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Methodological Aspects and Distinctive Features of the Risk Management Mechanism of Commercial Banks

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In the modern financial system, commercial banks play a crucial role in mobilizing financial resources, ensuring payment circulation, and supporting economic growth¹. However, banking activities are inherently associated with various types of risks, including credit, market, liquidity, and operational risks. Ineffective management of these risks can threaten not only the stability of individual banks but also the resilience of the entire financial system.

Therefore, the development and application of effective risk management mechanisms have become a key priority for commercial banks. Risk management involves identifying, assessing, monitoring, and mitigating potential risks in order to ensure financial stability, profitability, and compliance with regulatory requirements². The methodological approaches and distinctive features of these mechanisms vary depending on the bank's size, strategy, regulatory environment, and level of technological development³.

This study focuses on the methodological aspects and specific characteristics of risk management mechanisms in commercial banks, highlighting their importance in enhancing financial sustainability and adapting to the dynamic and uncertain conditions of the global financial market.

This section analyzes the methodological aspects and distinctive features of risk management mechanisms in commercial banks and presents the main results of the study. Effective risk management is based on a systematic approach that integrates risk identification, measurement, monitoring, and control within the overall management framework of a bank.

The analysis shows that credit risk remains the most significant type of risk for commercial banks, as lending activities constitute a major share of their assets. Banks apply various quantitative and qualitative methods, such as credit scoring, internal rating systems, and stress testing, to assess borrowers' creditworthiness and minimize potential losses. The implementation of these methods contributes to improving asset quality and reducing non-performing loans. Market risk management focuses on mitigating losses arising from changes in interest rates, exchange rates, and financial instrument prices. The results indicate that commercial banks increasingly rely on advanced analytical tools, including Value at Risk (VaR) models and sensitivity analysis, to

¹ Mishkin, F. S. *The Economics of Money, Banking and Financial Markets*

² ISO 31000 – Risk Management Standard

³ OECD banking studies

measure market risk exposure. These tools enable banks to make informed decisions and enhance their resilience to market volatility.

Liquidity risk analysis demonstrates that maintaining an optimal balance between assets and liabilities is essential for ensuring uninterrupted financial operations. Banks use liquidity ratios, cash flow forecasting, and contingency funding plans to manage liquidity risk effectively. The findings suggest that strong liquidity management practices improve banks' ability to withstand unexpected shocks.

Operational risk management addresses losses resulting from internal processes, human factors, and external events. The analysis reveals that banks are strengthening internal controls, improving information systems, and adopting risk culture practices to reduce operational risk. As a result, overall operational efficiency and regulatory compliance are enhanced. Overall, the results confirm that the effectiveness of risk management mechanisms in commercial banks largely depends on the integration of methodological approaches, regulatory requirements, and modern technologies. Strengthening these mechanisms contributes to financial stability, sustainable growth, and increased competitiveness of commercial banks in the financial market.

Table 1. Structure of Risks in Commercial Banks⁴

Risk Type	Risk Level (%)
Credit Risk	45
Market Risk	25
Liquidity Risk	20
Operational Risk	10

The table presents the proportional distribution of the key risk categories typically encountered by commercial banks-credit, market, liquidity, and operational risks-expressed as percentage shares. The results indicate that credit risk constitutes the largest portion of the overall risk structure, which can be explained by the fact that lending operations generally form the dominant share of banks' asset portfolios. Because banks earn a substantial part of their income through loans, they are highly exposed to borrower-related uncertainties such as repayment delays, defaults, deterioration in collateral value, and adverse changes in borrowers' financial conditions. Consequently, the high share of credit risk highlights the need for strong credit policies, effective borrower screening, portfolio diversification, and continuous monitoring of loan quality.

The table also shows that market risk represents a significant component of the overall risk profile. This type of risk arises from fluctuations in interest rates, exchange rates, and market prices of financial instruments. Market risk becomes particularly relevant for banks with foreign currency positions, trading activities, and maturity mismatches between assets and liabilities. If market conditions become volatile, banks may face valuation losses, reduced interest income, or unexpected impacts on capital adequacy. Therefore, market risk requires continuous measurement and control through risk limits, hedging, sensitivity analysis, and stress-testing techniques.

In addition, liquidity risk accounts for a substantial share, emphasizing the importance of maintaining sufficient liquid resources and stable funding. Liquidity risk reflects a bank's ability to meet its short-term obligations-such as deposit withdrawals, settlement payments, and interbank liabilities-without suffering excessive costs or forced asset sales. Even profitable banks can experience distress if liquidity is not managed properly, especially during periods of financial instability or sudden deposit outflows. As a result, liquidity risk management depends on effective

⁴ Compiled by the author based on Basel Committee on Banking Supervision (BCBS) guidelines and banking risk management literature.

asset-liability management (ALM), liquidity buffers, cash-flow forecasting, and contingency funding plans.

Finally, although operational risk appears relatively smaller in percentage terms, it remains strategically important because its consequences can be severe. Operational risk stems from failures in internal processes, human error, system breakdowns, fraud, cyber incidents, or external disruptions. While it may be less visible in aggregate risk shares, operational risk can lead to sudden losses and reputational damage, potentially undermining customer trust and regulatory compliance. This reinforces the importance of strong internal controls, reliable information systems, staff training, audit functions, and a well-developed risk culture.

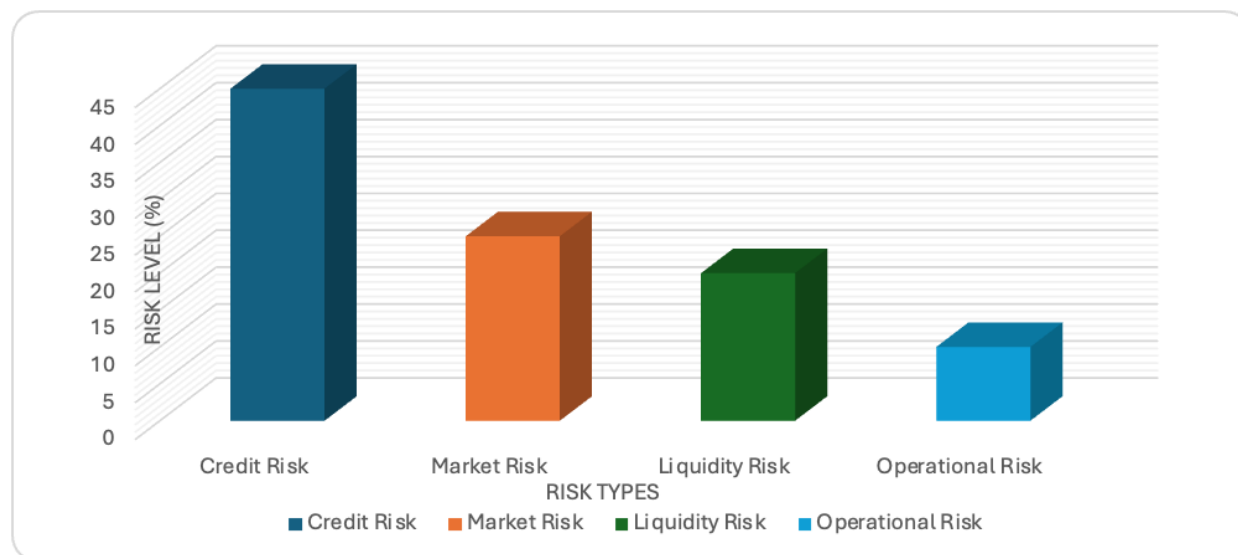


Figure 1. Structure of Risks in Commercial Banks⁵

Figure 1 presents the proportional distribution of major risk categories typically faced by commercial banks—credit, market, liquidity, and operational risk—expressed as percentage shares. The chart indicates that credit risk (45%) represents the largest component of the overall risk structure. This outcome is consistent with the fact that lending operations usually constitute the dominant share of bank assets; therefore, any deterioration in borrower repayment capacity, growth in non-performing loans, or inadequate collateral coverage directly increases the bank’s exposure and potential losses. For this reason, credit risk management is often the primary focus of banks’ internal control systems and regulatory supervision, supported by tools such as borrower screening, credit scoring, internal rating systems, portfolio diversification, and stress testing.

The figure also shows that market risk (25%) is the second-largest category. Market risk reflects potential losses arising from adverse movements in interest rates, exchange rates, and securities prices. This risk is particularly relevant for banks with active trading portfolios, foreign currency positions, or maturity mismatches that expose earnings and capital to changing market conditions. Common mitigation approaches include setting risk limits, hedging strategies, Value-at-Risk (VaR) analysis, sensitivity analysis, and scenario-based stress testing.

Liquidity risk (20%) occupies a substantial share as well, highlighting the importance of maintaining sufficient liquid assets and stable funding sources. Liquidity risk refers to the bank’s inability to meet short-term obligations—such as deposit withdrawals or payment settlements—without incurring significant costs or forced asset sales. Effective liquidity risk management

⁵ Prepared by the author based on internationally recognized banking risk classifications and prudential guidance, including the Basel Committee on Banking Supervision (Basel II/III framework) and standard risk management textbooks (e.g., Hull, *Risk Management and Financial Institutions*; Saunders & Cornett, *Financial Institutions Management*).

typically relies on liquidity ratios, cash-flow forecasting, asset-liability management (ALM) practices, and contingency funding plans designed to withstand sudden shocks.

Finally, operational risk (10%) is the smallest share in the presented structure, but it remains strategically important because it can generate unexpected losses and reputational damage. Operational risk results from failures in internal processes, human errors, system breakdowns, fraud, or external events (including cyber incidents). Banks usually address this risk through internal controls, compliance procedures, staff training, audit functions, cybersecurity measures, and the development of a strong risk culture.

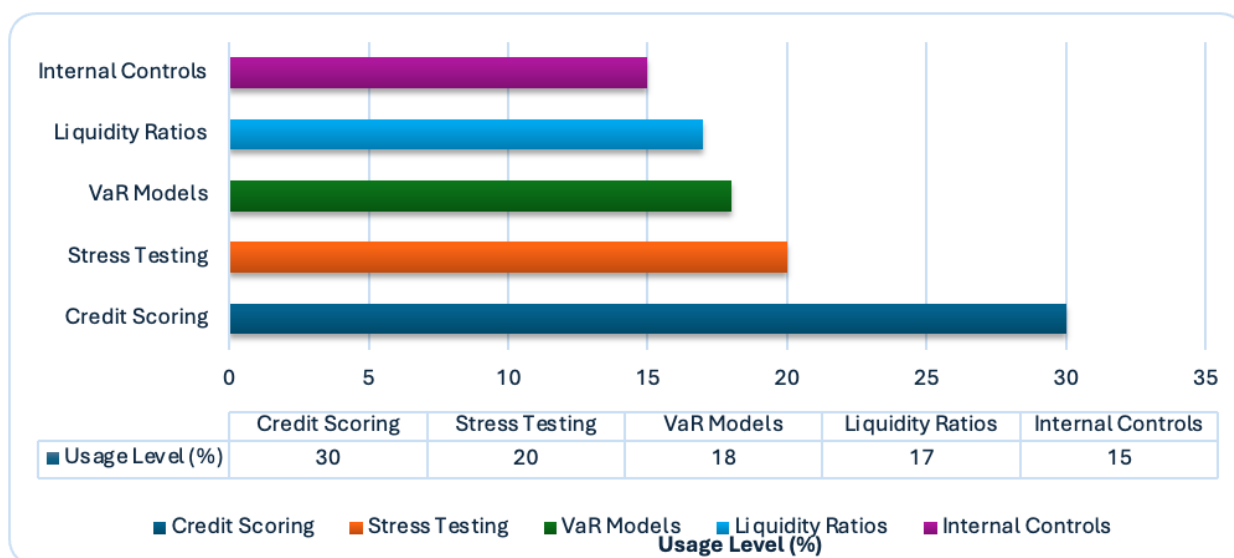


Figure 2. Use of Risk Management Tools in Commercial Banks⁶

Figure 2 illustrates the relative level of usage of key risk management tools in commercial banks, expressed as percentages. The distribution reflects how banks typically prioritize instruments and methods to identify, measure, monitor, and mitigate different categories of risk in their daily operations.

The chart shows that Credit Scoring (30%) is the most widely used tool. This outcome is expected because credit risk generally represents the largest share of banks’ total risk exposure. Credit scoring enables banks to evaluate borrowers’ repayment capacity using quantitative indicators (income, debt burden, credit history, collateral quality) and qualitative factors (employment stability, sector risk, business performance). As a result, credit scoring supports faster and more consistent lending decisions, improves loan portfolio quality, and helps reduce the probability of non-performing loans.

Stress Testing (20%) appears as the second most applied method. Stress testing is crucial for assessing how a bank’s financial condition might change under extreme but plausible scenarios—such as economic recession, sharp currency depreciation, rising interest rates, or sudden deposit withdrawals. The significant usage level indicates that banks increasingly integrate stress testing into strategic planning, capital adequacy assessment, and risk appetite frameworks. In supervisory practice, stress testing is also used to evaluate resilience and to ensure banks maintain sufficient buffers during adverse conditions.

Value at Risk (VaR) Models (18%) represent another widely used approach, particularly related to market risk measurement. VaR provides an estimate of potential losses over a specified time

⁶ Prepared by the author based on widely applied banking risk management practices described in international supervisory guidance and professional standards, including Basel Committee on Banking Supervision (Basel II/III principles), ISO 31000 (Risk Management Guidelines), and standard banking risk management literature (e.g., Hull, *Risk Management and Financial Institutions*; Saunders & Cornett, *Financial Institutions Management*).

horizon at a given confidence level, supporting decisions on trading limits, portfolio diversification, and hedging strategies. The prominence of VaR models in the figure suggests that banks are applying more advanced quantitative techniques to monitor exposures arising from interest rate movements, exchange rate volatility, and changes in market prices of securities.

Liquidity Ratios (17%) also hold an important share. Liquidity ratios (such as liquidity coverage-type indicators and other regulatory liquidity metrics) help banks monitor their ability to meet short-term obligations without incurring excessive costs. Their usage highlights the fact that liquidity management is a key determinant of financial stability. Banks that actively monitor liquidity ratios and cash-flow projections are better positioned to respond to unexpected shocks, maintain customer confidence, and avoid forced asset sales.

Finally, Internal Controls (15%) have the lowest proportion among the tools shown, but they remain essential for reducing operational risks and ensuring regulatory compliance. Internal controls include policies, procedures, audits, segregation of duties, IT-security measures, and compliance monitoring. Although the figure assigns a smaller share to internal controls, this does not imply low importance; rather, internal controls function as a continuous, system-wide “foundation” that supports all other risk management activities.

Overall, Figure 2 indicates that commercial banks rely most heavily on tools linked to credit risk assessment and resilience testing, while also employing quantitative market risk models, liquidity monitoring instruments, and internal governance mechanisms. The combined use of these tools strengthens the bank’s ability to manage risk comprehensively and enhances stability in a changing financial environment.

Table 2. Main Risk Management Tools Used by Commercial Banks⁷

Risk Management Tool	Purpose of Use	Usage Level (%)
Credit Scoring	Assessment of borrowers’ credit risk	30
Stress Testing	Evaluation of extreme risk scenarios	20
VaR Models	Measurement of market risk exposure	18
Liquidity Ratios	Control of liquidity position	17
Internal Controls	Reduction of operational risks	15
Total		100

The table summarizes the main risk management tools applied by commercial banks, their primary purposes, and their relative levels of usage expressed in percentage terms. The distribution indicates that credit scoring (30%) is the most extensively used tool, reflecting the central role of credit risk in banking activities. By systematically assessing borrowers’ creditworthiness, credit scoring supports informed lending decisions and contributes to improving the quality of loan portfolios.

Stress testing (20%) represents the second most commonly applied tool and is mainly used to evaluate the potential impact of extreme but plausible adverse scenarios on a bank’s financial position. Its significant usage level highlights the growing importance of forward-looking risk assessment, capital planning, and resilience analysis in both internal risk management and regulatory supervision.

Value at Risk (VaR) models (18%) are widely employed to measure market risk exposure, particularly in relation to fluctuations in interest rates, exchange rates, and financial asset prices.

⁷ Compiled by the author based on international banking risk management standards and supervisory guidelines, including the Basel Committee on Banking Supervision (Basel II/III framework), ISO 31000 Risk Management Guidelines, and widely used academic literature on financial institutions and risk management (e.g., Hull, *Risk Management and Financial Institutions*; Saunders & Cornett, *Financial Institutions Management*).

The use of VaR models enables banks to quantify potential losses within a defined confidence interval, supporting risk limit setting and portfolio management decisions.

Liquidity ratios (17%) play a crucial role in controlling a bank's liquidity position and ensuring its ability to meet short-term obligations. Regular monitoring of liquidity indicators helps banks maintain financial stability, manage funding risks, and respond effectively to unexpected cash outflows.

Finally, internal controls (15%) are primarily aimed at reducing operational risks arising from internal process failures, human error, system deficiencies, or external events. Although internal controls show the lowest usage percentage in the table, they form a fundamental component of an effective risk management framework by supporting compliance, transparency, and operational efficiency.

Overall, the table demonstrates that commercial banks rely on a combination of quantitative models, analytical tools, and governance mechanisms to manage different types of risks. The integrated use of these tools enhances banks' ability to identify vulnerabilities, mitigate potential losses, and maintain long-term financial stability.

The study examined the methodological aspects and distinctive features of risk management mechanisms in commercial banks, with a particular focus on the structure of major risks and the practical application of risk management tools. The analysis confirms that banking activity is inherently exposed to multiple types of risk, among which credit risk plays a dominant role. This is largely due to the significant share of lending operations in banks' asset portfolios, making borrower default risk a primary source of potential losses.

The findings also indicate that market and liquidity risks represent substantial components of banks' overall risk exposure. Fluctuations in interest rates, exchange rates, and financial market prices, as well as potential mismatches between assets and liabilities, can significantly affect banks' financial stability. Although operational risk accounts for a smaller share in quantitative terms, it remains strategically important due to its potential impact on operational continuity and institutional reputation.

Furthermore, the results demonstrate that commercial banks actively apply a range of risk management tools, including credit scoring, stress testing, Value at Risk (VaR) models, liquidity ratios, and internal control systems. The prevalence of these tools reflects an increasing reliance on both quantitative methods and governance-based mechanisms. Overall, the effectiveness of risk management depends on the integration of methodological approaches, regulatory requirements, and modern analytical techniques within a comprehensive risk management framework.

Based on the results of the study, the following recommendations can be proposed to enhance risk management mechanisms in commercial banks:

1. Strengthen credit risk management by improving credit assessment models, expanding the use of internal rating systems, and regularly monitoring loan portfolio quality to reduce the level of non-performing loans.
2. Enhance stress testing practices by incorporating more comprehensive and forward-looking macroeconomic scenarios, which would allow banks to better assess their resilience under adverse conditions.
3. Develop market risk measurement techniques through the wider use of advanced models such as VaR and sensitivity analysis, while complementing them with qualitative judgment and scenario analysis.
4. Improve liquidity risk management by strengthening asset–liability management practices, maintaining adequate liquidity buffers, and regularly updating contingency funding plans.

5. Reinforce internal controls and risk culture by investing in staff training, improving information systems, and promoting accountability and transparency across all levels of the organization.
6. Align risk management practices with international standards such as the Basel III framework and ISO risk management principles, ensuring compliance with regulatory requirements and enhancing overall financial stability.

In conclusion, the consistent and integrated application of advanced risk management mechanisms will enable commercial banks to mitigate potential losses, improve financial resilience, and ensure sustainable development in an increasingly complex and volatile financial environment.

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