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The Croatian National Bank hereby adopts and publishes this methodology pursuant to Article 306, paragraph (4) of the Credit Institutions Act (Official Gazette 159/2013, 19/2015, 102/2015, 15/2018, 70/2019, 47/2020 and 146/2020).

METHODOLOGY FOR THE COMPUTATION OF THE NATIONAL REFERENCE RATE (NRR)

1 Introduction

The National reference rate (NRR) of the average cost of financing of the Croatian banking sector is an implicit interest rate computed and published by the Croatian National Bank on its webpage pursuant to Article 306, paragraph (3) of the Credit Institutions Act (Official Gazette 159/2013, 19/2015, 102/2015, 15/2018, 70/2019, 47/2020 and 146/2020). It serves the role of an index for determination of the variable part of the variable interest rate on consumer credit in accordance with Article 11a, paragraph (2) of the Consumer Credit Act (Official Gazette 75/2009, 112/2012, 143/2013, 147/2013, 9/2015, 78/2015, 102/2015 and 52/2016) and Article 24, paragraph (2) of the Act on Consumer Housing Loans (Official Gazette 101/2017).

By the reporting date of 31 December 2019, the NRR had been computed and published by the Croatian Banking Association (HUB), based on credit institutions' performance indicators published by the Croatian National Bank (CNB). As of the reporting date of 31 March 2020, the NRR is computed and published by the CNB.

The NRR is the rate of the average cost of funding of the Croatian banking sector (banks, savings banks and branches of foreign banks; hereinafter referred to as 'banks'), given the period under review (3, 6 or 12 months), the type of source (deposits of natural persons, deposits of legal persons from the non-financial sector, other sources of bank funding) and the relevant currency (HRK, EUR, USD, CHF).

According to the scope of funds, there are three types of NRR:

1. **NRR1** – NRR for funds of natural persons (computed for HRK and EUR)
2. **NRR2** – NRR for funds of natural persons and legal persons from the non-financial sector (computed for HRK and EUR)
3. **NRR3** – NRR for all funds received by all natural and legal persons, including those from the financial sector (computed for HRK, EUR, CHF and USD).

Each of the three NRRs is computed for a period of 3, 6 and 12 months. The name of each NRR contains a clear indication of the scope of funds (scope **1**, **2** or **3**), an indication of the duration of the period to which the original data based on which the NRR is computed refer (**3M**, **6M** or **12M**) and an indication of the currency of funds (**HRK**, **EUR**, **USD**, **CHF**) – a total of 24 indices. Funds in kuna indexed to foreign currency are included in the currency to which they are indexed (instead of being included in kuna funds). For instance, the six-month NRR computed on the basis of data on the deposits of natural persons in euro and in kuna indexed to euro (NRR1) is indicated as "**6M NRR1 EUR**".

2 Costs of banks' funding

Indicators for NRR computation. To compute the NRR, the CNB computes, on a quarterly basis, the indicators of interest expenses of the Croatian banking sector for the main funding over the preceding quarter, as well as the indicators of the position of such funding as at the end of each month of the quarter to which the interest expenses refer. The data on positions as at the end of the month are reported on a gross basis and refer to the principal (interest excluded).

Main funding. Main funding includes financial liabilities allocated to the portfolio carried at amortised cost, excluding the following funding: electronic money, liabilities arising from financial lease, liabilities based on fees, liabilities based on announced dividend, liabilities to employees and other (unclassified) liabilities. They also exclude the funding denominated in or indexed to currencies other than the kuna, the euro, the US dollar and the Swiss franc. The scope of financial instruments depends on the scope of the respective NRR. The scope of funds in Scope 1 (Natural persons) and Scope 2 (Natural persons and non-financial sectors) is limited to transaction accounts and deposits, only for those that cannot be classified as a subordinated or hybrid instrument in banks' liabilities and that are not margin deposits. Scope 1 includes only the funding of natural persons, both domestic and foreign. Scope 2 includes the funding of both natural and legal persons, domestic and foreign, except for legal persons from financial sectors. Scope 3 (All natural and legal persons) includes all natural and legal persons (including those from financial sectors) and all main funding (transaction accounts, all deposits, including margin deposits, hybrid and subordinated instruments as well as loans received and debt securities issued). Perpetual debt instruments are not included in the scope of instruments used in the computation of the NRR.

Distribution of indicators. Indicators are computed for three scopes (Natural persons, Natural persons and non-financial sectors and All legal and natural persons) and four currencies (HRK, EUR, CHF, USD). Indicators for a particular currency also include banks' funding in kuna indexed to that particular currency, while indicators for the kuna only refer to kuna funding without indexing to a foreign currency.

Sources of data. Indicators are computed on the basis of data from non-consolidated preliminary reports (NP) for banks, i.e. monthly and quarterly data submitted by banks to the CNB as part of the "AA – Balance sheet and off-balance sheet items" and "RA – Income statement" reports as set out in the Decision on statistical and supervisory reporting. To compute interest expenses, quarterly indicators are first computed for each reporting institution separately (by subtracting the amount reported in the preceding quarter from the amount reported for the reference period, except for the first quarter in a calendar year) and then by calculating their sum (aggregating them). To compute funding positions, the sum of data is computed (data are aggregated) for all reporting institutions in a given month.

Population covered. Banks, savings banks and branches of foreign banks constitute the reporting population for the computation of the NRR. Branches of foreign banks include branches of credit institutions from other member states which provide services within the territory of the Republic of Croatia and branches of third-country credit institutions authorised by the Croatian National Bank to establish a branch in the territory of the Republic of Croatia. Housing savings banks are not included in the NRR computation. Furthermore, only the data of banks operating over the entire quarter (from the first to the last day of the observed quarter) are included in the computation of monthly aggregates of main funding and quarterly aggregates of interest expenses on main funding, i.e. the data of banks that ceased or began to operate in the observed quarter (due to bankruptcy, liquidation, merger, acquisition, etc.) are excluded from the computation.

Data covered. Computation is performed based on the data available at the moment of computation provided they have passed all logical input data checks prescribed in Section 4 of this Methodology. If the data fail to pass a logical check at the moment of computation, expert judgement is used prior to NRR computation to decide whether such input data may nevertheless be used in the computation or whether it is better to replace them with relevant data from the preceding quarter.

The technical specification of the computation of indicators is provided below:

	Scope 1	Scope 2	Scope 3
	Natural persons	Natural persons and non-financial sectors	All natural and legal persons
Institutions	Banks, savings banks and branches of foreign banks		
Relevant record	AA (for funding) and RA (for expenses)		
Relevant report	NP		
Date	AA reports: end of month for all three months in the observed quarter RA report: end of the observed quarter		
Portfolio	ATR		
Amount type	AA report: 1 + 2 – 7 + 8 + 12 RA report: 53		
Instruments	P0201, P0202, P0203, P0204, P0205, P0206		P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0209, P0211, P0212, P0213, P0501, P0502, P0505, P0506
Capital characteristics	–, N, D		–, N, D, P, H
Country	All countries		
Sector	14	11, 13, 14, 15	11, 12, 13, 14, 15
Currencies	kuna: HRK without indexing to f/c euro: (EUR) + (HRK indexed to EUR)		kuna: HRK without indexing to f/c euro: (EUR) + (HRK indexed to EUR) Swiss franc: (CHF) + (HRK indexed to CHF) US dollar: (USD) + (HRK indexed to USD)

The following applies:

Relevant report:

NP – indicates that the report concerned is a non-consolidated preliminary (unaudited) report

Amount type:

"1" – outstanding amount; "2" – overdue amount; "7" – discount; "8" – premium; "12" – embedded derivative – fair value; "53" – cumulative interest expense by interest-bearing instrument

Portfolio:

ATR – portfolio of financial instruments measured at amortised cost (IFRS 9, paragraphs 4.1.2. and 4.2.1.)

Instruments:

P0201 – Transaction accounts; **P0202** – Savings deposits; **P0203** – Time deposits; **P0204** – Deposits with notice period; **P0205** – Restricted deposits; **P0206** – Blocked deposits; **P0207** – Loans based on overdrafts on transaction accounts; **P0208** – Received overnight loans; **P0209** – Reverse repo loans; **P0211** – Received syndicated loans; **P0212** – Other received loans; **P0213** – Margin deposits; **P0501** – Bonds; **P0502** – Commercial papers; **P0505** – Certificates of deposit; **P0506** – Non-transferrable instruments (debt securities)

Non-interest bearing instruments and instruments that are not relevant are excluded from the computation: Fees and provisions payable (P0602), Declared dividends payable (P1002), Derivative financial instruments payable (P9998), Other liabilities (P9999), Financial lease (P0210), Operating lease (P9980) and Electronic money (P0301, P0302).

Capital characteristics:

"–" – not applicable

"N" – instrument does not have capital characteristics

"P" – instruments on the liabilities side having the characteristics of a subordinate instrument in additional own funds or ancillary own funds as set out in the Decision on own funds of credit institutions applicable at the time or instruments having the characteristics of Tier 2 capital in accordance with Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012 (hereinafter referred to as 'Regulation (EU) No 575/2013')

"H" – instruments on the liabilities side having the characteristics of a hybrid instrument as set out in the Decision on own funds of credit institutions applicable at the time

"D" – where, on the liabilities side, a reporting institution reports an instrument having the characteristics of capital in accordance with the description of modality "A" which was not referred to in the Decision on own funds of credit institutions or is not recognised under Regulation (EU) No 575/2013.

Sector:

"11" – non-financial corporations; "12" – financial institutions; "13" – government; "14" – households; "15" – non-profit institutions serving households.

Detailed descriptions of attributes referred to in the table above are available in the CNB's [Decision on statistical and supervisory reporting](#).

3 Computation of indicators

Only the data of banks that operated over the entire quarter are included in the computation of indicators.

3.1 Interest expenses

The amount of interest expenses on main funding is computed in the following manner:

Amounts are taken from the “RA” report. Data are available on a quarterly basis. First, cumulative interest expenses are computed and their value from the preceding reference period is subtracted from the amount for the observed reference period. In this way, “quarterly interest expenses” are computed separately for each bank in line with the rules set out in the preceding section of this Methodology. By calculating the sum of “quarterly interest expenses” their aggregate value is computed for all banks in the observed quarter. By way of exception, “cumulative interest expenses” equal “quarterly interest expenses” for the first quarter of a year.

The value of cumulative interest expenses from the preceding reference period is the same value that was used for computing the NRR in that period, i.e. the value published on the CNB’s website (for reference periods up to 31 December 2019 in the file “[Table SP5: Costs of banks’ funding](#)” (available in Croatian only) and for later periods in the file “National reference rate (NRR)” published at www.hnb.hr/nrs) are used as values for the preceding reference period.

The computation results in eight quarterly values of aggregate “quarterly interest expenses” as shown in Table 1.

Table 1 Interest expenses on main funding in banks' liabilities

Quarter	HRK			EUR			CHF	USD
	Natural persons	Natural persons and non-financial sectors	All natural and legal persons	Natural persons	Natural persons and non-financial sectors	All natural and legal persons	All natural and legal persons	All natural and legal persons
Q1								
Q2								
Q3								
Q4								

3.2 Main funding

Main funding amounts are computed in the following manner:

The amounts are taken from the “AA” report. For each bank, the “position amount” is computed first, after which the monthly aggregate of such “position amounts” is computed.

The computation results in eight monthly values of aggregate “position amounts” as shown in Table 2.

Table 2 Main funding in banks' liabilities – stocks at the end of the month

Date	HRK			EUR			CHF	USD
	Natural persons	Natural persons and non-financial sectors	All natural and legal persons	Natural persons	Natural persons and non-financial sectors	All natural and legal persons	All natural and legal persons	All natural and legal persons
January								
February								
March								

April								
May								
June								
July								
August								
September								
October								
November								
December								

4 Data checking procedures

4.1 Checks prior to NRR computation

The CNB performs the following input data checks: the first level of formal and logical input data checks is an integral part of the Decision on statistical and supervisory reporting. These checks are carried out immediately upon the receipt of files from reporting institutions at the point of entry.

The second level of data checks consists of verifying whether all banks delivered “AA” and “RA” reports in the quarter for which the NRR is computed in the manner and within the time limits set out in the Decision on statistical and supervisory reporting. By way of exception, this check, as well as other checks, do not apply to banks that did not operate over the entire duration of the quarter under review (because they began or ceased to operate in that quarter) as they are not included in the population covered by the computation of the NRR in the observed quarter.

The third level of data checks consists of additional input data checks, which include the verification of the temporal consistency of a bank’s interest expenses. Interest expenses in the income statement are verified to determine whether they are lower in the reference quarter than in the preceding quarter. The check is performed at the level of combination of the following characteristics: customer type, capital characteristics, instrument, currency, indexation, and portfolio.

The fourth level of checks consists of those performed individually for each bank at the level of combination of currency and scope referred to in Section 2 of this Methodology:

- 4.1.1 For each bank, data on quarterly interest expenses are checked to determine whether they are meaningfully related to the data on relevant funding. Specifically, if funding is reported in the observed quarter in a particular combination of scope and currency, quarterly expenses are expected for the same combination, and vice versa. The check is performed by calculating, for each bank, quarterly interest expenses and the average funding position for all months in the observed quarter. Where the data fail to pass the check, the CNB will request of the bank to provide a clear explanation of the deviation and (following appropriate verification) to confirm the accuracy of the data relevant for the given combination. The explanation of the reasoned deviation should focus on the largest and the most important changes that led to the mismatch and describe them in detail.

- 4.1.2** The data are checked to see whether a bank participates with more than 30% of aggregate quarterly interest expenses of the population covered or with more than 30% of aggregate average funding positions of the population covered with regard to any combination of currency and scope. Where this is the case, the CNB will request of the bank to confirm the accuracy of data relevant for the given combination.
- 4.1.3** The data are checked to see whether the ratio between a bank's quarterly expenses and the average position of relevant funding to which the expenses refer at the level of a given combination of currency and scope in the observed quarter is much lower or much higher than the appropriate ratio at system level (the ratio between aggregate expenses and the aggregate average funding position for the same combination of currency and scope in the same quarter). The standard deviation of the mentioned ratio in banks is computed for each currency and scope. Where the ratio for a bank is more than a half of the standard deviation lower (lower limit) or more than one and a half of the standard deviation higher than the appropriate ratio at system level (upper limit), the CNB expects from the bank to provide the possible reason for the deviation and (following appropriate verification) to confirm the accuracy of the data relevant for the given combination. In this case, it is acceptable to provide the possible reasons for the deviation because it concerns the comparison of a bank's practices and reference values in the system.
- 4.1.4** The data are checked to see whether the ratio between a bank's quarterly expenses and the average position of relevant funding to which the expenses refer at the level of a given combination of currency and scope in the observed quarter is more than 5% higher or more than 5% lower relative to the same ratio for the average of the covered population computed excluding the data for that bank. Where a bank has a ratio that exceeds the threshold of +5% or -5%, the CNB expects from the bank to provide the possible reason for the deviation and (following appropriate verification) to confirm the accuracy of the data relevant for the given combination. In this case, it is acceptable to provide the possible reasons for the deviation because it concerns the comparison of a bank's practices and reference values in the system.
- 4.1.5** The temporal consistency of monthly funding data is checked. The rate of change relative to the preceding month is computed for all three months in the observed quarter at bank, month, scope and funding currency level to determine whether the rate of change is higher than the upper limit or lower than the lower limit in a given month. For HRK and EUR the upper limit is +5% and the lower limit is -5%; for USD and CHF the upper limit is +10% and the lower limit is -10%. Where a bank's rate of change exceeds the defined thresholds, the CNB will request of the bank to provide a clear explanation of the deviation and (following appropriate verification) to confirm the accuracy of the data relevant for the given combination. The explanation of the reasoned deviation should focus on the largest and the most important changes that led to the mismatch and describe them in detail.
- 4.1.6** The temporal consistency of data on interest expenses is checked. Quarterly interest expenses according to scope and currency are computed at bank level and the rate of change is determined relative to the preceding quarter. The average rate of change according to scope and currency is also computed at system level as well as the standard deviation of the mentioned rate of change at banks for each currency and scope. Where a bank's rate of change is by more than one standard deviation lower or higher than the appropriate rate at system level, the CNB expects from the bank to provide

the possible reason for the deviation and (following appropriate verification) to confirm the accuracy of the data relevant for the given combination. In this case, it is acceptable to provide the possible reasons for the deviation because it concerns the comparison of a bank's practices and reference values in the system.

Where a bank's appropriate verification establishes that the bank is unable to confirm the accuracy of data and the previously submitted data should be corrected, the bank is expected to submit the correction and the appropriate explanation.

By way of exception, where non-compliance with any of the checks from 4.1.2 to 4.1.6 with regard to a combination of scope and currency is established for a bank in the observed quarter, the CNB will not request of the bank to confirm the accuracy of the data or to provide a statement on non-compliance where all three of the following conditions are met:

1. a bank participates with less than 1% in the aggregate average funding position of the population covered with regard to this combination of scope and currency in the reference period;
2. a bank participates with less than 1% in aggregate quarterly interest expenses of the population covered with regard to this combination of scope and currency in the reference period; and
3. a bank has no influence on the change of any of the NRR values (where for the observed reference period the NRR calculated including the bank's data is equal to the NRR calculated without including the bank's data, rounded to two decimal places).

4.2 *Additional checks of input data for accuracy*

The fifth level of checks consists of the checks of consistency of reporting on interest expenses and main funding for the end of the year. This is performed by comparing the audited data to preliminary data. After the legal time limit for the delivery of audited reports expires, cumulative interest expenses (for the entire year) and the amount of funding as at 31 December are compared at the level of combination of currency and scope. Where it is determined after data comparison that the audited data differ from preliminary data by more than 1%, the CNB will request of the bank to provide a clear explanation of the deviation and (following appropriate verification) to confirm the accuracy of the data relevant for the given combination. The explanation of the reasoned deviation should focus on the largest and the most important changes that led to the mismatch and describe them in detail. Where necessary, the CNB initiates the supervision of internal controls in the bank's supervisory reporting system.

5 **NRR computation**

The NRR is computed in the following manner for a currency, funding scope and period to which the data refer:

- total banking sector interest expenses are computed for the entire period with regard to the selected currency and funding scope;
- the average main funding position is computed for the entire period with regard to the selected currency and funding scope;
- the ratio between the previously computed total interest expenses and the average main funding position is computed and then divided by the total number of days in the entire period and multiplied by 365 (or 366 if the period includes leap year February) to obtain the NRR expressed on an annual basis.

The NRR is computed according to the following generic formula:

$$NRR (N, S, C) = \frac{\text{Total expenses } (N, S, C)}{\text{Funding average } (N, S, C)} \times \frac{365 \text{ or } 366}{\text{Number of days } (N)}$$

where the following applies:

N – number of months for which the NRR is computed (3, 6 or 12)

S – scope of funding and expenses (1, 2 or 3)

C – currency of funding and expenses (HRK, EUR, USD or CHF; where C=USD or CHF, then S=3)

Average funding position – regular arithmetic mean of relevant data (last N months)

Total expenses – regular sum of relevant data (last N/3 quarters)

Number of days (N) – actual number of days in the last N months

NRR is computed by applying the convention of the actual number of days, and in each step of the computation, all values are rounded to two decimal places (kuna and lipa).

Example:

The computation of 6M NRR2 EUR after the release of data on the costs of banks' funding for the first quarter of 2019 would be performed as follows:

$NRR(6, 2, EUR) =$

[(costs in the first quarter of 2019 + costs in the last quarter of 2018 for euro funding of natural persons and legal persons from the non-financial sector)

/

(sum of funding positions at the end of each of the first three months of 2019 and the last three months of 2018 for funding of natural persons and legal persons from the non-financial sector) / 6]

/ [(number of days from (including) 1 October 2018 to (including) 31 March 2019) x 365]

6 Publication

In the file “National reference rate (NRR)”, the CNB publishes, on its website, aggregated indicators of costs of financing (“EXPENSES” sheet) and funding sources to which these costs refer (“FUNDING” sheet) as well as the NRR computed for the observed quarter (“3M NRR”, “6M NRR” and “12M NRR” sheets). New data are published on a quarterly basis in line with the publication calendar available on the CNB’s website.

The file is published at www.hnb.hr/nrs on the CNB website.

It contains quarterly costs, end-of-month stocks of funding sources and the NRR computed for the reference periods starting from the 1st quarter of 2020. Explanations of any interventions by the CNB in the computation of any of the published aggregated indicators of costs or sources of funding are also published in the same file, in line with this Methodology, without specifying the name of the banks concerned.

The data on the NRR are published on the website on the sixtieth day after the expiry of the reporting period to which they refer. By way of exception, if that day is a non-working day, publication is moved to the preceding working day.

7 Internal procedures used by the CNB to ensure legal compliance of NRR computation

Internal procedures used by the CNB to ensure the legal compliance of NRR computation may be classified into three categories.

First, the CNB performs the checks of input data used in NRR computation and referred to in Section 4 of this Methodology. Where some data fail to pass the checks and the bank concerned fails to deliver a correction of such data, a special body within the CNB decides on the manner in which the data are to be treated in NRR computation. In doing so, the body relies on the comments provided by banks whose data failed to pass some checks and on the analysis and judgement of CNB's expert services responsible for the analysis of bank reports. In that way, the CNB ensures that all data relevant for the accurate quantification of average costs of funding of the Croatian banking sector are included in NRR computation and that unreliable data or data that could distort the quantification are excluded from the computation.

Second, the CNB established internal procedures for the assessment and prevention of conflict of interest to which CNB employees linked to NRR computation could be exposed should they, or persons close to them, have credit obligations connected with interest rates that depend on one or more NRR indexes. Such potential conflicts of interest are subject to ongoing assessment in line with the Code of Ethics of the CNB's Employees.

Third, the procedures used to check the data used for the NRR computation, as well as the NRR computation itself, are subject to regular audit by the Internal Audit Office of the CNB to ensure their compliance with global best practices.

8 Suspension of NRR computation for CHF

The CNB will stop computing the NRR for CHF as it accounts for a small share in financial instruments and due to the non-representativeness of the data based on which it is computed. The last reference date for which the CNB will publish the NRR for CHF will be 30 June 2022. Any reference to CHF in the Methodology will be erased on the date of publishing its last computation.

9 Inclusion of branches of foreign banks in the population

The data of branches of foreign banks will be included in the population covered starting from the reference date of 30 June 2021. From that date on, the data of branches of foreign banks will not be taken into consideration in the NRR computation, including the data that relate to the first quarter of 2021. Therefore, the system's computed quarterly interest expenses and the system's computed main funding already published for the period until the first quarter of 2021 will not be changed for the purposes of the NRR computation.

The data of branches of foreign banks will be included, as follows:

- the data on interest expenses (as the basis for computing quarterly interest expenses for the third quarter of 2021) will be taken into consideration as of the reference date of 30 June 2021;
- the first 3M NRR that will be computed including the data of branches of foreign banks will be for the reference date of 30 September 2021 (quarterly interest expenses for the third quarter of 2021 and the

average main funding position for July, August and September 2021 will be taken into consideration for the branches);

- the first 6M NRR that will be computed including the data of branches of foreign banks will be for the reference date of 31 December 2021 (quarterly interest expenses for the third and the fourth quarter of 2021 and the average main funding position for July, August, September, October, November and December 2021 will be taken into consideration for the branches);
- the first 12M NRR that will be computed including the data of branches of foreign banks will be for the reference date of 30 June 2022 (quarterly interest expenses for the third and the fourth quarter of 2021 and the first and the second quarter of 2022, and the average main funding position for July, August, September, October, November and December 2021 and January, February, March, April, May and June 2022 will be taken into consideration for the branches).