

Information document

SWESTR

Comprehensive information on Sveriges
Riksbank's framework for SWESTR

June 2021

Contents

1	The Riksbank as administrator of SWESTR	3
1.1	SWESTR	3
1.2	Regulations of principle	3
1.3	Governance arrangements	4
1.4	Organisation	4
1.5	Transparency	5
1.6	Evaluation and follow-up	5
2	Methodology for determining SWESTR	7
2.1	Underlying market	7
2.2	Transaction dataset	7
2.3	Data processing	7
2.4	Robustness requirements and method of calculation	8
2.5	Rounding	9
2.6	Determination of a corrected SWESTR	9
2.7	Special rules at the end of the year	10
3	Methodology for determining average rates and index	11
3.1	Method of calculation and market conventions	11
3.2	Rounding	12
3.3	Determination of corrected average rates and index	13
4	Publication	14
4.1	Publishing tools	14
4.2	Publication dates	14
4.3	Publication format	14
4.4	Value date	15
4.5	Conditions for use and re-publication	15
5	Questions, comments and complaints	16
5.1	Questions and comments	16
5.2	Complaints	16
5.3	Alternative reporting channel for anomalies	16

1 The Riksbank as administrator of SWESTR

1.1 SWESTR

Sveriges Riksbank determines, provides and controls the reference rate Swedish krona Short Term Rate (SWESTR). This means that the Riksbank is administrator of SWESTR.

SWESTR is a reference rate for the shortest maturity calculated by the Riksbank on the basis of transactions carried out in Swedish kronor from the relevant banking day to the next, *overnight (O/N)*, and reported to the Riksbank by major actors in the money market. The transactions are made between the reporter and banks, the Swedish National Debt Office, financial institutions or non-financial corporations. SWESTR is a fully transaction-based reference rate on the shortest maturity in Swedish kronor and is thus a reference rate as defined in the EU Regulation (2016/1011) on reference values (the Benchmark Regulation, BMR).

The Riksbank also provides compounded average rates for periods of 1 week, 1 month, 2 months, 3 months and 6 months, which are based on the determined values for SWESTR, and is consequently also the administrator of these average rates. The Riksbank also provides an index based on the SWESTR values.

The Riksbank publishes SWESTR and compounded average rates plus the index every banking day.

SWESTR can be used, among other things, as a benchmark, or base value, for pricing financial contracts, such as interest rate derivatives, FX derivatives and interest-bearing securities. SWESTR can also be used for pricing loans at variable interest rates.

Unless otherwise expressly stated, the term SWESTR in this information document shall refer to SWESTR as well as average rates and index based on SWESTR.

1.2 Regulations of principle

Like the other central banks that provide reference rates, the Riksbank complies, where applicable and relevant, with the principles for financial benchmarks adopted by the International Organization of Securities Commissions (IOSCO). The IOSCO principles were drawn up to increase the reliability of reference rates and contribute to good governance, control, transparency and quality in the determination of reference rates. The principles specify the arrangements that an administrator of a reference rate should have in place and represent international best practice for how an administrator should conduct the work regarding reference rates.

SWESTR is calculated on the basis of transactions that are representative of the overnight market in Swedish kronor. This market, which is a liquid and competitive market

that meets the applicable IOSCO principles for reference rates, thus constitutes the underlying market for SWESTR.

In accordance with the IOSCO principles, SWESTR will be subject to regular evaluation. This evaluation will include the underlying market and whether the calculation method accurately reflects the activity in this market. The process of identification and publication will also be subject to regular review.

SWESTR should also be well anchored among the market participants using the reference rate, and the Riksbank has therefore set up an advisory group for SWESTR. This group can also help to facilitate the Riksbank's information gathering for following up SWESTR.

1.3 Governance arrangements

The Riksbank ensures good internal governance for SWESTR through:

- a robust internal regulatory framework, including the necessary governing documents for SWESTR, with clear roles and responsibilities,
- well documented internal routine descriptions of the process of determining and publishing SWESTR,
- established processes for identifying and managing conflicts of interest related to SWESTR, and
- conducting active and systematic risk prevention work, including continuity planning.

1.4 Organisation

Executive Board

The Executive Board of the Riksbank makes important decisions of principle regarding SWESTR, such as the overall organisation and basic rules for the process of determining and publishing SWESTR. The Board also decides on the design of SWESTR and the compounded average rates and index.

Markets Department

The Markets Department (AFM) is responsible for the Riksbank's operational role as administrator.

AFM is responsible for the process that is applied each banking day to determine and publish SWESTR. At AFM, the work is organized in a way that ensures the quality and integrity of SWESTR, for instance by reducing and managing the risk of conflicts of interest. It is the Middle Office division within AFM that is responsible for determining SWESTR independently and objectively.

AFM regularly evaluates and follows up SWESTR, as well as preparing Executive Board decisions in matters concerning SWESTR.

Financial Stability Department

The Financial Stability Department (AFS) is responsible for the Riksbank's internal oversight of SWESTR. The oversight will be carried out in a committee consisting of members from different parts of the Riksbank's organisation. The oversight committee will follow up and oversee compliance with all of the IOSCO principles applicable to SWESTR.

Corporate Services Department

The IT division of the Corporate Services Department (AVS/IT) is responsible, together with the Riksbank's IT operations provider, for the development, maintenance and operation of system support for the work with SWESTR.

1.5 Transparency

Among other things, the Riksbank applies the following measures to achieve as much transparency as possible with regard to SWESTR.

Methodology and governing documents

The Riksbank publishes information on methodology and current processes on the Riksbank's website and publishes relevant governing documents.

SWESTR, average rates and index

The Riksbank publishes values for SWESTR, average rates and index on the Riksbank's website each Swedish banking day. In addition, overall information about the transaction dataset is published. Otherwise, the Riksbank does not comment on the daily values for SWESTR.

Transaction dataset report

The Riksbank publishes quarterly, and with a time lag, a report on late-received changes in the transaction data and/or validations that would have affected determined values for SWESTR if they were received in time. The report has the nature of a summary and includes days when the absolute value of the impact on SWESTR exceeds 0.001 percentage points (0.1 basis point).

1.6 Evaluation and follow-up

In accordance with the IOSCO principles, the Riksbank will evaluate and follow up the design of SWESTR and the Riksbank's work in other respects regarding SWESTR.

The Riksbank will annually certify that the Riksbank complies with the principles of the IOSCO principles in applicable and relevant parts by publishing a statement on SWESTR's compliance, known as the statement of compliance.

2 Methodology for determining SWESTR

2.1 Underlying market

The underlying market for SWESTR is the overnight market in Swedish kronor.

2.2 Transaction dataset

Data source for SWESTR

The data source for SWESTR is the reporting of short money market transactions that the Riksbank's monetary policy counterparties are required to do. At present, nine banks report their relevant transactions for SWESTR to the Riksbank on a daily basis. Transactions with a volume exceeding SEK 10 million *must* be reported, but smaller transactions *may* be reported.

Day count convention

Transactions are reported with the daily calculation convention actual number of days through 360.

Current transactions

The transactions that form the basis of SWESTR are those that:

- have the maturity overnight (O/N), i.e. from the transaction date to the next banking day,
- lead to a deposit at the reporting monetary policy counterparty,
- are made with a counterparty from one of the following categories:
 - banks and financial institutions
 - non-financial corporations
 - Swedish National Debt Office

2.3 Data processing

Checks and validation

To ensure the quality of the reported data forming the basis for the calculation of SWESTR, the Riksbank applies automatic checks aimed at identifying transactions suspected of being unintentionally and/or intentionally incorrectly reported. In cases where the automatic checks identify a transaction as potentially incorrectly reported, it should be used in the calculation of SWESTR if, and only if, the reporter confirms ("validates") that it is correctly reported.

Trimming

Before calculating SWESTR, the Riksbank shall, in accordance with international practice, trim the transaction data in order to reduce the impact of extreme values.

A total of 25 per cent of the transaction volume shall be excluded from further calculations:

- 12.5 per cent of the transaction volume with the lowest interest rates
- 12.5 per cent of the transaction volume with the highest interest rates

2.4 Robustness requirements and method of calculation

The normal calculation method is used if the transaction data is considered sufficiently robust.

If one of the robustness requirements is not met or the transaction data is not available, for example due to technical error, SWESTR is calculated using an alternative calculation method.

Robustness requirements

In order for the transaction data to be considered sufficiently robust:

- the transaction data must amount to at least SEK 6 billion,
- at least three reporting agents shall have reported transactions, and
- no single reporter shall account for more than 75% of the total transaction volume.

The robustness requirements are checked before trimming.

Normal calculation method

Normal calculation method refers to a volume-weighted average of the interest rates in the trimmed dataset, according to the following formula:

$$\sum_{k=1}^N \frac{v_k}{V_{tot}} r_k$$

in which:

N = Number of transactions

r_k = Interest rate of transaction k

v_k = Volume of transaction k

V_{tot} = Total transaction volume

Alternative calculation methods

Depending on the situation, there are two alternative calculation methods.

Technical error

If the relevant transaction dataset is not available, for example in the event of technical error, the following formula will be used for the alternative calculation of SWESTR:

$$repo_t + \frac{1}{2} \sum_{k=1}^2 (r_{t-k} - repo_{t-k})$$

in which:

r_t = determined SWESTR rate for the banking day t

$repo_t$ = Repo rate for banking day t

Transaction dataset does not meet all robustness requirements

If the relevant transaction dataset is available, but does not meet all of the robustness requirements, the following formula is used:

$$repo_t + \frac{1}{3} \sum_{k=0}^2 (r_{t-k} - repo_{t-k})$$

in which:

r_t = SWESTR calculated according to the normal calculation method for t is equal to the current banking day and determined SWESTR rate for banking days preceding the current banking day

$repo_t$ = Repo rate for banking day t

2.5 Rounding

Any rounding shall be done as late as possible before publication and shall follow established mathematical principles for rounding.

2.6 Determination of a corrected SWESTR

In the event of late reporting or validation of transaction data, or earlier technical error, the Riksbank may determine a corrected value for SWESTR. A corrected value for SWESTR will only be determined if the absolute value of the difference between the previously determined value and the new calculation exceeds 0.02 percentage points (2 basis points).

A corrected SWESTR value shall replace the previous value as official value for SWESTR on the day in question.

After the publication time of the corrected SWESTR, no new value for SWESTR can be determined, regardless of new or changed transaction data.

2.7 Special rules at the end of the year

The Riksbank does not apply any special rules for the calculation of SWESTR at the turn of the year.

However, the statistical configurations for the Riksbank's automatic controls, which are aimed at identifying potentially incorrectly reported transactions, may be calibrated so that transactions on the last banking day of the year do not affect the outcome of future checks.

3 Methodology for determining average rates and index

Average rates and index

The Riksbank provides backward-looking compounded average rates and an index based on the determined values for SWESTR. The average rates and the index are cumulative and reflect a continuous accrual of SWESTR. The average and index are thus of the type commonly referred to as *cumulative compounded (average rate)* and allow, among other things, the use of *observation shift*.

The index is provided because it allows easy calculation of the average rate of SWESTR over a period between any two banking days.

Time periods

Average interest rates based on SWESTR are provided for the time periods of 1 week and 1, 2, 3 and 6 months. The average rate for a particular period of time is only provided if the starting date for the period is 1 September 2021 or later.

3.1 Method of calculation and market conventions

The 360-day convention is applied for the calculation of the average rates and index.

Average rates

The periods for average rates are determined backward-looking on the basis of the period's end date and the date of publication of the average rates. In case the calculated starting date is not a banking day:

- for the period 1 week, the adjustment principle *(standard) preceding business day*, i.e. the starting date is brought forward to the immediately preceding banking day,
- for other time periods, the adjustment principle *modified preceding business day* is applied, i.e. the starting date is brought forward to the immediately preceding banking day, as long as this does not mean that the starting date is in another month, in which case the starting date is instead postponed.

The average rate with value date i is calculated using the following formula:

$$\left[\prod_{t=1}^{d_b} \left(1 + \frac{r_t \times n_t}{N} \right) - 1 \right] \times \frac{N}{d_c}$$

in which:

r_t = SWESTR value published on banking day t , i.e. the SWESTR value with the value date of the previous banking day

n_t = the number of calendar days for which interest r_t is applicable

N = number of days in the year, according to convention 360

d_c = number of calendar days in the interest period

d_b = number of banking days in the interest period between banking day t and banking day i

n_t is generally 1, except for Fridays when it is 3, to take account of accrual over the weekend, or where adjustments are needed to take account of non-banking days

Index

Index for SWESTR with value date i is calculated using the following formula:

$$\begin{cases} 100, & \text{om } i = 0 \\ 100 \times \prod_{t=1}^i \left(1 + \frac{r_t \times n_t}{N}\right), & \text{om } i > 0 \end{cases}$$

in which:

r_t = SWESTR value published on banking day t i.e. the SWESTR value with the value date of the previous banking day

n_t = the number of calendar days for which interest r_t is applicable

N = number of days in the year, according to convention 360

$t = 0$ refers to 1 September 2021

n_t is generally 1, except for Fridays when it is 3, to take account of accrual over the weekend, or where adjustments are needed to take account of non-banking days

Agreement between index and average rates

The average rate between any banking days x and y , can be calculated using index values:

$$\left(\frac{\text{Swestr index}_y}{\text{Swestr index}_x} - 1 \right) \times \frac{N}{d_c}$$

in which:

N = number of days in the year, according to convention 360

d_c = the number of calendar days in the interest period, i.e. , $y - x$

Swestr index $_i$ = SWESTR index with value date i

3.2 Rounding

Any rounding shall be done as late as possible before publication and shall follow established mathematical principles for rounding.

3.3 Determination of corrected average rates and index

The corrected values for the average rates and index shall be determined only if a corrected value for SWESTR is determined. In this case, these values replace the former as official values.

4 Publication

4.1 Publishing tools

API

The official publication of SWESTR and of the average rates and index based on SWESTR are the publication in the *application programming interface* (API) provided by the Riksbank for these purposes.

The Riksbank's website

The information will also be published on the Riksbank's website. The Riksbank's website comprises the alternative publication channel in case contingency routines need to be applied for publication.

4.2 Publication dates

SWESTR

SWESTR will be published every Swedish banking day at 11:00. A possible corrected value for SWESTR will be published at 14:00.

Average rates and index

Average rates and an index based on SWESTR are published every Swedish banking day at 11:05. Any corrected values for average rates and indices will be published at 14:05.

4.3 Publication format

SWESTR is published as a percentage to three decimal places. In addition to rate value, the following information about the transaction dataset is published:

- Total volume (SEK millions)
- The number of reporters that reported transactions
- Number of transactions

Corrected information about the transaction dataset is also published in the event of a corrected value for SWESTR.

Average rates for SWESTR are published as a percentage to five decimal places. For each average rate, the starting date of the period to which the rate relates is also published.

The index for SWESTR is published in decimal format to eight decimal places. The starting date (1 September 2021) has an index value of 100.

4.4 Value date

SWESTR

The value date for SWESTR is the date upon which the underlying transactions were executed and settled. SWESTR is published with a one-day time lag.

Average rates and index

The average rates and the index have value date on the day of publication, and include the information in the SWESTR value published on the same day.

4.5 Conditions for use and re-publication

The Riksbank's conditions for use and for the re-publication of SWESTR, including average rates and the index, are published on the Riksbank's website in Swedish and English.

5 Questions, comments and complaints

5.1 Questions and comments

Questions and comments regarding SWESTR can be sent to swestr@riksbank.se.

5.2 Complaints

The Riksbank provides a formal channel for complaints concerning SWESTR. Complaints may be sent either by physical letter or by e-mail as follows:

Physical letter

Sveriges Riksbank
SE-103 37 Stockholm
Please state "Complaint SWESTR" on the letter

E-mail

Please use the e-mail address swestr@riksbank.se
Please state "Complaint SWESTR" in the subject line

Handling of complaints

The Riksbank handles complaints received in accordance with current legislation and the Riksbank's internal regulations. This means, among other things, that employees who are the subject of the complaint will not be involved in the complaint handling process.

5.3 Alternative reporting channel for anomalies

The Riksbank provides an alternative reporting channel for the Riksbank's employees. Through this channel, employees can anonymously report abuse, for example with regard to SWESTR (so-called whistle blowing).



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