



IMPROVING THE EFFICIENCY OF LIQUIDITY RISK MANAGEMENT MECHANISMS IN COMMERCIAL BANKS THROUGH STRESS TESTING

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Abstract

This thesis investigates priority pathways for improving the efficiency of liquidity risk management mechanisms in commercial banks through stress testing. Based on an analysis of regulatory documents, the Central Bank's 2025 Financial Stability Review, and scholarly sources, it is shown that while aggregate liquidity ratios exceed regulatory minimums, stress testing mechanisms are not substantively integrated into operational funding and asset-liability management decisions. A four-stage governance mechanism, the "scenario matrix – cash flow survival horizon – compensatory buffer" principle, and five efficiency evaluation indicators are substantiated.

Keywords

commercial banks, liquidity risk, stress testing, management mechanisms, Liquidity Coverage Ratio, Net Stable Funding Ratio, contingency funding plan.

**TIJORAT BANKLARIDA LIKVIDLIK RISKINI STRESS-TESTLASH
ORQALI BOSHQARISH MEXANIZMLARI SAMARADORLIGINI OSHIRISH**

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Annotatsiya. Mazkur tezisda tijorat banklarida likvidlik riskini stress-testlash orqali boshqarish mexanizmlari samaradorligini oshirish yo'llari tadqiq etilgan. Me'yoriy-huquqiy hujjatlar, Markaziy bankning 2025-yil uchun Moliyaviy barqarorlik sharhi hamda ilmiy adabiyotlar tahlili asosida bank tizimida prudensial likvidlik





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me’yorlari bajarilayotgan bo’lsa-da, stress-testlash natijalarini aktiv va passivlarni tezkor boshqarish hamda favqulodda moliyalashtirish qarorlariga integratsiya qilish mexanizmi yetarli darajada shakllanmagani aniqlangan. Stress-testlashni boshqaruv qarorlariga bog’lashning to’rt bosqichli mexanizmi, «stsenariylar matritsasi – pul oqimlari yashovchanlik gorizonti – kompensatsion bufer» tamoyili hamda likvidlik riskini boshqarish samaradorligini baholovchi beshta ko’rsatkich asoslab berilgan.

Kalit so’zlar: tijorat banklari, likvidlik riski, stress-testlash, boshqarish mexanizmlari, likvidlikni qoplash me’yori, sof barqaror moliyalashtirish, favqulodda moliyalashtirish rejasi.

**ПОВЫШЕНИЕ ЭФФЕКТИВНОСТИ МЕХАНИЗМОВ УПРАВЛЕНИЯ
РИСКОМ ЛИКВИДНОСТИ В КОММЕРЧЕСКИХ БАНКАХ
ПОСРЕДСТВОМ СТРЕСС-ТЕСТИРОВАНИЯ**

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Аннотация. В данных тезисах исследованы пути повышения эффективности механизмов управления риском ликвидности в коммерческих банках посредством стресс-тестирования. На основе анализа нормативно-правовых актов, Обзора финансовой стабильности Центрального банка за 2025 год и научных источников показано, что агрегированные нормативы ликвидности выполняются, однако механизмы стресс-тестирования содержательно не увязаны с оперативными решениями по управлению активами и пассивами. Обоснованы четырехэтапный механизм управления, принцип «матрица сценариев – горизонт выживания денежных потоков – компенсационный буфер» и пять показателей оценки эффективности.





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Ключевые слова: коммерческие банки, риск ликвидности, стресс-тестирование, механизмы управления, коэффициент покрытия ликвидности, чистое стабильное фондирование, план экстренного фондирования.

INTRODUCTION

Managing liquidity risk in commercial banks through stress testing is a forward-looking analytical and governance mechanism designed to evaluate and safeguard a bank's payment capacity under external macroeconomic shocks, exchange rate volatility, and unexpected deposit run-offs [Fozilchayev, Xidirov 2019: p. 112], whose effectiveness depends on how substantively test outcomes guide operational asset and liability management. Meanwhile, the rapid expansion of digital financial technologies has accelerated transaction velocity, requiring real-time modeling of daily cash flows and behavioral maturity shifts [Elmirzayev et al. 2023: p. 214].

In Uzbekistan, the Strategy for Reforming the Banking System for 2020–2025 established the priority mandate of regulating bank liquidity on the basis of Basel III standards and introducing modern risk management and stress testing mechanisms [PF-5992 2020]. According to the Central Bank's Financial Stability Review for 2025, as of January 1, 2026, the banking system's aggregate Liquidity Coverage Ratio (LCR) reached 208 percent and the Net Stable Funding Ratio (NSFR) stood at 120 percent, while total regulatory capital adequacy reached 18.3 percent and the share of non-performing loans was formed at 3 percent [Central Bank 2026].

However, maintaining high aggregate prudential ratios does not guarantee the operational efficiency of liquidity risk management mechanisms at individual banks when macroeconomic instability intensifies. In the Central Bank's macro stress test, under the adverse scenario by the end of 2028, the Common Equity Tier 1 (CET1) capital adequacy ratio could decline from 14.7 percent to 5.6 percent and total regulatory capital adequacy could drop to 6.8 percent, while the average debt-service-to-income





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ratio (DSTI) in the microloan segment has risen to 40 percent [Central Bank 2026]. Deterioration in loan portfolio quality under macroeconomic shocks reduces scheduled interest and principal inflows, causing credit risk to transform directly into acute liquidity deficits [Xamdamov 2020: p. 5]. In most banks, internal liquidity stress testing mechanisms are not linked to macroeconomic scenarios, funds transfer pricing, and contingency funding plans within a single digital chain.

The purpose of the study is to substantiate priority directions for improving the efficiency of liquidity risk management mechanisms in commercial banks through stress testing and to develop performance assessment indicators. To achieve this goal, regulatory documents, the Central Bank's review, and scholarly studies were analyzed. The research results are as follows.

First, the institutional governance mechanism of liquidity stress testing is substantiated across four structural elements: a clear accountability chain (Supervisory Board Risk Committee, Asset and Liability Management Committee – ALCO, independent risk management division, and internal audit); a unified taxonomy linking national and foreign currency cash flows across behavioral maturity buckets; direct integration of stress test scenarios with the Contingency Funding Plan (CFP); and actuarial and econometric staff capacity [PF-5992 2020; Central Bank 2026]. A "closed-loop governance sequence" is proposed for scaling the mechanism: a bank transitions to dynamic stress-based limit management once these four institutional elements are established.

Second, for methodological and digital risk monitoring, the "scenario matrix – cash flow survival horizon – compensatory buffer" principle is proposed: macroeconomic shock parameters (GDP growth, inflation, exchange rate, and borrower debt burden) as well as on- and off-balance-sheet obligations are consolidated within a single automated software module [Elmirzayev et al. 2023: p. 248]. Across each maturity bucket (from 1



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day to 365 days), deposit run-offs, loan repayment delinquencies, and market haircuts on High-Quality Liquid Assets (HQLA) are calculated under three severity scenarios (baseline – 15 percent, moderate – 30 percent, severe – 50 percent), while manually entered data are automatically flagged as "unverified."

Third, five quantitative indicators measuring the efficiency of the stress-testing-based liquidity management mechanism are proposed: the share of on- and off-balance-sheet cash flows mapped to the automated maturity ladder; the stressed Liquidity Coverage Ratio under the severe macro-scenario (regulatory minimum – at least 100 percent, actual sector level – 208 percent [Central Bank 2026]); the Net Stable Funding Ratio in foreign currency; the share of stress indicators updated automatically in real time; and the proportion of ALCO funding and limit decisions substantively adjusted based on stress test reports. Generating at least 70 percent of stress indicators automatically as a threshold condition for transitioning to advanced dynamic liquidity management is the author's proposal and requires empirical testing.

Fourth, an operational mechanism linking stress test outcomes to the bank's funding pricing and lending decisions is proposed: maintaining a "Liquidity Stress-Resilience Dashboard" in the treasury system and mandating the attachment of a preliminary stress test impact conclusion when approving large corporate deposits and credit lines. This mechanism serves to proactively contain the adverse spillover of macroeconomic shocks onto bank solvency and payment capacity [Central Bank 2026; Xamdamov 2020: p. 7].

CONCLUSION

In conclusion, in our view, improving the efficiency of liquidity risk management mechanisms in commercial banks through stress testing requires shifting the primary focus from recording static prudential ratios to building an integrated institutional governance chain and a unified digital data infrastructure that jointly model credit and



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liquidity shocks. Although system-wide LCR (208 percent) and NSFR (120 percent) remain high, the Central Bank’s macro stress test demonstrates rising pressure on capital and cash flows under severe adverse scenarios [Central Bank 2026]. The study achieved its stated objective: the closed-loop governance sequence, the integrated stress testing principle, and five mechanism efficiency indicators were substantiated.

The findings rely on secondary data analysis, while the 70 percent automation threshold value represents the author’s proposal, testing which across several commercial banks constitutes a task for future research. Implementing the proposed indicators and governance mechanisms will transform bank liquidity risk management into a shock-resilient and observable operational process.

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