BANKING AGENCY OF REPUBLIKA SRPSKA

METHODOLOGY OF BANK SUPERVISORY STRESS TESTING

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Content

Abbreviations

BS	**Balance sheet**
P&L	Profit and Loss (account)
CBBiH	Central Bank of Bosnia Herzegovina
COREP	Common Reporting Framework
ECL	Expected Credit Losses
EIR	Effective Interest Rate
L1/L2/L3	Fair Value Measurement Level 1/2/3 (*level 1/level 2/level 3*) – IFRS 13
LGD	Loss Given Default
LRLT	Loss Rate Lifetime
IFRS	International Financial Reporting Standards
SME	Small and medium-sized enterprises
NII	Net Interest Income
NTI	Net Trading Income
OCI	Other Comprehensive Income
PD	Probabilty of Default
RII	Reference Interest Rate
RI	Relevant Indicator
S1/S2/S3	Stage 1/Stage 2/Stage 3 credit risk
TR	Transition Rate
ECB	European Central Bank

Pursuant to Article 187, Paragraph 7 of the Banking Law of Republika Srpska ("Official Gazette of Republika Srpska", No. 04/17, 19/18, 54/19 and 63/24) and Article 22, Paragraph 4, Item m) of the Statute of the Banking Agency of Republika Srpska ("Official Gazette of Republika Srpska", No. 63/17), the Director of the Banking Agency of Republika Srpska issued the

METHODOLOGY OF BANK SUPERVISORY STRESS TESTING

Introduction

1.1. Supervisory bank stress testing

Methodology of supervisory bank stress testing (hereinafter: Methodology) is adopted pursuant to Article 187, Paragraph 7 of the Banking Law of Republika Srpska, and the testing is carried out with the aim of monitoring the bank's operations, assessing risks and undertaking appropriate supervisory measures in a timely manner.

Supervisory bank stress testing (hereinafter: testing) primarily provides the Banking Agency of Republika Srpska (hereinafter: the Agency) with a framework for consistent comparison and assessment of banks' resilience, i.e. their capital position, and provides additional information in the process of supervisory review and evaluation of banks, where the results of this testing are used to determine the capital recommendation for the bank (Pillar to guidance, P2G). Testing is based on the Methodology, mutually consistent scenarios (Attachment 2) and templates in which data on input positions and test results are entered.

1.2. Objectives of this document

Methodology defines how banks should calculate the stress impact of the stipulated scenarios and, at the same time, sets constraints used in the calculations.

1.3. Testing scope

1.3.1. Sample of banks

The subject of stress testing are all banks of the banking sector of Republika Srpska.

1.3.2. Scenarios

Testing assesses banks' resilience to extreme credit, market and operational risk shocks that can be realized during unfavorable macroeconomic trends predicted by an adverse macroeconomic scenario. In order to better interpret the obtained results, projections are also made for the baseline macroeconomic scenario, which, in fact, represents a very likely development of the economy in the defined period. The scenarios were prepared in cooperation with the CBBiH and are described in Attachment 2 of the Methodology.

1.3.3. Time horizon and reference date

The testing is carried out on the basis of year-end 2024 data, and the scenarios will be applied over a period from beginning 2025 to end 2027.

1.3.4. The impact of stress test on capital

The impact of stress testing will be reported through the impact on the CET1 capital. There will also be a change in the ratios of Tier 1 and regulatory capital, as well as the leverage ratio, which will be automatically calculated in the CSV_CAP template after entering the relevant fields.

1.3.5. Hurdle rates

For the purposes of conducting testing, no hurdle rates or capital levels that banks should meet are defined in advance.

1.3.6. Accounting and tax regime

All balance sheet and P&L projections since the beginning of 2025 to the end of 2027 shall be carried out on the basis of the applicable accounting regime valid on 31 December 2024. It is assumed that there will be no changes in accounting or tax regime that would be applied after the start of testing. Regimes that are valid on the day the test is initiated will be applied during each year of the test horizon.

For the purposes of this testing, the banks will apply the tax rates determined by the legal regulations valid on the reference date, taking into account the assumption that the accounting profit is equal to the taxable profit. Also, for testing purposes, the impact of deferred tax assets in 2025, 2026 and 2027 scenarios will not be assessed.

1.3.7. Static balance sheet assumption

The stress testing shall be conducted on the assumption of a static BS. Assets and liabilities that mature within the time horizon of the testing should be replaced with similar financial instruments in terms of type, credit quality at date of maturity, and with a maturity corresponding to the remaining maturity of the instrument on 31/12/2024.

It is assumed that the bank will not initiate collection within the testing horizon, i.e. there is no recovery of the exposure in default status.

It is assumed that after the reference date, i.e. after 31 December 2024, no capital recovery measures will be undertaken, whether planned or not. Furthermore, it is assumed that banks maintain the same business model, i.e. portfolio structure (in terms of strategy of products and operations) throughout the time testing horizon. With respect to the P&L, revenues and costs, assumptions applied by banks should be in line with the said above, i.e. static BS and stable portfolio structure.

The assumption of static BS implies that during testing, exchange rate differences will not affect assets and liabilities denominated in foreign currency, including the foreign exchange clause.

There are no exceptions to the static BS assumption. Branch sales, capital recovery measures or other transactions that are not completed by 31 December 2024, even if agreed before that date, will not be considered in this testing.

Materially significant executed capital measures, i.e. increase, repayment or conversion of capital instruments as well as significant losses realised between 31 December 2024 and 28 February 2025 should be included as an additional item in the template CSV_CAPMEAS. However, these events will not have an impact on the stress test results.

1.3.8. Approach

The approach used in testing is a constrained bottom-up approach, and everything is subject to a detailed review by the Agency.

1.3.9. Risk coverage

The stress test is primarily focused on the assessment of the impact of risk drivers on the capital of banks. The following set of risks is subject to testing:

- credit risk,
- market risk,
- operational risk.

In connection with the mentioned risks, the impact of the scenario on NII and P&L, as well as on capital items, is assessed.

1.3.10. Process

The Agency shall deliver to the banks the baseline and macroeconomic adverse scenario as part of the submitted templates (worksheet SCENARIO), as well as reference values (worksheets CR_REF and IR_REF), and will carry out the data quality assurance procedure, i.e. assess the quality of input data and bank test results.

Banks shall be required to complete the templates and provide results based on the instructions provided in this document. In addition, they shall be required to ensure that the data and templates submitted are accurate, appropriately verified, and meet the standards specified in this document, and that the format and structure of the official version of the templates have not been altered.

It is particularly emphasized that banks should enter values, not reference links, in the appropriate reporting templates.

2. Credit risk

2.1. Overview

The impact of macroeconomic scenarios on exposure to credit risk is shown in capital (the final effect, the cost of impairment will be shown in the position of retained earnings) and in the amount of exposure to risk (i.e., for the purposes of this chapter, the amount of exposure weighted by credit risk), and based on the positions that are exposed to the risk stemming from the default of counterparties.

Impairment, or expected credit losses (ECL), are determined for each of the credit risk levels (S1, S2 and S3). The ECL assessment and impact on capital are based on:

- starting values of the credit risk parameters obtained by using internal models with a reference date as of 31 December 2024, and historical values of parameters during 2024, as defined by the Methodology,
- calculating the effect of the impact of macroeconomic scenarios on credit risk parameters using reference values from Attachment 2 of the Methodology, which reflect the trend of credit risk during the test horizon period (2025-2027),
- calculating changes in the ECL level as a basis for assessing the impact on P&L.

For the purposes of conducting testing, the following assumptions are defined:

- for the purpose of simplicity, the ECL projections shall be calculated by using a single approach for each macroeconomic scenario (baseline and adverse)
- to calculate the ECL, the approach of perfect foresight (projections in the absence of uncertainty) shall be used, and when determining the ECL, it will be considered that the scenarios are fully known,
- it is assumed that after the test horizon period, the credit risk parameters (TR and LGD) in the baseline scenario will constantly maintain the values from the baseline scenario from 2027. The parameters of credit risk (TR and LGD) in the adverse scenario will, from 2027, revert to the levels of the parameters from the baseline scenario in 2027. The specified revert will be linear and will reach the levels from the 2027 baseline scenario six years after the end of the scenario horizon (the corresponding risk parameter in the adverse scenario will be reduced in each subsequent year by 1/6 of the difference between the risk parameter in the adverse and baseline scenarios),
- for calculating ECL for S3 exposures, it is assumed that, after the horizon of the baseline and adverse scenario, the parameters of credit risk will have constant flat values.

Summary of the used constraints on credit risk projections:

- no recovery of S3 exposures, the acceptable transitions are from S1 to S2, S2 to S1, S1 to S3 or S2 to S3,
- no release of ECL for S3 exposure over the scenario horizon,
- the coverage percentage of S1 exposures does not decrease during the test horizon period at the level of the total portfolio.

2.2. Scope

Credit risk testing for the purpose of assessing the impact on P&L includes the regime of counterparties (central governments, regional governments and local authorities, public sector entities, institutions, financial and non-financial companies, and the household) and all positions (including on-balance and off-balance positions) exposed to the risk stemming from the default of a counterparty, excluding positions valued at fair value (through OCI, that is through capital or through P&L). Positions that are valued at fair value for the purposes of assessing the impact on P&L and capital (through OCI) are covered by market risk testing in accordance with Chapter 3 of the Methodology.

For the purposes of this testing, banks are required to report on exposures by applying the exposure categories based on the Decision on calculating capital in banks, which are reported in COREP. Table 1 provides an overview of the exposure structure that was used as a starting point for calculating the credit risk parameters for both scenarios (baseline and adverse scenario). Exposures to central banks, multilateral development banks, international organizations and other exposures are not subject to stress testing within the credit risk framework. The templates that are part of the Methodology define the elaboration of exposure categories that will be used in this testing for the purposes of calculating ECL, as well as calculating risk-weighted exposures.

For the purposes of credit risk coverage, it is defined that if exposures are transitioned to other categories based on credit risk mitigation techniques, that transition should be made in accordance with the definition of exposure categories in the templates, and the reports should include values after the substitution. Therefore, expected credit losses will be calculated for each of the years of the test horizon period taking into account the exposure category after credit risk mitigation techniques.

In cases where the scenarios predict a fall or increase in real estate prices, the initial exposure category will not be changed due to this. For example, if there has been a fall in the price of real estate and as a result there has been a reduction in the part of the amount of exposure secured by real estate, the initial amount will still be kept in the category Exposure secured by real estate.

Table 1. Exposure categories

Exposure categories	Subject of testing
Central banks	---
Central governments	X
BiH	X
Countries – Group 1	X
Countries – Group 2	X
Regional governments and local authorities	X
Public sector entities	X
Multilateral development banks	---
International organizations	---
Institutions	X
Companies	X
SME	X
Non-SME	X
Household	X
SME	X
Non-SME individuals	X
Secured by real estate	X
Non-SME companies	X
SME	X
Non-SME individuals	X
Other exposures	---

Exposures that are not covered by the scope of IFRS 9, and securities that are valued at fair value through OCI (with the exception of securities whose business model is "Held to collect") and P&L are not covered by credit risk testing for the purpose of assessing the impact on the ECL level, and are not must be entered in the template CSV_CR_SCEN. However, banks are required to submit them in a separate spreadsheet to enable verification of the completeness of the data with the data from the banks' regulatory reports.

2.3. Definitions and assumptions

Methodology for testing credit risk follows this approach:

- the exposure transitions between the three credit risk levels (S1, S2 and S3) need to be projected for each year of the test horizon period,
- the ECL calculation for S1 and S2 is performed depending on where the subject exposures are at the end of each of the year of the test horizon period by applying the appropriate credit risk parameters in accordance with boxes 2, 3, 4 and 5,
- for S3 exposures, the ECL is calculated using the credit risk parameters for the relevant year (see boxes 6 and 7).

2.3.1. Exposure, credit risk levels, flows and stock of expected credit losses

The exposure is the gross exposure[1] after applying the substitution effects and the credit conversion factor. Given that the substitution effects in COREP reports are applied after deduction for expected credit losses, banks are expected to add the corresponding expected credit losses to the exposure value after the substitution effects to obtain the exposure for testing purposes. If the exposure is partially secured by credit protection, in which case only part of the exposure is allocated to another exposure category through the substitution effects, the bank is obliged to do the same calculation, with proportional allocation, i.e. adding the expected credit losses on the exposure after the substitution of exposure categories, in order to obtain exposure for testing purposes. Subsequently, the bank applies a credit conversion factor to off-balance sheet exposures, which it applies in accordance with the Decision on credit risk management and determining expected credit losses. The exposure obtained in this way is the starting point of the ECL calculation.

S1 exposures are exposures of credit risk level 1.

S2 exposures are exposures of credit risk level 2.

SX exposures are exposures of credit risk level 1 or 2.

S3 exposures are exposures allocated to credit risk level 3, and the allocation to the corresponding rows of the report, i.e. exposure categories, is made depending on where the given exposures would be, if they were not defaulted.

Flow S1-S2 (S1-S2 Flow) is the amount of exposure that transitioned from S1 to S2 during the year.

Flow S2-S1 (S2-S1 Flow) is the amount of exposure that transitioned from S2 to S1 during the year.

Flow in S3 (SX-S3 Flow) is the amount of exposure that transitioned from S1 and/or S2 to S3 during the year. The flow in S3 should be divided into **the Flow from S1 to S3 (S1-S3 Flow) and the flow from S2 to S3 (S2-S3 Flow)** based on which credit risk level the exposure was assigned to at the beginning of the period. The Flow in S3 should be the sum of the Flow from S1 to S3 and the Flow from S2 to S3.

S3 exposure is further subdivided into:

- existing S3 exposures **(Exp Old S3)**. This is the amount of S3 exposure as of 31 December 2024,
- cumulative, new S3 exposures **(Cumul New Exp S3)** from the beginning of the stress testing horizon. This is the sum of the exposures that have shifted from S1 and/or S2 to S3 since the beginning of the stress testing horizon, i.e. from 1 January, 2025.

As no recovery of projected S3 exposures is possible, Exp S3 is a cumulative variable that contains the initial S3 exposures (31 December 2024) and the sum of Flows in S3 in the observed stress testing horizon. For example, the S3 exposure (Exp S3) at the end of 2026 is the sum of the S3 exposure as of 31 December

[1] Column 010 COREP report C07.00.

2024, the S3 Flow (SX-S3 Flow) in 2025 and the S3 Flow (SX-S3 Flow) in 2026. The transition from S3 to S2, i.e. to S1, is not allowed by the Methodology.

ECL stock (ECL stock) corresponds to the ECL stock at the end of the observed year. The starting ECL stock corresponds to the accounting balance as of 31 December 2024, by corresponding exposures. The ECL stock should be further divided into ECL stock for S1 (**ECL stock S1**), ECL stock for S2 (**ECL stock S2**) and ECL stock for S3 (**ECL stock S3**).

ECL stock for **S1 in S1 (ECL stock S1-S1)** represents the ECL for exposures that were in S1 at the beginning of the period and remained in S1.

ECL stock for **S1 in S2 (ECL stock S1-S2)** represents the ECL for exposures that were S1 exposures at the beginning of the period and shifted to S2 at the year end.

ECL stock for **S1 in S3 (ECL stock S1-S3)** represents the ECL for exposures that were S1 exposures at the beginning of the period and shifted to S3 at the year end.

ECL stock for **S2 in S1 (ECL stock S2-S1)** represents the ECL for exposures that have shifted from S2 to S1 at the year end.

ECL stock for **S2 in S2 (ECL stock S2-S2)** represents the ECL for exposures that were in S2 at the beginning of the period and remained in S2 at the year end.

ECL stock for **S2 in S3 (ECL stock S2-S3)** represents the ECL for exposures that were S2 exposures at the beginning of the period and shifted to S3 at the year end.

ECL stock for existing S3 (ECL stock Exp Old S3) represents the ECL for S3 exposures that were in S3 at the beginning of the testing horizon, i.e. as of 31 December 2024.

ECL stock for new S3 (ECL stock SX-S3) represents ECL for exposures that were S1 or S2 at the beginning of the period and reached the end of the year as S3. **ECL stock for new S3 (ECL stock SX-S3)** is the sum of ECL for the amount of exposure that shifted from S1 to S3 **(ECL stock S1-S3)** and ECL for the amount of exposure that shifted from S2 to S3 **(ECL stock S2-S3)**.

Stock of cumulative ECL for new S3 (ECL stock SX-S3) is, in fact, the ECL stock for new S3 (ECL stock SX-S3) from the beginning of the testing horizon, i.e. from 1 January 2025.

Banks are required to fill in the previously mentioned amounts in the CSV_CR_SCEN template for each of the credit risk levels for 2024 (stock at the beginning and at the end of 2024). The values for the period 2025-2027 will be automatically projected for each of the testing horizon years, for both scenarios, using the reference values from Attachment 2 of the Methodology.

2.3.2 Implicit credit risk parameters

TR (transition rate) represents the 1-year transition rate of exposure between credit risk levels (S1, S2 or S3).

LGD (loss given default) refers to the assessment of losses associated with possible transitions to S3.

LRLT (loss rate lifetime) represents the rate of expected loss over a lifetime.

The above indices indicate the corresponding transition in a given year (for example 1-3 indicates the transition of exposure from S1 to S3 in a given year):

- $\mathbf{TR^{1-3}}$ refers to the probability rate of an exposure starting the year in S1 and transitioning at the year end to S3. The loss rate associated with the exposure that transitions from S1 to S3 is $\mathbf{LGD^{1-3}}$,
- $\mathbf{TR^{2-3}}$ refers to the probability rate of an exposure starting the year in S2 and transitioning at the year end to S3. The loss rate associated with the exposure that transitions from S2 to S3 is $\mathbf{LGD^{2-3}}$,
- $\mathbf{TR^{1-2}}$ refers to the probability rate of an exposure starting the year in S1 and transitioning at the year end to S2,

- **TR^{2-1}** refers to the probability rate of an exposure starting the year in S2 and transitioning at the year end to S1,
- **$LRLT^{1-2}$** refers to the lifetime expected loss rate of those exposures that begin the year in S1 and end it in S2,
- **$LRLT^{2-2}$** refers to the lifetime expected loss rate for all exposures that begin and end the year in S2 regardless of the stage they end up eventually during their lifetime in terms of credit risk level,
- **$LRLT^{3-3}$** refers to the lifetime expected loss rate associated with existing (old) S3 exposures (as of 31 December 2024 were S3). In each year of the testing horizon, $LRLT^{3-3}$ shall be applied to the stock of existing (old) S3 exposures.

All above mentioned parameters (TR, LGD and LR) for 2024 are calculated automatically as implicit parameters, based on data previously entered by the bank in the template CSV_CR_SCEN (e.g. parameter LGD^{1-3} will be calculated, automatically, based on data entered by the bank on the ECL stock for new S3 from S1, and data on transitions of exposure from level S1 to level S3).

Projections for the period 2025-2027 are calculated based on reference values submitted by the Agency, where the TR parameter will be used to project flows for each of the test horizon years as well as to calculate ECL (e.g. projected TR^{1-3} will be used as 12M- probability of transition to default for S1 exposures, while the projected TR^{2-3} during and after the testing horizon (2025-2027) will be used as the probability of default for S2 exposures which is needed to calculate the LRLT for S2 exposures).

2.3.2.1 Credit risk parameters based on the bank's internal models

With the exception of credit risk parameters calculated on the basis of transitions between exposure levels, the bank is required to provide data on credit risk parameters obtained using internal models as of 31 December 2024.

12M PD PiT is a 12-month (current), exposure-weighted, default probability, at the level of each of the exposure categories, obtained based on the values calculated using the internal model. This parameter is required for the bank to submit for S1 and S2 exposures.

Lifetime PD PiT is the lifetime (current) probability of default, i.e. the probability that the exposure will shift to credit risk level 3 over its lifetime. It is calculated as the sum (by periods) of marginal probabilities until the maturity of the exposure.

In this year's testing, the bank will calculate **LGD** for S1 and S2 exposures for 2024 as the LGD weighted exposure (obtained based on values calculated using an internal model) at the level of each of the exposure categories. If the bank does not have a developed LGD model but uses the stipulated fixed values (in accordance with Article 19 of the Instructions for classification and valuation of financial assets), in which case the bank will calculate the LGD in the manner described above.

2.3.2. Static balance sheet assumption

According to the static balance sheet assumption, it is not permitted to reduce the amount of S3 exposures. Exposures that subsequently became S3 increase the S3 exposure stock, reducing the stock of S1 and/or S2 exposures and keeping the total amount of exposure at a constant level. It is assumed that no recovery and write-off of S3 exposures should take place within the testing horizon.

For the purpose of calculating the credit risk exposure, the residual maturity is kept constant for all assets. For example, a 10-year bond with residual maturity of 5 years at the start of the exercise is supposed to keep the same residual maturity of 5 years throughout the exercise. A constant residual maturity is assumed even when the residual maturity enables the use of a more favorable risk weighting for short-term exposures.

Under the static balance sheet assumption, the amount of exposure to S1 and S2 will only change due to the 1-year flow in S1, S2 or S3.

2.4. Impact on P&L

2.4.1. Starting point-in-time risk parameters

For the exposure categories Public sector entities, Companies, Retail and Secured by real estate, including all their subcategories, as starting point-in-time to compute the credit risk parameters for each of the testing horizon years, the credit risk parameters shall be used as follows:

TR^{1-3}, **TR^{2-3}**, **TR^{1-2}**, **TR^{2-1}**: the value of the given parameter for 2024.

LGD^{1-3} , **LGD^{2-3}**: values of LGD for S1, i.e. S2 exposures reported by the Bank for 2024.

$LRLT^{1-2}$, **$LRLT^{2-2}$**: values calculated for 2024.

$LRLT^{3-3}$: as a value higher than: **$LRLT^{3-3}$** value for 2024, and LGD value for S1 or S2 exposures calculated (reported) by the Bank for 2024.

In exceptional circumstances, when the historical value of the TR parameter is affected by one-off events, the bank may make an adjustment and exclude the impact thereof, with adequate documentation of the adjustment.

For exposure categories: Central governments, Regional governments and local authorities, and Institutions, it is assumed that during the testing horizon, exposures in these categories will not change the level of credit risk[2]. The submitted PD and LGD values for 2024 will be used as starting point-in-time parameters, and not the implicit values of TR and LGD parameters, as is the case in other exposure categories that are the subject of testing. Projections of PD and LGD parameters for each of the test horizon years will be calculated based on the reference values from Attachment 2 of the Methodology, which will result in a change in the ECL level for the relevant exposure categories.

2.4.2. Projected point-in-time credit risk parameters

Attachment 2 provides projections of credit risk parameters (so-called reference values) for TR (in case the TR parameter is not used for certain categories but the PD parameter, PD parameter projections are given), LGD and LRLT at the level of the exposure category for each of the testing horizon year, and for both scenarios.

TR: Projections of TR parameters are based on the credit risk model developed by the CBBiH and are provided separately for private individuals and separately for companies, predicting transition rates TR^{1-2}, TR^{1-3} and TR^{2-3} for each of the testing horizon years depending on key macroeconomic variables such as GDP and interest rates. Credit risk models use aggregate TRs as dependent variables, i.e. transitions between credit risk levels for the banking sector as a whole. The reference values determined at the level of aggregate TRs will be transformed into reference values at the level of the bank, as follows:

Step 1:

The initial, aggregate TR_{2024} as well as aggregate TR_{2025}, TR_{2026} and TR_{2027} are projected using the model. They were transformed using the inverse standard normal distribution. For the obtained (inverse) values for each of the three projected TRs, the difference in relation to the inverse value of the initial TR is calculated, i.e. the corresponding δ (delta) is determined.

Example.

The initial, aggregate TR^{1-3} for 2024 is 3%, while the assumption that TR^{1-3} for 2025 is 6%. In this case, the corresponding values, obtained by applying the inverse standard normal distribution are -1.88 and -1.55. Based on the previous one, we have that the corresponding delta, δ_{2025} = -1.55 - (- 1.88) = 0.33

[2] Almost all exposures in these categories are exposures of credit risk level 1. It is assumed that these are low risk exposures and that they will not change the credit risk level during the testing horizon, even if the associated PD increases significantly.

Step 2.

The initial TR, which is at the bank level, is transformed in the previously described manner by adding the corresponding delta for each of the testing horizon years, thus obtaining TR_{2025}, TR_{2026} and TR_{2027} at the bank level.

Example.

The initial TR^{1-3} for 2024 at the bank level should be 1%. Applying the previously described transformation, we obtain the corresponding (inverse) value -2.33. Further, adding the corresponding $\delta_{2025} = 0.33$, we get that the inverse value of TR^{1-3}, at the bank level, for 2025 is equal to -2.33 + 0.33, i.e. equal to -2.00.

Step 3.

Finally, by applying the standard normal distribution to the obtained inverse values of the initial TRs increased by the corresponding δ, for each of the horizon years, the corresponding TR_{2025}, TR_{2026} and TR_{2027} at the bank level are obtained.

Example.

TR^{1-3} for 2025, after applying the standard normal distribution function for a value of -2.00 is 2.27%.

This approach guarantees that the change (increase) in aggregate TR will be properly allocated to each of the banks. If the TR value of the bank is at the level of the average TR (measured in aggregate TR) the increase is the same. If the bank's TR is lower than average, its increase is lower in absolute amount but higher in relative amount. In case the bank's TR is higher than the average TR, its increase is higher in absolute amount but smaller in relative amount. Table 2 provides an example of the reference value application.

Table 2. An illustrative example of the reference value application

	2024	2025	2026	2027
Aggregate TR	**3%**	6%	5%	4%
…absolute increase of initial TR (pp)	…	3 pp	2 pp	1pp
… relative increase of initial TR	…	2.00	1.67	1.33
Bank 1 (low risk):TR	**1%**	2.27%	1.83%	1.40%
…. absolute increase of initial TR (pp)		1.27 pp	0.83 pp	0.40 pp
… relative increase of initial TR		2.27	1.83	1.40
Bank 2 (high risk): TR	**10%**	16.97%	14.79%	12.48%
… absolute increase of initial TR (pp)		6.97 pp	4.79 pp	2.48 pp
… relative increase of initial TR		1.70	1.48	1.25

In the case of parameter $TR^{2\text{-}1}$, the Agency determined a reference value for each of the testing horizon years, based on the change factor it applied to the transition values for 2024.

PD: Projections of PD parameters at the bank level for Central Governments, Regional Governments and local authorities, and for Institutions are given and implemented in the template CSV_CR_SCEN by the Agency, as a ratio of relative increase of PD for each of the testing horizon years (compared to initial, corresponding PDs), where the assumption is that in the case of the baseline scenario the mentioned ratio is equal to 1. In other words, no changes of PD are foreseen in the baseline scenario for the mentioned exposure categories (Template CR_REF).

Table 3 provides a mapping of the projected reference values for TR and PD parameters at the level of exposure category. The obtained values are implemented in the CSV_CR_SCEN template.

Table 3 Mapping table for the use of reference values

Central banks	**---**
Central governments	
BiH	**Governments (PD)**
Country – Group 1	**Governments (PD)**
Country – Group 2	**Governments (PD)**
Regional governments and local authorities	**Governments (PD)**
Public sector entities	**Companies (TR)**
Multilateral development banks	**---**
International organizations	**---**
Institutions	**Banks (PD)**
Companies	
SME	**Companies (TR)**
Non-SME companies	**Companies (TR)**
Household	
SME	**Companies (TR)**
Non-SME private individuals	**Private individuals (TR)**
Secured by real estate	
Non-SME companies	**Companies (TR)**
SME	**Companies (TR)**
Non-SME private individuals	**Private individuals (TR)**
Other exposures	**---**

LGD: It is assumed that the initial values of the LGD parameter, in the case of the baseline scenario, will remain unchanged during the testing horizon (will be equal to the baseline values), while in the case of the adverse scenario the change will be only in the first testing horizon year in the absolute amount of 10 pp and that level will be maintained until the end of the testing horizon (noting that LGD cannot be higher than 100%).

LRLT: Projections of lifetime loss rates for exposures remaining or transitioning to S2 will be applied through the implemented formulas in the CSV_CR_SCEN template for each of the exposure category level scenarios, i.e. the initial value will be increased by the given change in the worksheet CR_REF. Lifetime loss rates for exposures that were and remained in S3 (LRLT3-3) will remain unchanged in the case of the baseline scenario (will be equal to the baseline values), while in the case of the adverse scenario the change will be only in the first year and in absolute amount of 10 pp, while in the remaining testing horizon years will not change further.

2.4.3. Calculating ECL

The projection of risk parameters defined in the previous section based on each of the macroeconomic scenarios (baseline and adverse) is used to calculate the ECL.

The increase in the ECL for all levels of credit risk shall be shown in P&L (CSV_P&L) in the row Impairment or (-) reversal of an impairment loss on a financial asset not measured at fair value through P&L.

2.4.3.1. ECL stock

ECL stock for each level of credit risk depends on the ECL for existing exposures at each level of credit risk and changes in the ECL due to exposure transitions between credit risk levels. ECL stock for each credit risk level will change during the testing horizon as set out below.

Box 1. ECL stock

ECL stock S1(t+1) = ECL stock for new S1 exposures + ECL stock for existing S1 exposures
= ECL stock S2-S1(t+1) + ECL stock S1-S1(t+1)

ECL stock S2(t+1) = ECL stock for new S2 exposures + ECL stock for existing S2 exposures
= ECL stock S1-S2(t+1) + ECL stock S2-S2(t+1)

ECL stock S3(t+1) = ECL stock for new S3 exposures + ECL stock for existing S3 exposures
= ECL stock S1-S3(t+1)+ ECL stock S2-S3(t+1) + ECL stock of Exp Old S3(t+1)

The variables in Box 1 are defined in Boxes 2. - 7.

ECL projections will be calculated automatically, based on integrated formulas, in the credit risk scenario template (CSV_CR_SCEN).

2.4.3.2. ECL stock for S1 exposures

ECL stock for new S1 exposures is due to the transition from S2 to S1 (ECL stock S2-S1). The method of calculating the ECL for new S1 exposures is defined by the following box.

Box 2. ECL for new S1 exposures

$$\textbf{ECL stock S2-S1}(t+1) = \textbf{S2-S1 Flow}(t+1) * TR^{1-3}(t+2) * LGD^{1-3}(t+2)$$

$$\textbf{S2-S1 Flow}(t+1) = \textbf{Exp S2}(t+1)_{(BoY)} * TR^{2-1}(t+1)$$

whereby:
$S2(t+1)_{(BoY)}$ is the amount of S2 exposure at the beginning of period t+1.
LGD^{1-3} is the expected loss rate for exposures that transitioned from S1 to S3.
TR^{1-3} is the 1-year transition rate of S1 exposure to S3.
TR^{2-1} is the 1-year transition rate of S2 exposure to S1.

As stated in section 2.1., credit risk parameters in the adverse scenario will, as of 2028 (including 2028), onwards (within six years) revert to the levels of parameters from the baseline scenario from 2027, and the stated revert will be linear. In view of the above, the ECL stock in the last testing horizon year is calculated as follows:

$$\textbf{ECL stock S2-S1}_{adverse(2027\ EoY)} = \textbf{Exp S2}_{(2027\ BoY)} * TR^{2-1}_{adverse(2027)} *$$

$$* (5/6 * TR^{1-3}_{adverse(2027)} * LGD^{1-3}_{adverse(2027)} + 1/6 * TR^{1-3}_{base(2027)} * LGD^{1-3}_{base(2027)})$$

As stated in section 2.1., it is assumed that the credit risk parameters in the baseline scenario after the horizon will constantly retain the values from the baseline scenario from 2027. In view of the above, the ECL stock in the last testing horizon year in the baseline scenario is calculated as follows:

$$\textbf{ECL stock S2-S1}_{base(2027\ EoY)} = \textbf{Exp S2}_{(2027\ BoY)} * TR^{2-1}_{base(2027)} *$$

$$(TR^{1-3}_{base(2027)} * LGD^{1-3}_{base(2027)})$$

ECL stock for existing S1 exposures (ECL stock S1-S1) should reflect the impact of the change in baseline parameters, and due to the impact of the given scenarios on the change in the ECL. The method of calculating the ECL for existing S1 exposures is defined in the following box.

Box 3. ECL stock for existing S1 exposures

$$\textbf{ECL stock S1-S1}(t+1) = \textbf{Exp S1}(t+1)_{(BoY)} * (1 - TR^{1-2}(t+1) - TR^{1-3}(t+1)) * TR^{1-3}(t+2) * LGD^{1-3}(t+2)$$

whereby:

$S1(t+1)_{(BoY)}$ is the amount of S1 exposure at the beginning of period t+1.

LGD^{1-3} is the loss rate for exposures that transitioned from S1 to S3.
TR^{1-2} is the 1-year transition rate of S1 exposure to S2.
TR^{1-3} is the 1-year transition rate of S1 exposure to S3.

As stated in section 2.1., credit risk parameters in the adverse scenario will, as of 2028 onwards (within six years) revert to the levels of parameters from the baseline scenario from 2027, and the stated revert will be linear. In view of the above, the ECL stock in the last testing horizon year in the adverse scenario is calculated as follows:

$$\textbf{ECL stock S1-S1}_{adverse(2027\ EoY)} = \textbf{Exp S1}_{(2027\ BoY)} * (1 - TR^{1-2}_{adverse(2027)} - TR^{1-3}_{adverse(2027)})$$

$$* (5/6 * TR^{1-3}_{adverse(2027)} * LGD^{1-3}_{adverse(2027)} + 1/6 * TR^{1-3}_{base(2027)} * LGD^{1-3}_{base(2027)})$$

As stated in section 2.1., it is assumed that the credit risk parameters in the baseline scenario after the testing horizon will constantly retain the values from the baseline scenario from 2027. In view of the above, the ECL stock in the last testing horizon year in the baseline scenario is calculated as follows:

ECL stock S1-S1$_{base(2027\ EoY)}$ = Exp S1$_{(2027\ BoY)}$* (1-TR$^{1-2}_{base(2027)}$ - TR$^{1-3}_{base(2027)}$)* TR$^{1-3}_{base(2027)}$* LGD$^{1-3}_{base(2027)}$

For exposures from the categories of Central Government, Regional Government and local authorities, and Institutions, no assumption is given for transitions between credit risk levels. The simplified calculation is provided by the following formula:

ECL stock S1-S1(t+1)= Exp S1(t+1) $_{(BoY)}$ * PD(t+1) * LGD(t+1),

whereby the ECL stock in the last testing horizon year in the adverse scenario is calculated as follows:

ECL stock S1-S1$_{adverse(2027\ EoY)}$ = Exp S1$_{(2027)}$* (5/6* PD$_{adverse(2027)}$* LGD$^{1-3}_{adverse(2027)}$ + 1/6* PD$_{base(2027)}$ * LGD$_{base(2027)}$),

while for the baseline scenario it is calculated as follows:

ECL stock S1-S1$_{base(2027\ EoY)}$ = Exp S1$_{(2027)}$* PD$_{base(2027)}$* LGD$_{base(2027)}$

which is in fact equal to the initial ECL for S1 exposures, since the assumption for the baseline scenario is that, in this case, PD and LGD parameters, during the testing horizon, will not be changing.

2.4.3.3. ECL stock for S2 exposures

ECL stock for new S2 exposures is due to the transition from S1 to S2 (ECL stock S1-S2). The method of calculating the ECL for new S2 exposures is defined in the following box.

Box 4. ECL stock for new S2 exposures

ECL stock S1-S2(t+1) = **S1-S2 Flow(t+1)** * **LRLT$^{1-2}$(t+1)**

S1-S2 Flow(t+1) = Exp S1(t+1) $_{(BoY)}$ *TR$^{1-2}$(t+1)

whereby:

S1(t+1) $_{(BoY)}$ is the amount of S1 exposure at the beginning of period t+1.

TR$^{1-2}$ is the 1-year transition rate of S1 exposure to S2.

LRLT$^{1-2}$ is the expected lifetime loss rate for exposures that were S1 at the BoY and reached S2 at the EoY.

ECL stock for existing S2 exposures (ECL stock S2-S2) shall reflect the impact of the change in baseline parameters due to the impact of the given scenarios. The method of calculating the ECL for existing S2 exposures is defined in the following box.

Box 5. ECL stock for existing S2 exposures

ECL stock S2-S2(t+1)= Exp S2(t+1) $_{(BoY)}$ * (1-TR$^{2-1}$(t+1) -TR$^{2-3}$(t+1)) * LRLT$^{2-2}$(t+1)

whereby:

S2(t+1) $_{(BoY)}$ is the amount of S2 exposure at the beginning of period t+1.

TR$^{2-1}$ is the 1-year transition rate of S2 exposure to S1.

TR$^{2-3}$ is the 1-year transition rate of S2 exposure to S3.

LRLT$^{2-2}$ is the lifetime expected loss rate for exposures that were S2 at the BoY and reached S2 at the EoY.

For exposures from the categories of Central Government, Regional Government and local authorities, and Institutions, no assumption is given for transitions between credit risk levels. The simplified calculation is provided by the following formula:

ECL stock S2-S2(t+1)= Exp S2(t+1) * LRLT$^{2-2}$(t+1)

whereby S2(t+1) is the amount of S2 exposure at the end of period t+1.

2.4.3.4. ECL stock for S3 exposures

ECL stock for S3 exposures is the sum of the ECL stock for exposures that were in S3 as of 31 December, 2024 (ECL stock Exp Old S3), ECL stock for new S3 exposures resulting from the transition from S1 to S3 (ECL stock S1-S3) and ECL stock for new S3 exposures resulting from the transition from S2 to S3 (ECL stock S2-S3).

ECL for S3 exposures (whether new or existing) may not be released in any of the testing horizon year.

The method of calculating the ECL for new S3 exposures resulting from the transition from S1 to S3 or from S2 to S3 is defined by the following box:

Box 6. ECL stock for new S3 exposures

ECL stock SX-S3(t+1) = ECL stock S1-S3(t+1) + ECL stock S2-S3(t+1)

ECL stock S1-S3(t+1) = Exp S1(t+1) $_{(BoY)}$ * TR^{1-3} (t+1) * LGD^{1-3}(t+1)

ECL stock S2-S3(t+1) = Exp S2(t+1) $_{(BoY)}$ * TR^{2-3} (t+1) * LGD^{2-3}(t+1)

whereby:

S1(t+1) $_{(BoY)}$ is the amount of S1 exposure at the beginning of period t+1.

S2(t+1) $_{(BoY)}$ is the amount of S2 exposure at the beginning of period t+1.

TR^{1-3} is the 1-year transition rate of S1 exposure to S3.

TR^{2-3} is the 1-year transition rate of S2 exposure to S3.

LGD^{1-3} is the expected loss rate for exposures that transitioned from S1 to S3.

LGD^{2-3} is the expected loss rate for exposures that transitioned from S2 to S3.

The method of calculating the ECL for existing S3 exposures is defined in the following box, and takes into account the deterioration in the quality of exposure, which is foreseen in the scenario.

Box 7. ECL stock for existing (old) S3 exposures

ECL stock for existing (old) S3(t+1)= Exp Old S3(t) * $LRLT^{3-3}$(t+1)

whereby:

$LRLT^{3-3}$ is the loss rate assessed in the period t+1 for existing (old) S3 exposures and is the same in each year of the testing horizon.

2.5. Impact on risk exposure amount

The impact of macroeconomic scenarios for the purposes of this year's testing is possible only in the case of defaulted exposures, i.e. defaulted new exposures.

Unlike the CSV_CR_SCEN template, which only includes exposures related to credit risk testing, the CSV_CR_REA template includes all exposures used to calculate the risk exposure amount in accordance with Article 49 of the Decision calculating capital in banks, with the note that exposure categories not listed in the relevant template (e.g., Exposures in the form of equity investments) are presented in the Other Exposures category.

The average risk weight that will be applied in the testing horizon to the exposure categories in S1 and S2 is unchanged, while the REA will only be affected by the migration of S1 and S2 exposures to S3 exposures and changes in expected credit losses for S1, S2 and S3 exposures. The average weight for 2024 will be calculated automatically based on the ratio of the risk-weighted exposure amount and the exposures impaired for expected credit losses, after applying the mitigation techniques and credit conversion factors.

It is assumed that the amount of risk exposure for exposures that are not tested in accordance with the part of the Methodology related to credit risk (e.g. securities measured at fair value through OCI or P&L), as

well as other items that are not subject to IFRS 9 (e.g. fixed assets, acquired tangible assets, etc.) remains constant, i.e. in the template CSV_CR_REA it will have the same value as of 31 December 2024.

Exposure losses or gains measured at fair value through OCI or P&L are estimated through the market risk framework.

Market risks

3.1. Overview

The impact of market risks on all bank positions measured at fair value will be assessed by revaluation based on the application of stressed factors submitted by the Agency.

Testing implies a significant decline in liquidity and an increase in market uncertainty, which implies, on the other hand, the need to form reserves for market liquidity for all positions measured at fair value (L1, L2 and L3) in accordance with Section 3.4. In addition to the stated reserves, banks should also calculate the reserves for model uncertainty related to the valuation of L2 and L3 assets.

3.2. Scope, definitions and assumptions

This part of the Methodology covers all positions that are under fair value measurement, i.e. positions under fair value measurement through P&L and OCI.

The impact of foreign exchange risk on bank positions is not the subject of this testing.

Central government positions include positions of exposure to central governments and regional governments or local authorities as contracting parties. These exposures are based on direct exposure (e.g. exposure to country A, which has bonds as collateral issued by country B, will be an exposure to country A and will not represent exposures to country B). These positions do not include exposures to other contracting parties with a full or partial government guarantee, nor state-owned companies. Exposures to international organizations, multilateral development banks and central banks are not considered exposures to central government.

Market risk factors refer to a set of factors defined by the Agency, and for the purposes of this testing they are: interest rates, i.e. yield shocks, trends in stock prices and shares in investment funds. These factors are used to calculate the impact of macroeconomic scenarios on positions that are under fair value measurement and are included in market risk templates.

The market risk shock in accordance with the baseline and adverse scenario will be applied once in the first year of testing to all positions covered by the part of the Methodology related to market risks, i.e. the overall impact of market risk shocks on P&L, i.e. OCI, will be fully recognized in 2025.

Nominal values of all asset and liabilities positions in the scope of market risk will remain constant during the testing horizon.

Banks will assume that no portfolio management activities will be carried out in response to adverse scenarios (e.g. change in portfolio structure or portfolio liquidation).

3.3. Revaluation

3.3.1. Market risk factors

In the Attachment of the Methodology, scenarios are provided that will serve as a basis for projections of the effect of revaluation of all positions that are under fair value measurement. The market risk shock in accordance with the baseline and adverse scenario that will be applied once in the first year of testing is defined as:

- parallel shifts in yield curves for debt instruments (expressed in base points), which implies a change in interest rates at all maturities by the same amount, with the magnitude of the change stated separately for BiH and for two groups of other countries (Group 1 and Group 2),

- declining value of stocks and shares in investment funds (only in adverse scenario).

3.3.2. Scope

All accounting categories that are under fair value measurement should be revalued in the baseline and adverse scenario.

For portfolio items that are under fair value measurement through OCI for which the ECL is otherwise calculated, the impact of changes in counterparty credit risk shall be deemed to be included in the determination of fair value and entered in the OCI.

3.3.3. Revaluation characteristics

The revaluation effects should be entered in the CSV_MR_FULL_REVAL template.

Banks should re-evaluate all positions that are under fair value measurement, and distribute the effect by exposure categories, i.e. the accounting approach. Banks will report on:

- fair or accounting value, and the nominal value of positions and
- revaluation gains or losses.

The report on the total effect, depending on the accounting approach, will contain the items:

- the impact of revaluation on OCI and
- the impact of revaluation on P&L.

The effect of the revaluation of direct central government positions will be reported in the CSV_MR_FULL_REVAL template in the columns 12 and 17.

When calculating the impact of market shock on the value of shares held by banks, the shares of SWIFT, Mastercard, Visa, the Central Securities Register and the Banja Luka Stock Exchange, if the bank has them in its portfolio, should be excluded from the revaluation.

For testing purposes, banks will not take into account the possible effects of valuing their own (issued) debt securities. Also, banks will not take into account the possible effects of securities valuation, which represent the bank's investments in capital instruments of another institution that is also subject of the testing.

For the purpose of reviewing the calculation, banks are obliged to submit to the Agency the basis for revaluation of related securities, as well as the calculation of reserves for market liquidity and model uncertainty.

3.4. Reserves for market liquidity and model uncertainty

Banks will not calculate the loss due to reserves for market liquidity and model uncertainty in the baseline scenario, but only in the adverse scenario. The initial reserves for market liquidity and model uncertainty[3] as of 31 December, 2024 are assumed to be zero, and the stated reserves in the adverse scenario are calculated as follows.

The shock for market liquidity risk is 201%, while the shock for model uncertainty is 179% for L2 instruments and 240% for L3 instruments. Reserves for model uncertainty are determined only for L2 and L3 instruments, and market liquidity reserves for all instruments. The impact on reserves for market liquidity and model uncertainty is determined based on the bid-ask spread and cumulative shocks, and the instrument value, as follows:

L1: **((bid-ask spread) / 2) * 201% * instrument value**

L2: **((bid-ask spread) / 2) * (201%+179%) * instrument value**

L3: **((bid-ask spread) / 2) * (201%+240%) * instrument value**

[3] Please note that these reserves are not additional value adjustments from Article 117 of the Decision on calculating capital and explanations for row 290 in the template C 01.00 - Regulatory capital (CA 1).

The value of the instrument represents the nominal value in the case of bonds and the fair value in the case of shares.

For L1 instruments, banks should use a bid-ask spread from the stock exchange on which the instrument is listed, documenting it as an attachment to the submitted templates.

In case the bid-ask spread is not available, the following reference values will be used for L2 and L3 instruments:

Bonds issued by the state governments and other issuers of the Group 1: 30bp

Bonds issued by the state governments and other issuers of the Group 2: 60bp

Republika Srpska and FBiH bonds: 60bp

All other bonds (bonds issued by companies, bonds of municipalities, cities and cantons) and equity investments**:** 100bp

Banks will report in the CSV_MR_RESERVE template on the impact on reserves under their accounting regime, type of instrument (L1 / L2 / L3). These reserves represent add-on for the revaluation impact.

3.5. Impact on risk exposure amount

The initial value of the risk exposure amount for market risk is equal to the one calculated by the bank for the purposes of the Decision on calculating capital in banks as of 31 December 2024. The specified value should be entered in the CSV_REA_SUM template in column 1.

For the purposes of this testing, it is assumed that the projections of the risk exposure amount for market risk will be constant and equal to those at the initial date of testing, for both the baseline and adverse scenario purposes.

4. Net interest income (NII)

4.1. Scope

For the purposes of NII projecting, all interest-bearing positions in all accounting categories should be considered, including not only instruments valued at amortized cost, but also those subject to fair value measurement, such as instruments that are fair valued through the OCI or P&L.

It is assumed that in both the baseline and adverse scenarios, interest income on loans in S3 will not be accrued.

Fees and commission that are part of the NII for the purposes of regular financial reporting are the subject of this part of the Methodology. These fees and commission that may be directly related to credit exposures should be stressed through a change in the loan effective interest rate. All remaining fee and commission income is not the subject of this part of the Methodology and as part of net interest income is covered in Section 6 of the Methodology.

Banks report separately on portfolios with variable and fixed interest rates at predefined time classes of re-pricing that are on an annual, calendar basis. Instruments that have a combined interest rate will be treated by banks, for the purpose of testing, as instruments with a fixed interest rate, if as of 31/12/2024 the fixed period has not expired, or if as of 31/12/2024 the fixed period has expired, they will be treated as instruments with a variable interest rate.

4.2. NII calculation method

4.2.1. Definitions

The effective interest rate (EIR) is the effective interest rate defined in accordance with IFRS 9 and is equal to the ratio of income (or expense) to a provided volume. At the portfolio level and for a provided time period, the implicit average EIR is equal to the ratio of generated income/expenses during the time period and the average volume of that period. At the end of the period (2025, 2026, 2027 and 2028 and

onwards), the EIR at the portfolio level is equal to the exposure weighted average EIR at the individual exposure level.

The EIR of new business in 2024 is equal to the exposure weighted EIR at the level of new instruments, i.e. instruments that originated in 2024 and reached the end of the year in BS.

The reference interest rate (RII) is the general or risk-free rate for the observed instrument, which the bank uses when managing interest rate risk in the banking book. This rate does not include the credit risk margin specific to the instrument, nor the liquidity margin.

Margin is defined as the 'premium' earned/paid by banks over the instrument's/portfolio's reference rate, and is equal to the difference between real effective interest rate and RII of the same.

Maturity date, which determines the time class at the end of 2024 in which the product will be classified, is the contractual date according to which the margin or RII of the asset or liability is repriced:

- for fixed-rate instruments, (including overnight instruments), it is assumed that the maturity dates of the RII and the margin are the same, and equal to the contractual maturity of the instrument,
- for variable rate instruments, it is assumed that the margin is repriced at the contractual maturity of the instrument, while the RII is repriced at the date of its reset.

It is assumed that the RII for variable interest rate instruments changes only once during each testing year for a given change in quarterly Euribor.

Volume stands for the notional amount of an instrument, i.e. its gross carrying amount in the case of instruments at amortized cost.

4.2.2. Static BS assumption

NII projections are based on the assumption of static BS. Assets and liabilities maturing within the testing time horizon will be replaced by similar financial instruments in terms of type, credit quality at the time of the interest rate reset, and the original interest rate reset period. Estimates cover only the portfolio of loans and receivables S1 and S2, and it is expected that in times of stress the total volume of exposure S1 and S2 will decrease due to the increase in the volume of exposure in S3.

Interest income and expenses of banks develop in periods of stress as a consequence of:

- the period until the interest rate on assets and liabilities resets again,
- reset in the margin and/or RII on assets and liabilities, and
- transition of S1 and S2 exposures to S3.

4.2.3. Treatment of assets and liabilities maturing

The bank should enter in the CSV_NII_CALC template the average volume, whereby the average is calculated as the sum of balances at the beginning and end of the year divided by two, the amount of interest income and expenses, the volume of new business and the related average EIR for each of the pre-defined interest-sensitive portfolios as of 31/12/2024. In doing so, the bank will show separately the volumes and related EIR of the existing instruments by maturity dates (2025, 2026, 2027, as well as volumes due in 2028 and onwards).

Furthermore, when it comes to asset items, the bank needs to perform break down into domestic (regional) exposures (BiH), and into two groups of other countries in accordance with the section of the Methodology related to market risk (Group 1 and Group 2).

The following assumptions must be taken into account when filling in:

- banks will assume that sight deposits and savings deposits mature immediately. Therefore, they are considered a maturing position regardless of their duration. They will be classified into products with a fixed interest rate and they will be repriced in the first period of the testing horizon.
- overdrafts, revolving loans and credit cards will be considered as products maturing in the first period of the testing horizon, i.e. in the first year, and upon maturity these placements will be replaced by similar financial instruments,

- in the case of time deposits (including term deposits that have concluded early termination clause), the actual term is taken as the remaining maturity,
- liabilities that are callable by the counterparty are expected to be executed on the first possible date of the call,
- in the case of loans taken and granted, each annuity is allocated to the appropriate maturity bands as expected to be paid, after which it will be replaced with a similar financial instrument in terms of type, credit quality at the time of repricing, and remaining instrument maturity (both RII and margin), in accordance with the assumption of static BS,
- classic off-balance sheet items: guarantees, letters of credit, bills of exchange, framework loans, financing obligations and other classic off-balance sheet items are not considered interest-sensitive positions,
- derivatives are included in accordance with Chapter IV of the Decision on calculating capital in banks,
- funds on the required reserve account with the CBBH should be allocated to the portfolio of fixed interest rates and with the assumption of overnight maturity (O/N maturity), while funds above required reserves do not represent an interest-sensitive position,
- repo / reverse repo transactions and securities lending transactions to the counterparty/from the counterparty are included as respective positions in the received/granted loan.

4.2.4. Reporting requirements

Banks should report on the starting-point position values in the NII templates (CSV_NII_CALC). When entering, it is necessary to break-down interest-sensitive items depending on whether they represent assets or liabilities, regardless of whether the contract stipulates a negative interest rate. So, the interest calculation will follow the segmentation regardless of the interest amount sign.

Banks are obliged to submit to the Agency the documents used to fill out the CSV_NII_CALC template.

4.3. Impact on P&L

4.3.1. Constraints applied to NII

The assumptions used in the adverse scenario cannot result in an increase in net interest income, compared to 2024 values.

4.3.2. Loan treatment

In both cases, both under the baseline and adverse scenarios, interest rates on S1 and S2 exposures will be calculated. Interest income generated by these exposures will be calculated on the gross amount basis.

In order to achieve consistency with the exposure projections in S3 in the template covering credit risk, the total amount of transitions to S3 (SX-S3 Flow) expressed in the credit risk template CSV_CR_SCEN in 2025, 2026 and 2027 will decrease the positions in S1 and S2 in relation to the reported volume of assets in each year in the template CSV_NII_CALC, and will be allocated according to the appropriate category of assets for the needs of the NII in accordance with Table 4.

Given that for the Central Banks, Central Governments, Regional Governments and local authorities and Institutions transition rates in S3 are not provided, migrations in S3 apply only to three exposure categories containing interest-bearing positions, namely Non-financial companies, Retail-housing and Mortgage Loans and Household-Other. The applied transition rates in S3 are calculated as weighted average of values defined within credit risk, as follows:

Table 4. Allocation of types of assets subject to credit risk to asset categories for NII calculation

NII – asset category	Credit risk – asset type
Asset – Loans and receivables/ Debt securities – Non-financial companies	Public sector entities
	Companies – SME
	Companies – Non SME
	Secured by real estate – Companies Non SME
Asset – Loans and receivables – Household – Housing and mortgage loans	Secured by real estate – SME
	Secured by real estate – Non SME individuals
Asset – Loans and receivables – Household – Other	Household – SME
	Household – Non SME individuals

4.3.3. NII projections

In the CSV_NII_CALC template, interest income and expenses during the testing horizon will be calculated automatically. In each year of the testing horizon for all product types (fixed, variable, combined interest rate products), the amount due (in the case of assets after excluding exposure S3) will be replaced by new exposures under defined new pricing conditions.

Furthermore, existing exposures in each year of the testing horizon that are not maturing (for asset items after excluding exposure S3) will affect interest income, i.e expenses in accordance with the flows defined by the bank.

For each time period of the projection, the EIR will be expressed in a manner that implicit EIR are swapped for RII and margin changes.

For a swap contract, the reference rate and margin for the variable part are defined as for instruments with a variable interest rate, and for the fixed part of the swap contract they are defined as for instruments with a fixed interest rate. The margin can be negative depending on the swap contract features. For contracts for which there is an option to adjust the margin before maturity depending on the bank's discretion, it is assumed that the bank will not exercise that option.

The change in margin is determined once during the horizon, i.e. it will occur only once during the testing horizon and after that it will remain unchanged, i.e. it is not possible to change the margin more than once during the testing horizon.

4.3.3.1. Margin change for liabilities positions

In the baseline and adverse scenario, changes in the margin on the bank's liabilities in the event of a change in EIR (immediately after maturity) are listed below.

Margin changes for new bank liabilities:

Margin change = γ * corresponding change in long term interest rate,

where the γ factor is specific for different types of liabilities according to the following table:

γ	Household deposits – sight	Household deposits – time	Non financial companies deposits – sight	Non financial companies deposits – time	Government deposits – sight	Government deposits – time	Deposits of banks and other financial companies	Debt securities (excluding covered bonds)	Other liabilities
	0,1	1	0,2	1	0,2	1	1	1	1

Subordinated debt (both loans and bonds) is treated as debt securities. The change in margin is applied to all positions of interest expense.

4.3.3.2. Margin change for asset positions

Under the baseline and adverse scenario, the change in the margin on assets whose interest rate changes is defined below.

Margin change on new bank asset = λ * corresponding change in long term interest rate

whereby λ factor is specific for different types of assets that includes:

λ	Central bank	Government	Individuals – Housing loans	Individuals – Other	Financial entities	Non-financial companies	Other asset
	0	1	0,5	0,5	1	1	1

The margin change is applied to all interest income positions. Government bond yield shocks that affect the margin of asset items have different values for exposures to the government for different groups of countries, while the yield shock for BiH was used for the remaining assets.

5. Operational risk

5.1. Impact on P&L

The projection of total operational risk losses, aggregated for the three-year testing period, will be calculated as a function of RI. The mentioned RI is defined in accordance with the provisions of the Decision on calculating capital in banks. The amount of losses is proportionally projected over a time horizon of three years.

The projection of total losses from operational risk is calculated according to the following formula:

$$L_{(\text{base or adverse scenario})} = \Omega_{(\text{base or adverse scenario})} * RI_{2024},$$

where RI is a relevant indicator calculated for 2024, L is the total loss projected on a time horizon of three years, i.e. in each of the three years of the horizon the loss will be L/3, in the baseline scenario the scaling factor is $\Omega_{(\text{base scenario})} = 0{,}03$, while in the adverse scenario the scaling factor is $\Omega_{(\text{adverse scenario})} = 0{,}10$.

5.2. Impact on risk exposure amount

The total amount of risk exposure for operational risk for the needs of the baseline and adverse scenario, in each year of the testing horizon, will be equal to the amount of risk exposure for operational risk based on the Decision on calculating capital in banks as of 31 December 2024.

6. Noninterest income, expense and capital

6.1. Overview

Banks will use the methodology defined here for the projection of other noninterest income and expenses, which were not previously included in the testing through credit, market and operational risk, i.e. the assessment of NII.

6.2. Scope

This testing will include changes in noninterest income and expense on dividend income items, net fee and commission income and the share of profit or loss from investments in subsidiaries accounted for using the equity method. For other items of noninterest income and expenses, it is assumed that their impact on P&L during the testing horizon will be equal to the balance as at the end of 2024.

This chapter also covers the impact of taxes and dividends paid on capital.

6.3. Approach and reporting requirements

6.3.1. Approach

The impact of deferred tax assets will not be considered for testing purposes.

Given the assumption of BS statics, the effects of exchange rate differences will not be included in this testing.

It is not possible to adjust the items of noninterest income and expenses for 2024 due to one-off effects such as costs of resolution, mergers, etc.

6.3.2. Reporting requirements

All starting-point and projected values will be included in the CSV_P&L template. Additional impact on capital will be included in the CSV_CAP template.

6.4. Impact on P&L and capital

6.4.1. Dividend income and net fee and commission income

Banks should use the model described here when projecting dividend income, net fee and commission income and share of profit or loss from investments in subsidiaries accounted by using the equity method.

In the baseline scenario, for the projection of each of the above three items (dividend income, net fee and commission income and share of profit or loss from investments in subsidiaries), the projection will be the reported value for 2024, if that year was positive one, and if the value for 2024 was negative or zero, then the projection for the following years will be zero.

In the adverse scenario, banks are required to follow the approach of projections of dividend income, net fee and commission income and share of profit or loss from investments in subsidiaries accounted by using the equity method, and in accordance with the box below, the reduction of total net income for 2024 will be applied to them and such calculated values will be projected during the three years of the testing horizon. Banks that have reported net income for one of the above items for 2024 as zero or negative, a net income of zero for each year will be projected for such item.

Box 12. Calculation of dividend income, net income from fees and commissions and share of profit from investments in subsidiary companies

For each item (dividend income, net fee and commission income and share of profit from investments in subsidiaries accounted by using the equity method) the banks will apply the following reduction:

$$\textbf{Net income 2025, 2026, 2027= Net income 2024}*(1-\delta(\text{a or b}))^{4}$$

where:

- δ_a reduction in net fee and commission income and amounts to 0,2;
- $\delta_б$ reduction in dividend income and share of profit from investments in subsidiaries accounted by using the equity method of remaining two items and amounts to 0,5.

6.4.2. Dividends paid

The pay-out ratio is defined as the ratio between dividend pay-outs to shareholders and after-tax profits.

In both the baseline and adverse scenarios, banks will apply the pay-out ratio based on planned dividend policies.

[4] For example, if at the end of 2024, net income from fees and commissions amounted to 100, then in 2025 under stress it would amount to 80=(100*(1-0.2)), while dividend income of 100 under stress would amount to 50=100*(1-0.5).

When projecting the dividend pay-outs, banks must also take into account regulatory provisions related to the additional capital requirement based on the SREP score, a combined buffer and appropriate distribution restrictions.

6.4.3. Tax treatment

For the purposes of testing, the impact of taxes in the testing horizon is assessed by applying the tax rates as determined by the applicable legal regulations (10%). For testing purposes, the impact of deferred tax assets will not be assessed over the testing horizon.
The bank will show the taxable profit in the corresponding row of the CSV_P&L template. For the sake of simplicity, the fact that some items included in the P&L cannot be recognized as a tax deduction, nor be taxable, will be ignored.

6.4.4. Operational risk

Banks will include expenses and provisions for operational risk in their reports for 2024 in accordance with their own accounting practices. Projected losses from operational risks will be included in the CSV_P&L template in accordance with the provisions of Chapter 5. Operational risk, i.e. in the position "profit or loss from operational risk" consistent with the data in the operational risk template (CSV_OR_GEN). To avoid double counting of projected losses, banks will not project impacts on the above profit and loss items in accordance with their accounting practices.

6.4.5. Impact on capital and leverage ratio

AT1 capital instruments that are converted into CET1 capital or written off in the case of a trigger event, in accordance with Article 17 of the Decision on calculating capital in banks, are reported in a separate memoranda, if the trigger of the conversion in the adverse scenario is above the CET1 capital ratio. However, the result of this impact on CET1 capital will not be taken into account when calculating capital ratios.

The leverage ratio will be reported on the basis of the Decision on calculating capital in banks for each testing year. It is assumed that the exposure to calculate the leverage ratio within the testing horizon will be constant.

Number: D- 3/23

Date: 13 March 2025

Director

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Srđan Šuput

Attachment 1. Group of countries (classification)

Group 1: countries whose credit rating belongs to credit quality level 1 and 2 in the Table for ECAI credit assessment allocation for the purposes of the Decision on calculating capital in banks.

Group 2: other countries.

For the purposes of determining the market shock in Methodology part 3.3.1, if the issuer of the securities is a legal entity from the group of countries 1 or 2, the volume of the change will be determined depending on the country where the issuer is headquartered.

Attachment 2. Macroeconomic scenarios

Scenarios and assumptions for supervisory bank stress testing are based on projections of key macroeconomic variables of the Office of the Chief Economist and the Financial Stability Department (OFS) of the CBBH and are a combination of a macroeconomic model and expert assessment. ECB projections from December 2024 were used for trend projections of short-term interest rates, while projections of changes in long-term interest rates were expertly assessed on the basis of available market information.

The baseline scenario is based on the official, autumn projections of the CBBiH, according to which moderate economic growth is expected until the end of the projection horizon. The CBBiH estimates that the expected trend in economic activity growth will slow down as early as the fourth quarter of 2024 as a result of the floods that affected part of BiH. Among external risks, the expected economic activity of the eurozone countries had an impact on the economic growth projection. The decrease in foreign demand from the eurozone, which is reflected in the continued strong decline in domestic industrial production and exports, contributed to the continuation of expectations of modest growth in economic activity in the coming years. The estimate of real GDP growth for 2025 is 2.6%, and for 2026 it is 2.8%. Based on expert assessments of the OFS, as well as assessments of international financial institutions, according to which there is a tendency for a slight growth in real GDP over a three-year period, economic activity is expected to grow by 3% in 2027, which is in line with the average economic growth in the previous 10 years. It is estimated that personal consumption, which is the largest macroeconomic aggregate in the GDP structure, will be the main driver of economic growth.

Inflation measured by the consumer price index has slowed down compared to previous years and is expected to continue to move at rates of around 2.0% until the end of the projection horizon. Regardless of the slowdown, inflation will also be influenced by real wage growth in the coming period. In the medium term, the increase in prices of fossil-based products will have an increasing impact after the introduction of the CBAM mechanism, which aims to reduce the effect of carbon emissions in international trade from the beginning of 2026.

Given that there has been no stronger transmission of monetary conditions from the euro area to the domestic market, domestic interest rates are not expected to react quickly to the ECB's monetary policy easing, and it is expected that interest rates will have a trend of slight growth by the end of the projection period, with slower growth dynamics of interest rates in the household sector compared to interest rates in the corporate sector.

The effects of inflation and a slight increase in interest rates are expected to somewhat slow down the growth of real estate prices over the stress testing horizon.

The adverse scenario assumes a supply-side shock as the key driver of the economic contraction in the tested period. Geopolitical tensions that disrupt the supply chain and lead to a surge in food and energy prices, together with the country's internal structural weaknesses (weather risk), will result in a disruption or reduction in production, loss of markets for BiH companies, and consequently impaired labor market indicators and a decrease in overall economic activity. This macroeconomic scenario assumes a strong increase in exogenous prices, leading to inflation growth significantly above the baseline scenario. In conditions of high inflation, the ECB's restrictive monetary policy is expected to continue, as well as higher Euribor rates, which will be reflected in the domestic market through higher interest rates for both households and companies. However, the trend of interest rate growth in both categories should stop in the

last year of testing, when the economic recovery is expected to begin. Considering that, according to the usual time distribution of macroeconomic variables, supply recovers more slowly than demand, the materialization of this scenario would result in a two-year recession with a slight recovery of economic activity only in the third year of testing. Real estate prices will also follow the trend of the overall economy. Namely, real estate prices in this scenario will be additionally pressured by rising interest rates, weaker creditworthiness of private individuals and a decrease in the total real income of the household, so an extended period of decrease in real estate prices is expected for two consecutive years.

Basic macroeconomic variables

		Baseline scenario			Adverse scenario		
	2024	2025	2026	2027	2025	2026	2027
Key macroeconomic variables							
GDP	2,4%	2,6%	2,8%	3,0%	-4,1%	-0,8%	3,0%
Inflation	1,7%	1,9%	2,0%	2,0%	3,0%	5,0%	2,5%
Unemployment rate	27,8%	24,6%	23,7%	23,5%	26,6%	28,6%	28,0%
Short-term interest rates (level)							
3M Euribor	3,6%	2,1%	2,0%	2,2%	2,6%	2,5%	2,7%
Real estate price index (change)	8,2%	2,9%	1,1%	4,0%	-2,0%	-4,3%	5,0%
Loan interest rates							
Corporate	4,4%	4,7%	4,9%	5,0%	5,2%	6,3%	6,3%
Private individuals	5,6%	5,6%	5,7%	5,7%	6,0%	6,8%	6,8%

Reference values for credit risk - aggregate transition rates

			Baseline scenario			Adverse scenario		
		2024	*2025*	*2026*	*2027*	*2025*	*2026*	*2027*
TR1-2								
	Corporate	4,67%	4,84%	4,87%	4,82%	6,30%	8,16%	7,06%
	Private individuals	3,62%	3,49%	3,44%	3,35%	3,82%	4,35%	4,23%
TR1-3								
	Corporate	0,29%	0,42%	0,51%	0,57%	0,61%	0,91%	1,10%
	Private individuals	0,56%	0,60%	0,62%	0,63%	0,68%	0,83%	0,88%
TR2-3								
	Corporate	5,12%	6,05%	6,74%	7,19%	6,29%	9,70%	12,70%
	Private individuals	7,06%	7,27%	7,48%	7,62%	7,40%	8,94%	10,58%

PD parameter change

	Baseline scenario			Adverse scenario		
	2025	2026	2027	2025	2026	2027
Central governments						
BiH	1,0	1,0	1,0	1,5	1,5	1,5
Countries - Group 1	1,0	1,0	1,0	1,5	1,5	1,5
Countries - Group 2	1,0	1,0	1,0	1,5	1,5	1,5
Regional governments and local authorities	1,0	1,0	1,0	2,0	2,0	2,0
Institutions	1,0	1,0	1,0	1,5	1,5	1,5

Market risk factors – Interest rates (change)

	Baseline scenario			Adverse scenario		
	2025	2026	2027	2025	2026	2027
BiH	0,5%	0,0%	0,0%	1,0%	0,0%	0,0%
Countries - Group 1	0,2%	0,0%	0,0%	0,5%	0,0%	0,0%
Countries - Group 2	0,3%	0,0%	0,0%	0,7%	0,0%	0,0%

Market risk factors – Shares and funds

Adverse scenario Shares and funds *Relative changes (%)*	
Geographic area	Shock
BiH	-15%
Countries - Group 1	-15%
Countries - Group 2	-15%

Market liquidity provisioning and model uncertainty

Liquidity and model uncertainty Relative changes (base points)		
Geographic area	Base	Shock
Entire	Liquidity provisioning	201
Entire	Model uncertainty – L2	179
Entire	Model uncertainty – L3	240