lending in that they concern products used by the institution's customers to make ongoing payments.

These accounts are also included in new agreements, but the entire outstanding amount is reported there in that case. The reason for this is

that a large number of transactions are carried out on these accounts that are due more to the purchasing decisions of the counterparty than new agreements between the counterparty and reporting institution. In other words, these accounts would constitute a disproportionately large share of new agreements if all transactions were reported as new agreements.

Under outstanding assets, these accounts are divided up into credit card credits and other transaction accounts with a credit line and revolving credits. The difference between these two categories is that interest is always payable on credit card credits, which is not always the case for other transaction accounts with a credit line and revolving credits (for example cash card receivables).

For both items, only *withdrawn and not yet repaid credit* shall be reported; that is, not the entire granted credit line.

Credit card credits include:

- Card credits on which interest is payable because withdrawn credit has not been paid on the first possible payment date.
- Card credits for which interest is payable as soon as the credit line is utilised.

Other transaction accounts with a credit line and revolving credits include:

- Cash card receivables; that is, card credits with 0 percent interest (which, after an interest-free period, turns into a credit card credit if it is not paid on the first possible payment date)
- Debit balances in on-demand accounts (i.e. negative balances):
    - Credits that were *not* advanced; that is, overdrafts.
    - Withdrawn credits that were advanced (although not connected to a card).
- Construction credits
- Cheque accounts with overdraft facilities

3.5. Overdraft fees and interest rates

Overdrafts in on-demand accounts shall, as described above, be entered as an asset under transaction account with a credit line (other transaction accounts with a credit line and revolving credits).

The overdraft rate – that is, a higher interest rate on overdrawn amounts – is included in the equivalent reported interest rate[7]. Any

[7] If the overdraft interest rate varies between different overdrawing levels, the overdraft rate counts as an amount-weighted average in the same way as other interest rates in the statistics. See more details in section 5 for guidelines on how to calculate the interest rates.

overdraft fee shall, however, be included neither in the annualised agreed rate nor the effective rate.

3.6. Amounts beyond the scope of the interest rate analysis

Outstanding assets and liabilities are divided up between amounts that are included in the interest rate analysis and amounts that are excluded from the interest rate analysis. Usually, however, amounts that are excluded from the interest rate analysis shall only be reported under outstanding assets, and not under outstanding liabilities. If you need to report amounts beyond the scope of the interest rate analysis in outstanding liabilities, please contact Statistics Sweden on fmr@scb.se.

Assets beyond the scope of the interest rate analysis refer to distressed credits – non-performing loans, and forborne loans for which the interest rate does not reflect market conditions.[8] The reason for their exclusion is that the interest rate on such loans reflects the individual borrower's ability to pay, rather than market conditions in general.

The definition of amounts beyond the scope of the interest rate analysis is the same as the ECB's definition for interest rate statistics. Note however that the definition of distressed credits is not entirely consistent with the definition in MFI, as the MIR definition is broader. It includes both non-performing loans (the definition of which is the same as in MFI) and forborne loans for which the interest rate does not reflect market conditions. The vast majority of forborne loans for which the interest rate does not reflect market conditions ought to be classed as non-performing loans, although theoretically there could be a small category of loans where this is not the case. For example, it could occur that a bank grants forbearance already when the borrower starts to show signs of financial difficulty without the loan itself yet being classed as non-performing.

Other loans for which the interest rate is below the market rate, such as employee loans and intragroup loans, shall however be included in the interest rate analysis.

Combined, the amounts within and beyond the scope of the interest rate analysis correspond to the total loan stock that is reported in MFI.

3.7. Loan-to-value ratio

In MIR, the calculation of loan-to-value ratios shall, as far as possible, follow the process in the amortisation requirement (FFFS 2016:16) and the mortgage cap (FFFS 2016:33). The loan-to-value ratio shall thus be

[8] Non-performing loans according to Annex II of Regulation (EU) No 2021/379 (ECB/2021/2). Forbearance measures according to Commission Implementing Regulation (EU) No 2021/451.

calculated on the current loan amount and the current market value of the collateral, with the market value referring to *"The price that would be attained if a sale were carried out under market conditions with reasonable time allowed for negotiation. The market value should be assessed without consideration for speculative and temporary conditions and established by means of an individual valuation. It should be possible to base an individual valuation on general price levels or purchase price. (FFFS 2016:33)*.

As MIR performs a breakdown into different types of residential property and also other collateral, further guidance is provided below for reporting loan-to-value ratios in MIR:

The purpose of the breakdown of loan-to-value ratios is to better enable analysing differences in interest rates; that is, the extent to which the loan-to-value ratio affects the interest rate for the loan.

The simplest case is when there is one loan and one collateral object. If a household has a loan of SEK 1.4 million with a single-family dwelling valued at SEK 1.9 million, the loan-to-value ratio is 74 percent.

If the loan is divided into two loans, e.g. one at a floating interest rate and one at a fixed interest rate with the same collateral, account shall be taken of both loans. If a household has one mortgage of SEK 0.5 million at a floating interest rate, and one of SEK 0.9 million at a fixed interest rate, and the single-family dwelling that is the collateral is valued at SEK 1.9 million, the loan-to-value ratio is 74 percent.

It may also be the case that the borrower has loans from several different creditors. In the interest rate statistics, this can be addressed as follows:

- In that case, the loan-to-value ratio is calculated as own lending in relation to the value of the collateral after deductions for all the mortgage deeds not held by the reporting party. If there is only information concerning better lien priority on mortgage deeds, the loan-to-value ratio shall be calculated based on the value of the collateral after deductions for mortgage liens with higher priority held as collateral by parties other than the reporting party.
- If there are multiple creditors and mortgage deeds, the approach of the Association of Swedish Covered Bond issuers (ASCB) "Max LTV per property" may also be used.

Distribution of collateral in MIR

In MIR, the entire loan is reported on the collateral object that covers the largest part of the loan (or in a determined order when equally large parts are covered). If a loan of SEK 3.2 million has a single-family dwelling valued at SEK 2.5 million and an agricultural property valued at SEK 1.8 million as collateral, and no other loans are secured by these properties, the entire loan will be reported on the single-family dwelling. However, the loan-to-value ratio takes both collateral objects into account and will therefore be 3.2/(2.5+1.8) = 84 percent.

However, there may be more complex cases involving multiple loans and several different collateral objects. For example, a loan of SEK 3 million is collateralised by a single-family dwelling worth SEK 3 million but also by a forestry property worth SEK 4 million, while at the same time the forestry property is the sole collateral for a loan of SEK 2.1 million. Calculating the loan-to-value ratio based on all loans and collateral (73 percent) would however not reflect the fact that the single-family dwelling has better collateral than the forestry property. See Appendix 1 for a more detailed example.

In order to better allocate collateral objects in such cases, where there is no fixed distribution of how much of each collateral object secures a certain loan, the following method can be applied in MIR:

1. Allocate the collateral objects in proportion to the loans
2. Calculate each collateral object's share of the allocated collateral objects in (1)
3. Distribute the loans according to the collateral objects' share in (2)
4. Calculate loan-to-value ratio per collateral object
5. Calculate loan-to-value ratio per loan, loan-to-value ratio per collateral object weighted by distributed loans (3)

For outstanding and new assets, the loan-to-value ratio for stocks and interest rates is reported, broken down by half-open 5 percent intervals from 0 to 100.

- [a, b) Endpoint a is included but not b.

Loans with loan-to-value ratios exceeding 100 percent, or with an unknown loan-to-value ratio, shall be reported separately.

4. New agreements

4.1. General information

New agreements are defined as all new agreement entered into between the reporting institution and counterparty sometime during the month

concerned. This information is collected, as well as interest rate data on outstanding stocks, to illustrate interest rate formation during the month concerned. The definition of what is included in new agreements is thus central to interest rate statistics

In the form, there are two tabs in which only new assets and liabilities are reported. This section provides a description of the boundary between new agreements and outstanding amounts.

'New agreements' refer to amounts that have been agreed during the period, irrespective of whether or not they have been disbursed/redeemed. This differs from outstanding amounts, which only includes disbursed/redeemed loans. In other words, new agreements can include amounts that are never disbursed/redeemed, and will thus not be included in outstanding amounts either.

New agreements include:

- All agreements for which terms and conditions that affect the interest rate on deposits and lending are initially determined.[9]
- Extensions of or amendments to the terms of existing loans, irrespective of whether or not negotiation takes place:
  - All agreements concerning existing deposits and lending that are the result of *direct* negotiations, e.g. in loan transfers or renegotiations.
  - Extensions of existing agreements that *indirectly* entail a renegotiation of terms. This is the case for instance when the rate fixation period for a housing loan matures and the customer does not contact the bank, since it can be seen as a way of indirectly accepting the new terms. (Automatic adjustments to the floating rate are not included however).
- Saving in accounts for which there is no predetermined monthly amount. Each new deposit shall be treated as a new agreement.

New agreements *do not* include:

- Changes to floating rates (automatic adjustments) made by the reporting institution.
- A changeover from a fixed to a floating rate, or vice versa, during the period of validity of the agreement *that is included in the original agreement.*
- Partial disbursements during periods of time after the period for which the agreement was negotiated. The entire loan amount agreed at the start of the agreement shall instead be included in the

[9] Normally, this corresponds in practice to the time of disbursement or deposit. If the actual interest rate is determined during a reporting period that is earlier than the time of disbursement or deposit, reporting shall occur at the time of interest rate determination.

interest rate statistics for new agreements, irrespective of when disbursement is made.
- Loan commitments, for example in homebuying. These are not entered as new agreements until the borrower has formally entered a loan agreement.
- Transferred or purchased loan stocks, provided they are not renegotiated to a new interest rate and/or maturity.

In addition, there are a couple of special cases for how new agreements are reported:

- Under new agreements (assets), overnight loans and transaction accounts with a credit line to non-financial corporations are reported broken down by loan size. Here, amounts and interest rates shall refer to outstanding amounts and sum up to the reported amounts in outstanding assets.
- On-demand accounts are reported only under outstanding amounts, and new agreements are retrieved from outstanding amounts in the form. This is because the entire outstanding amount counts as new agreements in the statistics because transactions in such accounts reflect payments rather than individual investment decisions.

4.2. Examples of new agreements

4.2.1. Loans for which the total loan amount is not taken out immediately

For a loan that is disbursed in different tranches over time, the total loan at the time of the agreement is reported under new agreements. This is illustrated in the example below.

A loan of SEK 5,000 with an original maturity of six years and an annualised agreed rate of 4.2 percent is agreed in year one. In the contract, it says that the customer can take out tranches of the loan according to an agreed schedule. The fact that tranches of the loan are taken out at different times does not affect how new agreements are reported, because new agreements only capture the agreement between the customer and the institution at the time of the agreement; that is, in year one. The total loan amount (SEK 5,000) that was agreed at the year-one point in time, and the interest rate for the entire amount, are therefore reported as new agreements.

The gradual increase in the loan will be visible in the outstanding amounts, as outstanding amounts refer to utilised credit, see the table below.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Outstanding						
Interest rate	-	4.2%	4.2%	4.2%	4.2%	4.2%
Amount	-	SEK 1,500	SEK 3,000	SEK 4,500	SEK 5,000	SEK 5,000

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
New agreements						
Interest rate	4.2%	-	-	-	-	-
Amount	SEK 5,000	-	-	-	-	-

For loans taken out in tranches at different times, the interest rate for the different tranches might be unknown in advance. In such cases, the interest rate on the agreement date is reported for the entire loan under new agreements.

4.2.2. Deposits with agreed maturity

New deposits with agreed maturity are reported differently under new agreements depending on whether or not the savings are predetermined.

- If a customer deposits SEK 5,000 into an account with an agreed maturity of two years, the deposit counts as a new agreement because it is then that the amount and interest rate are agreed. If, at a later date, the customer deposits a further SEK 5,000, this amount too will be a new agreement as the interest rate and maturity will be initially determined for this amount.
- In the case of *monthly saving planned in advance* of SEK 5,000 with agreed maturity, it is however only the initial deposit of SEK 5,000 that shall count as a new agreement.
- The exception is if the monthly saving is such for which the reporting institution knows with certainty what the total savings will be, and the agreement enables the reporting institution to perform the customer's commitment to saving. In that case, the entire total saving amount and the agreed rate at the time of entering the agreement are reported, e.g. SEK 60,000 for monthly saving of SEK 5,000 over one year.

4.2.3. Lending with matured fixed interest

Lending that is extended after a fixed interest rate has matured shall always be reported under new agreements, irrespective of whether or not direct negotiation has taken place.

When a fixed-interest loan has matured and the customer does not wish to repay the loan, the customer has the following options:

- Inform the institution that the customer wishes to extend the loan with the same rate fixation period as before, or another rate fixation period.

- Do nothing, which can be seen as an indirect choice to accept the new terms.[10]

Both of these options shall be reported as new agreements, which is the case irrespective of whether or not the terms remain identical to how they were. It can be added that fixed-rate loans that are extended shall be reported as new agreements even if they retain the same internal loan number or equivalent identifier at the institution.

4.2.4. Raised loan amount on an existing loan

If the loan amount on an existing loan is raised, the entire loan shall be designated as a new agreement. This is the case both if the new amount is inserted into the existing loan, or if the entire loan is arranged as a new loan. If, however, the new tranche of the loan is arranged as a new loan and the old amount remains in the existing loan, only the new loan shall be reported as a new agreement.

4.2.5. Existing loan that changes currency

Because only loans denominated in SEK are included in the interest rate statistics, loans that switch from a foreign currency to SEK shall be entered as a new agreement when the loan amount and interest rate in SEK have been determined.

4.2.6. Changed amortisation period for an existing loan

Loans that have a changed amortisation period shall not be considered new agreements as this does not affect the interest rate terms for the loan.

4.2.7. Step-up loans

A step-up loan is one where the borrower fixes the interest rate for a certain period, but has a particularly favourable interest rate in the initial months. The period with a more favourable interest rate can usually be considered a kind of "special offer period", with the period of time and interest rate being predetermined in the loan agreement. When the period ends, the interest rate is increased to a more normal level. The annualised interest rate for step-up loans can preferably be calculated as a geometric mean.

A loan has a rate fixation period of one year with a favourable interest rate for three months. The favourable interest rate is 2 percent and the interest rate for the remaining period is 4 percent.

$$r_{ag} = \sqrt[12]{2 \cdot 2 \cdot 2 \cdot 4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 \cdot 4} = \sqrt[12]{2^3 \cdot 4^9} \approx 3.3636\%$$

[10] Known as a "tacit agreement".

5. Interest rate calculation

When reporting the interest rate statistics, it is generally the annualised agreed rate that shall be reported. For new agreements, the effective rate is also reported, although only for certain types of loan.

This section describes the calculations for annualised agreed rate and effective rate.

All interest rates are based on those agreed between the reporting institution and the customer concerned. All interest rates are reported as amount-weighted averages. The interest rate on outstanding amounts is calculated based on disbursed/redeemed loans and the interest rate on new agreements is calculated based on contractual amounts during the period, irrespective of whether or not the loan has been disbursed.

5.1. Annualised agreed rate

The annualised agreed rate shall include all interest payments but, as a rule, no charges. "Charges" refer to administrative costs, such as arrangement and overdraft charges for example. Account needs to be taken of the following, however:

- An exception is however loans at a discount (disagio), defined as the difference between the nominal amount of the loan and the amount received by the customer. The discount is considered as an interest payment at the start of the contract and is thus included in the annualised agreed rate.
- In certain cases, where the "charge" for the loan can be equated to an interest payment for the loan, it shall be included in the annualised agreed rate. Contact Statistics Sweden for guidance.

The agreed rate is annualised using the following formula to obtain the annualised agreed rate.[11]

$$x = \left(1 + \frac{r}{n}\right)^n - 1$$

where:

x = annualised agreed rate.
r = annualised nominal rate. The annualised nominal rate does not take account of the number of interest payment periods/interest capitalisation periods.

[11] See section 4.2.1 Annualised agreed rate in the Manual on MFI interest rate statistics.

n = the number of interest payment periods/interest capitalisation periods during the year[12].

Example:

The reporting institution and the customer agree on a loan with an interest rate of 10 percent per year (r), with quarterly interest payments. The loan has an original maturity of five years, which however does not affect the calculation in the formula below.

$$x = \left(1 + \frac{r}{n}\right)^n - 1 = \left(1 + \frac{0{,}10}{4}\right)^4 - 1 = 0.103813 = 10.3813\ \%$$

5.2. Effective rate

The effective rate shall, unlike the annualised agreed rate, include both interest payments and charges, and be reported for certain new agreements.

The effective rate shall cover the total cost of the credit (interest plus charges[13]) for the customer. The effective rate is calculated according to the following formula[14]:

$$A = \sum_{k=1}^{k=m} \frac{C_k}{(1+i)^{t_k}} = \frac{C_1}{(1+i)^{t_1}} + \frac{C_2}{(1+i)^{t_2}} + \cdots + \frac{C_m}{(1+i)^{t_m}}$$

where:

A = the credit amount
k = the number that corresponds to the payments place in the sequence of the borrower's drawdowns (first drawdown = 1, second = 2, third = 3 and so on.)
C_k = the amount that the borrower shall pay upon drawdown k
i = the effective rate
m = the total number of drawdowns for the borrower
t_k = the period of time, expressed in years and fractions of years, between the date of the credit and the date of each of the drawdowns 1 to m.

If a fee is drawn directly on the disbursement date from the loan amount, it is considered to be paid in the amount C_1 upon period $t_1 = 0$.

The intervals between the dates used in the calculation shall be expressed in years or in fractions of a year. A year is presumed to have

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[12] I.e. 1 for yearly payments, 2 for semi-annual payments, and so on. In the case of daily interest capitalisation or interest payments, a standard year of 365 days shall always be used.

[13] Any overdraft charge shall however *not* be included in the effective rate.

[14] According to the same definition as stipulated in the Consumer Credit Act (2010:1846) and the Calculation of Effective Interest Rates on Consumer Credits Ordinance (2010:1855).

365 days or 366 days for leap years, 52 weeks or 12 equal months. An equal month is presumed to have 30.41666 days[15].

Example 1:

A loan of SEK 1,000 is taken out on 1 January 2018. The repayable amount of SEK 1,200 (includes the principal as well as interest and charges) shall be repaid on 1 July 2019 (546 days after the loan was taken out).
The above equation will be as follows:

$$1000 = \sum_{k=1}^{k=m} \frac{C_k}{(1+i)^{t_k}} = \frac{1200}{(1+i)^{546/365}}$$

Which gives an effective rate i = 0.129620 = 12.9620%

Example 2:

A loan of SEK 1,000 in total is taken out on 1 January 2018. Out of this amount, SEK 50 is an administrative charge, meaning that the actual loan is only SEK 950. The repayable amount of SEK 1,200 shall, as in the example above, be repaid on 1 July 2019 (546 days after the loan was taken out).

The equation will be as follows:

$$950 = \sum_{k=1}^{k=m} \frac{C_k}{(1+i)^{t_k}} = \frac{1200}{(1+i)^{546/365}}$$

which gives an effective rate i = 0.169026 = 16.9026%

Example 3:

A loan of SEK 1,000 is taken out on 1 January 2018. The loan shall be repaid on two occasions.

SEK 600 is paid after 1 year (365 days) and a further SEK 600 is paid after 2 years (730 days).

The equation will be as follows:

$$1000 = \sum_{k=1}^{k=m} \frac{C_k}{(1+i)^{t_k}} = \frac{600}{(1+i)^{365/365}} + \frac{600}{(1+i)^{730/365}}$$

which gives an effective rate i = 0.1306623 = 13.0662%

5.3. Weighting of interest rates

The interest rate is reported as an amount-weighted average of interest rates, in part by product and in part in total.

[15] Unlike the calculation of the annualised agreed rate, in which a standard year of 365 days is applied.

The weighted average interest rate for the outstanding balance is calculated as $\frac{\Sigma D*R}{\Sigma \mathrm{D}}$

where

D = utilised amount
R = interest rate in percent

For new agreements, which refers to the contractual and not the utilised amount, the equivalent will be $\frac{\Sigma B*R}{\Sigma \mathrm{B}}$

where

B = granted amount
R = interest rate in percent

Example: Deposits[16] in three different amounts on three different occasions

Below is a comparison between new agreements and outstanding stocks in an example with three different deposit amounts on three different occasions:

- In January 2017 SEK 1,000 is deposited at an interest rate of 2.00 percent per year with an agreed maturity of 1 year. Semi-annual interest capitalisation.
- In January 2018 SEK 2,000 is deposited at an interest rate of 3.15 percent per year with an agreed maturity of 2 years. Interest capitalisation once a year.
- In January 2019 SEK 2,500 is deposited at an interest rate of 3.76 percent per year with an agreed maturity of 3 years. Interest capitalisation upon maturity.

[16] The same applies to lending.

The table below shows how each amount shall be reported as a new agreement or outstanding amount:

	Jan 2017	Jan 2018	Jan 2019	Jan 2020	Jan 2021
Outstanding amount					
Interest rate	2.0100%	3.1500%	3.4149%	3.6269%	3.6269%
Amount	SEK 1,000	SEK 2,000	SEK 4,500	SEK 2,500	SEK 2,500
New agreements					
Interest rate	2.0100%	3.1500%	3.6269%	-	-
Amount	SEK 1,000	SEK 2,000	SEK 2,500	-	-
Interest rate calculation					
i)	2.0100% SEK 1,000				
ii)		3.1500% SEK 2,000	3.1500% SEK 2,000		
iii)			3.6269% SEK 2,500	3.6269% SEK 2,500	3.6269% SEK 2,500

First of all, the annualised agreed rate is calculated for the loans:

i) $\left(1+\frac{0.02}{2}\right)^{2}-1=2.0100\ \%$

ii) $\left(1+\frac{0.0315}{1}\right)^{1}-1=3.1500\ \%$

iii) $\left(1+\frac{0.0376}{1/3}\right)^{1/3}-1=3.6269\ \%$

For January 2019, when there are two deposit items with different interest rates, the interest rate on the outstanding amount is calculated as

$$\frac{3.1500\cdot 2000+3.6269\cdot 2500}{2000+2500}=3.4149\ \%$$

Appendix 1: Calculation example for loan-to-value ratios

Example 1: Two loans for which a single-family dwelling is the sole collateral for loan 1, while a forestry property serves as joint collateral for loan 1 and loan 2.

	Loan	Collateral	
		Single-family dwelling	Forestry property
Loan 1	3.2	Yes	Yes
Loan 2	1.6	No	Yes
Total loans	4.8		
Value collateral object		3.0	4.0

Step 1. Allocate the collateral objects in proportion to the loans

	Single-family dwelling	Forestry property
Loan 1	3	(4*3.2) / 4.8 = 2.67
Loan 2	0	(4*1.6) / 4.8 = 1.33

Step 2. Calculate each collateral object's share of the allocated collateral objects in (1)

	Single-family dwelling	Forestry property
Loan 1	3 / (3+2.67) = 0.53	2.67 / (3+2.67) = 0.47
Loan 2	0	1

Step 3. Distribute the loans according to the collateral object's share in (2)

	Single-family dwelling	Forestry property
Loan 1	3.2*0.53=1.70	3.2*0.47=1.50
Loan 2	0	1.6

Step 4. Calculate loan-to-value ratio per collateral object

	Single-family dwelling	Forestry property
Value collateral object	3.0	4.0
Loan-to-value ratio per collateral object	1.70/3=0.57	(1.50+1.6)/4=0.78

Step 5. Calculate loan-to-value ratio per loan, loan-to-value ratio per collateral object (4) weighted by distributed loans (3)

	Loan-to-value ratio per loan
Loan 1	(1.70*0.57 + 1.50*0.78)/3.2=0.67
Loan 2	0.78

MIR, amounts in SEK thousands		
	Single-family dwelling	Forestry property
Loan-to-value ratio 65–70 percent	3200	
Loan-to-value ratio 75–80 percent		1600

Example 2: Two loans, both secured by a detached house and a holiday home

	Loan	**Collateral**	
		Detached house	Holiday home
Loan 1	4.0	Yes	Yes
Loan 2	2.5	Yes	Yes
Total loans	6.5		
Value collateral object		4.2	5.3

Step 1. Allocate the collateral objects in proportion to the loans

	Detached house	Holiday home
Loan 1	(4.2*4) / 6.5 = 2.58	(5.3*4) / 6.5 = 3.26
Loan 2	(4.2*2.5) / 6.5 =1.62	(5.3*2.5) / 6.5 = 2.04

Step 2. Calculate each collateral object's share of the allocated collateral objects in (1)

	Detached house	Holiday home
Loan 1	2.58 / (2.58+3.26) = 0.44	3.26 / (2.58+3.26) = 0.56
Loan 2	1.62 / (1.62+2.04) = 0.44	2.04 / (1.62+2.04) = 0.56

Step 3. Distribute the loans according to the collateral object's share in (2)

	Detached house	Holiday home
Loan 1	4.0*0.442=1.768	4.0*0.558=2.232
Loan 2	2.5*0.442=1.105	2.5*0.558=1.395

Step 4. Calculate loan-to-value ratio per collateral object

	Detached house	Holiday home
Value collateral object	4.2	5.3
Loan-to-value ratio per collateral object	(1.768 + 1.105) / 4.2 = 0.68	(2.232 + 1.395) / 5.3 = 0.68

Step 5. Calculate loan-to-value ratio per loan, loan-to-value ratio per collateral object (4) weighted by distributed loans (3)

	Loan-to-value ratio per loan
Loan 1	(1.768*0.68 + 2.232*0.68) / 4.0=0.68
Loan 2	(1.105*0.68 + 1.395*0.68) / 2.5=0.68

MIR, amounts in SEK thousands	
	Single-family dwelling
Loan-to-value ratio 65–70 percent	6500

In this case, where both collateral objects cover both loans, the loan-to-value ratio according to the calculation above is the same as the sum of loans/sum of collateral = 6.5/9.5 = 0.68.

Example 3: A parent who is a business operator with loans of SEK 3 million with a detached house worth SEK 7 million, is a co-borrower for their child's tenant-owned apartment with loans of SEK 7.2 million and a value of SEK 8 million, collateralised by the detached house. An assumption is made that loan for the tenant-owned apartment is allocated 50–50 between the borrowers.

	Loan	Collateral	
		Detached house	Tenant-owned apartment
Loan 1 (Bus-op HH)	3.0	Yes	No
Loan 2 (Bus-op HH)	3.6	Yes	Yes
Loan 3 (Other HH)	3.6	Yes	Yes
Total loans	10.2		
Value collateral object		7	8

Step 1. Allocate the collateral objects in proportion to the loans

	Detached house	Tenant-owned apartment
Loan 1 (Bus-op HH)	7*3/10.2=2.06	
Loan 2 (Bus-op HH)	7*3.6/10.2=2.47	8*3.6/7.2=4
Loan 3 (Other HH)	7*3.6/10.2=2.47	8*3.6/7.2=4

Step 2. Calculate each collateral object's share of the allocated collateral objects in (1)

	Detached house	Tenant-owned apartment
Loan 1 (Bus-op HH)	1	0
Loan 2 (Bus-op HH)	2.47/(2.47+4)=0.38	4/(2.47+4)=0.62
Loan 3 (Other HH)	2.47/(2.47+4)=0.38	4/(2.47+4)=0.62

Step 3. Distribute the loans according to the collateral object's share in (2)

	Detached house	Tenant-owned apartment
Loan 1 (Bus-op HH)	3.0	0
Loan 2 (Bus-op HH)	3.6*0.38=1.37	3.6*0.62=2.23
Loan 3 (Other HH)	3.6*0.38=1.37	3.6*0.62=2.23

Step 4. Calculate loan-to-value ratio per collateral object

	Detached house	Tenant-owned apartment
Value collateral object	7	8
Loan-to-value ratio per collateral object	(3+1.37+1.37)/7=0.82	(2.23+2.23)/8=0.56

Step 5. Calculate loan-to-value ratio per loan, loan-to-value ratio per collateral object (4) weighted by distributed loans (3)

	Loan-to-value ratio per loan
Loan 1 (Bus-op HH)	0.82
Loan 2 (Bus-op HH)	(0.82*1.37+0.56*2.23)/3.6=0.66
Loan 3 (Other HH)	(0.82*1.37+0.56*2.23)/3.6=0.66

MIR, amounts in SEK thousands	**Business-operating household**	**Other household**
	Single-family dwelling	Tenant-owned apartment
Loan-to-value ratio 65–70 percent		7200
Loan-to-value ratio 75–80 percent		
Loan-to-value ratio 80–85 percent	3000	