

‘Approved’
Central Bank of
the Republic of Azerbaijan
Resolution № 06/05
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Regulation on bank stress testing

1. General provisions

1.1. This Regulation has been developed pursuant to Article 34.5 of the *Law of the Republic of Azerbaijan on Banks*.

1.2. This Regulation determines general requirements for stress testing applicable to banks and local branches of foreign banks operating in the Republic of Azerbaijan (hereinafter – the bank), including requirements relating to the stress testing program, data infrastructure, the development of stress-testing models, sensitivity and scenario requirements, the conduct of stress tests for individual risk categories, and the submission of relevant information to the Central Bank of the Republic of Azerbaijan (hereinafter – the Central Bank).

2. Definitions

2.1. The definitions used in this Regulation bear the following meanings:

2.1.1. ‘Bottom-up stress test’ – a stress test performed by banks using models developed by banks based on the macroeconomic projections of the Central Bank and the requirements of this Regulation.

2.1.2. dynamic balance – a balance sheet constructed by adjusting assets and liabilities in line with the scenarios applied and bank’s future business plans and operational projections.

2.1.3. ad hoc stress test – a non-periodic stress test conducted specifically upon the occurrence of an event or where the need arises.

2.1.4. projection horizon – the period covered by the stress-testing model during which stressed conditions are assumed to persist.

2.1.5. static balance sheet – a balance sheet that remains unchanged during the projection horizon by replacing maturing balance-sheet items with items of a similar nature and of an equivalent amount.

2.1.6. stress test – a tool for assessing the potential impact of one or more shocks on the financial position of a bank.

2.1.7. shock – a plausible and measurable event that may potentially affect the activities of a bank.

2.1.8. reverse stress test – a stress test based on modelling designed to identify shocks and events that could lead to a significant deterioration in a bank’s financial soundness indicators and render the continuation of its operations unviable.

2.1.9. top-down stress test – a stress test performed by the Central Bank by applying the same assumptions, methodologies and scenarios to all banks based on a common model.

2.2. For the purposes of this Regulation, the definitions ‘non-performing loan’ and ‘model validation’ have the meanings assigned to them in the ‘*Regulation on credit risk management in banks*’, approved by Resolution No 46/4 of the Management Board of the Central Bank dated 21 September 2023.

3. General requirements for stress testing

3.1. Banks conduct stress tests to identify and assess events that may adversely affect their risk profile and, based on the results thereof, develop an action plan.

3.2. Stress tests are developed by the organizational unit(s) performing the risk management function in cooperation with other relevant organizational units of the bank and, following agreement by the Management Board, are approved by the Supervisory Board and the Risk Management Committee, taking into account the requirements specified in Items 9.3 and 9.4 of this Regulation.

3.3. The frequency of stress testing is determined by the bank, taking into account the requirement set out in Item 9.2 of this Regulation, having regard to the type of stress test, the scale and nature of the risks arising from the bank's activities, and changes in market conditions and the macroeconomic environment in which the bank operates.

3.4. Results of stress tests are taken into account in the preparation and review of the bank's strategic plan, as well as in the development and enhancement of the bank's risk appetite, risk policies, limits and internal rules.

3.5. Stress-testing models are subject to validation and periodic reassessment of their adequacy by employees of relevant organizational units that are independent of the development and conduct of the bank's stress tests and/or by external experts not involved in those processes.

3.6. Employees responsible for the development and implementation of the bank's stress-testing program are prepared to respond to the questions specified in Annex 1 herein during assessments of the stress-testing model (either internally by the bank or by the Central Bank).

4. Stress testing program

4.1. Banks establish a stress-testing program for the conduct of stress tests. The stress-testing program, at a minimum, covers the following:

4.1.1. the types and objectives of stress tests.

4.1.2. the frequency of stress testing.

4.1.3. clear, transparent and consistent allocation of responsibilities and procedures relating to stress testing.

4.1.4. adequate data infrastructure.

4.1.5. a description of the models used for stress testing.

4.1.6. requirements relating to the validation and periodic reassessment of models.

4.1.7. a description of the potential shocks and scenarios to be used.

4.1.8. a contingency action plan for each stress test. The action plan should consider the measures identified under stressed conditions as part of the bank's recovery plan.

4.2. The stress-testing program should also provide for the conduct of ad-hoc and reverse stress tests.

4.3. Banks review the stress-testing program at least annually. The stress-testing program and any amendments thereto are documented and communicated to the Supervisory Board, the Risk Management Committee, the Management Board and the relevant organizational units of the bank.

5. Data used for stress testing

5.1. Banks' stress-testing models should be based on high-quality, reliable and comprehensive data. Such data should, at a minimum:

5.1.1. cover a period that reflects the evolution of economic, financial and market indicators, taking into account the bank's principal business activities and risk profile, including periods of severe economic stress.

5.1.2. be available at a sufficiently high frequency (e.g. monthly or quarterly).

5.1.3. be free from outliers and inaccurate observations (with such observations identified using appropriate statistical methods).

5.1.4. reflect structural changes (new adjustments, changes to financial reporting etc.).

5.1.5. be consistent across data sources, and any discrepancies should be identified and analyzed.

5.1.6. the reliability of data sources (internal information systems, statistics published by the Central Bank and third-party sources) should be assessed and documented.

6. Development and application of stress-testing models

6.1. Stress tests are developed using econometric models. In developing and refining econometric models, banks should, at a minimum, comply with the following requirements:

6.1.1. models should be based on sound economic, financial and statistical theory.

6.1.2. models should be commensurate with the bank's nature, size and scale, as well as the complexity and risk profile of its business activities.

6.1.3. models should be statistically and economically robust and stable.

6.1.4. significance indicators should be strong, and the interpretation of model parameters should be clear and economically meaningful.

6.1.5. economically relevant variables should not be omitted from the model, nor should variables lacking economic relevance be included.

6.1.6. diagnostic tests should be performed, statistical deficiencies addressed, and the most appropriate model selected.

6.1.7. an appropriate balance should be maintained between theoretical considerations and empirical results, and models should be tested across different economic cycles and under different scenarios.

6.1.8. the model methodology and transmission mechanisms of underlying economic relationships should be clearly described, and any limitations or weaknesses of the model should be documented.

6.1.9. econometric models used to project the impact of macroeconomic variables on the bank's risk profile and financial performance should be consistent with one another in terms of their key assumptions, while also ensuring consistency with the approaches adopted in the financial modelling framework (e.g., the models used to project the non-performing loan (NPL) ratio and the size of the bank's loan portfolio should produce logically consistent results).

6.1.10. statistical relationships between macroeconomic variables and financial indicators should be reflected in a manner consistent with economic rationale (e.g., where macroeconomic projections indicate a deterioration in economic activity, the models should not assume significant growth in the loan portfolio).

6.1.11. key assumptions underlying the models should be appropriately justified and documented.

6.2. Banks determine the projection horizon for stress-testing models. The projection horizon should be commensurate with the nature of the bank's portfolio, its risk profile and the objectives of the stress test.

6.3. When modelling the impact of macroeconomic factors on financial indicators, detailed projection should be provided without adversely affecting model performance (e.g., the loan portfolio should be segmented, as appropriate, by customer category, loan type, economic sector, residual maturity, current classification category or other relevant characteristics, together with any additional sub-segments that the bank considers appropriate, and projections under the relevant stress scenario should be developed for each segment).

6.4. When developing stress tests, macroeconomic variables should be appropriately linked to dependent variables in econometric models to estimate their impact on the bank.

6.5. Banks may use either a static or a dynamic balance sheet in developing stress-testing models. A static balance sheet is used to assess the bank's current financial position and existing risks, whereas a dynamic balance sheet is used for forward-looking projections.

6.6. Stress-testing models may be applied at portfolio and/or at bank level (covering all material risks). At portfolio level, stress tests cover all material risks affecting the portfolio as a whole or relevant portfolio sub-segments by means of sensitivity analyses and scenario analyses. Portfolio-level stress tests should identify risk drivers and corresponding shocks relevant to the nature of the portfolio (e.g., shocks such as declining property prices, rising unemployment and a contraction in gross domestic product).

7. Sensitivity and scenario analyses

7.1. Banks should perform sensitivity analyses at the portfolio and/or at the bank level. A sensitivity analysis is the application of stress to a single risk factor to measure the bank's sensitivity to that risk factor. For instance, a bank may assess the impact of

changes in interest rates, declines in the value of liquid assets, increases in probabilities of default, or the default of major counterparties. Such analyses support the identification of risks and potential risk concentrations.

7.2. In sensitivity analyses, banks should apply shocks of varying severity to the risk factors identified by the bank. The severity of such shocks should be determined based on long-term historical developments. To assess sensitivity to risk factors effectively, banks should complement historical data and experience-based analyses with hypothetical events.

7.3. Scenario analyses form an integral part of the bank's stress-testing framework. Scenario analyses should, at a minimum:

7.3.1. be forward-looking and reflect a coherent sequence of interrelated events over the projection horizon of the stress test.

7.3.2. take into account hypothetical events in addition to historical observations.

7.3.3. include baseline, adverse and severely adverse scenarios, with specific assumptions and shocks defined for each scenario.

7.3.4. cover the risks to which the bank is exposed, and risk sensitive areas.

7.4. Sensitivity and scenario analysis should consider shocks of varying degrees of severity.

7.5. Scenarios may reflect developments affecting the economy as a whole, the financial sector, or bank-specific circumstances.

8. Requirements for stress testing by major risk types

8.1. The bank conducts stress tests, at a minimum, for liquidity, credit, market, and operational risks. The stress shocks applicable to each risk type are specified in Annex 2.

8.2. The scenarios used for liquidity risk stress testing should be based on shocks relating to current and projected market conditions that are relevant to the bank and the specific nature of its operations (the nature of its banking activities and products, and the sources of its funding). When conducting liquidity risk stress testing, the bank should take into account results of stress tests performed for credit, market, operational, and other material risks.

8.3. The scenarios used for credit risk stress testing should be based on assumptions relating to current and projected market conditions, relevant to the nature of the bank's loan portfolio. Credit risk stress tests should also incorporate assumptions regarding events that may adversely affect the value of securities pledged as collateral for large credit exposures (a downgrade of the issuer's investment rating and a deterioration in market liquidity).

8.4. The bank should conduct operational risk stress testing in a manner commensurate with the nature of its activities and the scale of its operations.

8.5. Operational risk stress tests should also take into account macroeconomic relationships (e.g., an increase in incidents of internal fraud during periods of economic downturn).

8.6. Market risk stress testing scenarios should take into account the impact of changes in on- and off-market risk factors and be designed in accordance with the bank's

sensitivity to various market risk components. Such scenarios should be based on assumptions regarding current and projected changes in interest rates, exchange rates, and values of securities and commodities. The risk factors considered should include changes in prices, exchange rates, and interest rates; market volatility and liquidity; historical correlations and probabilities of market conditions under stressed circumstances; as well as the bank's sensitivity to severe but plausible stress scenarios, including the default of major market participants and scenarios involving maximum cash outflows.

9. Requirements for bottom-up stress tests

9.1. To conduct bottom-up stress tests, the Central Bank prepares and delivers macroeconomic projections to banks for the indicators specified in Annex 3 herein by 30 December for annual stress tests and by 30 June for semi-annual stress tests.

9.2. Bottom-up stress tests are conducted by systemically important banks (SIBs) on a semi-annual and annual basis and by all other banks on an annual basis.

9.3. Results of annual stress tests conducted by a bank, together with the corresponding action plan, are approved by the Supervisory Board and submitted to the Central Bank within 45 (forty-five) days following the provision of the macroeconomic projections by the Central Bank. Where the action plan specifies measures to strengthen the bank's capital position, it also specifies proposed capital enhancement measures, including available instruments (the issuance of hybrid capital instruments, increases in share capital, additional capital contributions by shareholders, optimization of risk-weighted assets, etc.) together with their order of priority.

9.4. Results of semi-annual stress tests conducted by a SIB, together with the corresponding action plan, is approved by the Risk Management Committee and submitted to the Central Bank within 45 calendar days following the provision of the macroeconomic projections by the Central Bank.

9.5. Banks may incorporate into their bottom-up stress-testing models projections for macroeconomic variables in addition to those provided by the Central Bank. In such cases, those projections should be consistent with the severity of the relevant stress-testing scenario.

9.6. The bottom-up stress tests avoid:

9.6.1. management actions intended to mitigate the impact of stress (reducing the size of the loan portfolio or changing its composition to improve the capital adequacy ratio).

9.6.2. improvements under adverse scenarios relative to the baseline (non-shocked) scenario.

9.6.3. improvements in the classification category of assets or in the risk group.

9.6.4. increases in income (except for increases reflecting the projected rate of inflation used in forecasting non-interest expenses).

9.6.5. under adverse scenarios, provisions for NPLs falling below 75% of the projected stock of NPLs over the projection horizon. This threshold applies separately to newly originated NPLs (loans that were not classified as non-performing before the

projection horizon) and existing NPLs (loans already classified as non-performing before the projection horizon).

9.6.6. the application of liquidity shocks to funding sources.

9.7. For the purposes of bottom-up stress tests, projected dividend distributions should be based either on the dividend policy set out in the bank's strategic plan or on the average dividend payout ratio observed over the bank's three most recent profitable financial years.

9.8. The Central Bank assesses the results of bottom-up stress tests within 30 (thirty) calendar days. During the assessment, the results of bottom-up stress tests are compared with those of the corresponding top-down stress tests. Where additional information is requested from a bank during the assessment process, such information is also taken into account. Where the Central Bank concludes that the bottom-up stress test fails to comply with the requirements of this Regulation, the bank repeats the bottom-up stress test and submits revised results, together with an updated action plan where appropriate, to the Central Bank within 7 (seven) working days, following approval in accordance with Items 9.3 and 9.4 of this Regulation.

9.9. The outcome of the Central Bank's assessment of the results of bottom-up stress tests is taken into account as part of the risk-based supervisory process and in determining the appropriate supervisory measures.

Questions for the assessment of the stress-testing model

1. Which macroeconomic projections, other than those provided by the Central Bank, were used?
 - 1.1. Why and how were these scenarios selected?
 - 1.2. How is this choice justified?
2. Do the stress tests adequately capture the bank's material risks?
 - 2.1. How do stress tests reflect credit and liquidity risks?
 - 2.2. Has the use of more granular data or more granular testing approaches been considered?
 - 2.3. What other stress tests were considered, and why were they not conducted?
3. To what extent are the scenarios sufficiently severe and plausible?
 - 3.1. How was the severity of the scenarios determined?
 - 3.2. How was the projection horizon selected?
 - 3.3. Have reverse stress tests been used?
4. Is the stress test based on a static balance sheet or a dynamic balance sheet?
 - 4.1. Why was this approach selected?
 - 4.2. What was the primary objective of the stress test?
 - 4.3. How will the results be analyzed and used?
5. Why were these models selected?
 - 5.1. Were alternative models considered?
 - 5.2. Which significance indicators were used in selecting the models?
 - 5.3. What model risks have been identified?
 - 5.4. Why were the current sensitivity-testing models and methodologies selected?
 - 5.5. Are the scenarios based on historical observations or hypothetical events?
6. What assumptions and expert judgement were applied in conducting stress tests?
 - 6.1. How does the bank identify and assess such assumptions and judgements?
 - 6.2. To what extent are the Management Board and the Risk Management Committee informed of, and involved in discussing, these assumptions and judgements?
7. Does the bank have sufficient data to conduct stress tests?
 - 7.1. What are the sources of the data used?
 - 7.2. Are the data validated before use?
 - 7.3. Are there any data quality deficiencies and what have been done to address them?
8. How are second-round effects and interdependencies between risks reflected in the stress tests?
 - 8.1. Which interactions between risks are captured in stress tests?
 - 8.2. Which interactions are not reflected, and why?
 - 8.3. Has the impact of other risks on liquidity risk been assessed?
9. Are stress tests conducted more frequently than required by applicable regulatory requirements?

10. Has the stress-testing program been documented and does it comply with the requirements of this Regulation?

11. Have responsibilities for conducting stress tests been clearly allocated?

11.1. To what extent are other organizational units involved in the process?

11.2. Where are the stress tests developed by a single organizational unit, to what extent are other organizational units informed?

11.3. If several organizational units are involved in developing the stress tests, how are the results coordinated and consolidated?

12. To what extent is the Management Board familiar with the stress-testing models?

12.1. When were the stress-testing models last discussed?

12.2. Which issues were discussed?

12.3. What were outcomes of those discussions, and what changes were subsequently made?

13. What reviews has the internal audit function carried out in relation to stress testing, and what were the key findings?

14. Does the bank have sufficient resources to conduct stress tests?

14.1. How does the bank assess whether its staff possess the necessary knowledge and expertise?

14.2. Are the training and development needs of staff adequately addressed?

14.3. What additional resources require further development?

14.4. Does the bank rely on external experts to support stress testing?

14.5. If so, how does the bank assess whether those external experts possess adequate resources and expertise?

Shocks by material risk categories

1. Liquidity risk shocks

1.1. Liquidity risk shocks may include, but are not limited to, the following:

1.1.1. changes in the value of liquid assets in the market.

1.1.2. premature withdrawals of funds by holders of term liabilities.

1.1.3. reductions in balances held in current accounts and correspondent accounts.

1.1.4. withdrawal of the ten largest deposits that may give rise to significant liquidity risk for the bank.

1.1.5. early withdrawal of funding obtained from banks and other financial institutions.

1.1.6. reduced access to funding sources.

1.1.7. increased correlation between funding sources (where the same shock simultaneously affects all funding sources) or insufficient diversification of funding sources.

1.1.8. breaches of contractual terms relating to committed credit lines (unjustified refusal to honor lending commitments or failure to provide committed funds in full or on time).

1.1.9. restricted access to Central Bank funding facilities.

1.1.10. crystallization of off-balance sheet liabilities (e.g., the calling of guarantees involving significant amounts).

1.1.11. changes introduced by the Central Bank to reserve requirements or other regulatory requirements affecting liquidity ratios.

1.1.12. a reduction in the bank's stock of liquid assets.

1.1.13. additional collateral requirements in respect of funding obtained.

1.1.14. unsustainable growth of the balance sheet.

1.1.15. currency changes in the composition of customers' deposits.

1.1.16. restricted access to foreign exchange markets.

1.1.17. significant exchange rate movements.

1.1.18. a downgrade of the bank's credit rating by an international rating agency.

1.1.19. restrictions on the realization of assets.

1.1.20. delayed repayment or non-repayment of loans (resulting in liquidity risk arising from credit risk).

1.1.21. changes in interest rates.

1.1.22. changes in the rate of inflation.

2. Credit risk shocks

2.1. Credit risk shocks may include the following:

2.1.1. adverse changes in economic conditions or in the condition of individual economic sectors.

- 2.1.2. a decline in the value of collateral.
- 2.1.3. changes in interest rates.
- 2.1.4. changes in exchange rates.
- 2.1.5. force majeure events.
- 2.1.6. deterioration in borrowers' repayment capacity (increase in NPLs).
- 2.1.7. default or bankruptcy of at least the ten largest borrowers.
- 2.1.8. introduction of adverse changes to legislation.

3. Operational risk shocks

For operational risk stress testing, shocks based on the risk events specified in Annex 3 to the *'Regulation on operational risk management in banks,'* approved by Decision No. 04/1 of the Management Board of the Central Bank dated 28 January 2025, may be used.

4. Market risk shocks

In market risk stress testing, the model incorporates shocks affecting financial instruments measured at fair value, specifically securities whose value exceeds 1% of the bank's Tier 1 capital (e.g., unexpected changes in market prices, liquidity shortfall, default of major market participants, etc.). The analysis also takes into account interconnections between different markets and the resulting increase in correlations when performing the calculations.

Macroeconomic indicators used in Central Bank forecasts provided to banks

1. The forecasts provided by the Central Bank may include the following key macroeconomic indicators:

- 1.1. Changes in Gross Domestic Product and non-oil Gross Domestic Product.
- 1.2. Oil prices.
- 1.3. Inflation.
- 1.4. Real Effective Exchange Rate and Nominal Effective Exchange Rate.
- 1.5. Refinancing rate.
- 1.6. Unemployment.
- 1.7. Property prices.
- 1.8. Budget expenditures and their components.
- 1.9. Azerbaijan Interbank Rate (AZIR).
- 1.10. Exchange rates and other macroeconomic factors.
- 1.11. Any other indicators deemed necessary.

2. The Central Bank's macroeconomic forecasts cover a period extending at least until the end of the following calendar year and are prepared under at least two different scenarios.

3. The forecasts provided to banks should not be construed as representing the Central Bank's future monetary policy decisions and/or official forecasts.