Nat. Volatiles & Essent. Oils, 2021; 8(5): 9225-9248

EMPIRICAL RESEARCH ON THE IMPACT OF FINANCIAL RESOURCESON ENSURING THE ECONOMIC SECURITY OF BANKS

ABDULLAEV ALTINBEK YANGIBAYEVICH[1], ABDULLAEV GUZAL ALTINBEKOVNA[2]

Abstract:

Need to study methods of influencing the optimal structure and turnover of banking resources on economic security of the bank based on economic and mathematical models and algorithms. The purpose of the article is to develop scientific and methodological support for achieving economic security using financial instruments of bank management in a changing external environment and internal wednesday. Economic and mathematical methods are used to develop this problem. methods and techniques of system analysis. The article examines the impact of the structure of bank resources on the provision of economic security of the bank, in order to function taking into account the influence of external and internal factors, i.e. to perform all functions regularly and in a timely manner, and also by simulating the parameters of the equations, it becomes possible to forecast the bank's economic security in the future. Conclusions: to ensure the safety of banks ' functioning, it is necessary to create a program for the effective use of their funds based on optimizing their turnover and structure banking resources what is one of the main areas of banking management that requires close attention when ensuring the economic security of banks is the management of banking risks, which allows you to avoid making inadequate management decisions and based on the results of the study, relevant forecast recommendations and suggestions were prepared for decision makers, the adjustment must be taken into account banking services. Improvements: in this study attempts to create a system of indicators for assessing the provision of economic security of the bank. Based on an empirical study, proposals are put forward from the point of view of the existing form of banking services and the use of information technologies in order to determine level security features economic security of the bank. This will help to better prepare the banking system for new challenges.

Keywords: *Structure banking resources, Provision economic security, Financial sustainability, Economic insolvency, Economic threat, Banking risks.*

INTRODUCTION

The problem of studying the impact of the structure of banking resources on ensuring the economic security of the bank is one of the most relevant areas of research in the banking sector of the economy of Uzbekistan. Much attention has been paid to research on this problem at all stages of the bank's development.

The economic security of a bank is a complex, multi-faceted concept that depends on many factors that arise both inside and outside the bank. Ensuring economic security is possible only when the bank develops and implements an interconnected asset, liability and risk management process. First of all, we are talking about the need to form an optimal structure banking resources and assess its impact on the bank's financial condition, which leads to the adoption of various management decisions that can

[1] *Doctor of sciences, professor, Professor of Jizakh Polytechnic Institute, Uzbekistan, email id: oltinbek60@gmail.com*

[2] *Independent Researcher, Tashkent State University of Economics, Uzbekistan, email id: guzalabdullayeva88@gmail.com*

disrupt its stability and threaten economic security. To ensure the safe functioning of banks, it is necessary to form a program for the rational and efficient use of their funds based on the optimization of the structure banking resources This is one of the main areas of banking management. Another aspect of banking management that requires close attention when ensuring the economic security of banks is the management of banking risks, which allows you to avoid making inadequate management decisions.

Global and domestic economic experience shows that it is necessary to create a model for ensuring the economic security of banks that would be resistant to banking risks and actively stimulate the socio-economic development of banks. Ensuring the economic security of banks is not only a fundamental factor in the effective functioning of the banks themselves and a strategy for their medium-term development in the banking management system, but also a guarantee of the safe functioning of municipalities, regions and the state as a whole.

A bank must have a certain amount of money, i.e. resources, to support its business activities. Due to this development of the economy, the problem of finding and attracting banking resources is of paramount importance for the intensive development of banks. In this regard, the problem of the formation and development of the financial market and the formation of the resource base of banks is of great importance. Bank resources are the aggregate of the bank's own funds, borrowed and borrowed funds of legal entities and individuals on a repayable basis, which are placed by the bank in order to comply with legal requirements and generate income. The increase in banking resources strengthens the country's monetary fund. In addition, a large place is given to the bank and in the provision of economic security pot.

The current state of development of banks in Uzbekistan is characterized by a period of analysis and elimination of shortcomings and major omissions in the provision of financial services. Economic security pot. Reasons for this software backlog economic security these factors include a low level of work on the development of banking resources, a threat to economic security, imperfect forecasting, violation of market principles and management. economic security of banks imperfect conditions of banking resources and bank risk management systems, weak resource base, economic insolvency of clients, lack of the required volume of long-term deposits, under-capitalization, etc. Also, the crisis-forming processes that continue in the banking sector are aggravated by the low level of development of banking competition, the underdevelopment of the financial market, lagging behind international standards, and insufficient development of modern banking technologies. Negative processes lead to a weakening of regulation of financial and credit relations in the banking sector.

At the same time, the negative processes revealed the need to modernize the methods of ensuring the economic security of the banking sector. Due to the lack of effectiveness of existing methods, the state of financial stability of the bank has significantly worsened, and the aggressive banking policy pursued by commercial banks has contributed to the formation of an additional group of factors of bank instability. However, ensuring the economic security of the banking sector requires addressing such serious problems as the weak resource base, the economic insolvency of customers, the lack of the necessary volume of long-term deposits and low public confidence in banks, the small share of long-term bank lending and insufficient financing of the real sector of the economy, the poor quality of the loan portfolio and the growth of risks and imbalances in banking activities.

The implementation of the open banking policy of the Central Bank of the Republic of Uzbekistan, as well as the interdependence of banking structures in different countries, make it necessary to improve the optimal banking system. Structure of bank resources It focuses on ensuring the economic security of the banking sector and its counteraction to external and internal threats. However, the development of mechanisms for improving economic security due to the impact of external and internal environmental factors has not received sufficient coverage. This indicates not only the high relevance of the research topic, but also the practical significance of improving the optimal one.Structure and turnover of banking resources on ensuring the economic security of the banking sector of Uzbekistan in increasing the stability of the real sector of the economy and the need to form an integrated approach to managing economic security in bank management, taking into account current business trends.

LITERATURE REVIEW :

At the present stage of the development of economic relations, the priority direction for the banking sector of the economy is the issues of business security. Some aspects of ensuring the economic security of economic entities are presented in the works of scientists, for example, Eshtokin S. (2005) conducted a study on the development of recommendations for the construction of economic security monitoring systems based on a preventive approach to credit risk management, ensuring the minimization of the latter. The study proves the need to use credit monitoring tools to improve the credit policy and operational activities of a commercial bank; developed a methodology for economic security analysis for effective system analysis and strategic decision-making in the field of credit risk management and ensuring the economic security of a commercial bank; the algorithm of economic security management is substantiated, which allows to unify managerial actions in the development and implementation of credit policy and credit operations; a model of stress testing of economic security of a commercial bank in the implementation of credit operations is developed; an intelligent automation platform for monitoring credit risks is developed and tested.

Alenin V. (2007) studied the relations developing in the banking sector in the process of ensuring the economic interests of the individual, business entities and society expressed by the state. The main attention is paid to the economic aspects of the banking security system, technical and technological, informational, legal and other similar aspects of the security of the banking system. The study has developed an expanded classification of threats to the economic security of the regional banking sector, which is distinguished by the introduction of additional signs and groups of threats (primary and secondary, direct and indirect, general and specific, long-term and short-term, hidden and explicit), as well as ranking the latter by degree of significance; the dual role of a regional bank in the system of ensuring the economic security of the banking sector is determined, which consists, firstly, in ensuring its own economic security and, as an element of the system, the security of the entire banking system of Russia, and secondly, in a targeted regional orientation that contributes to the development of the region's economy; a method has been developed for assessing the dynamics of the economic security of the banking sector in the region, the distinctive feature of which is the orientation on the nature (positive or negative) and the pace of dynamics of its main indicators in the studied region compared with other subjects of the Federation.; the methodology of "graphical analysis of the security of the banking sector of the region" has been developed, a characteristic

feature of which is the use of two-dimensional graphs (sequential analysis of the position of banks based on pairwise characteristics), allowing to consider the performance indicators of a credit institution in a complex

Ilinich E. (2004) conducted a study on the methodological foundations and principles of economic security of banking activity, the development of proposals and recommendations for the formation of mechanisms to ensure it in modern conditions of increasing and transformation of threats and risks. The study has developed a model of bank risk management based on their new classification, which allows to determine the relationships and stages of their management in order to ensure the economic security of banking activities; Proposals have been developed to improve information security as a key link in ensuring economic security, involving a set of measures to protect databases, information repositories of the bank, information transmission channels and automated banking systems; trends in criminalization of the banking sector of Russia and the main directions of ensuring economic security in the banking sector in connection with the increasing threats from organized crime have been identified.; proposals have been developed to create an organizational and managerial mechanism for ensuring the economic security of banking activities based on the developed conceptual provisions for ensuring the security of banking activities; the methodological foundations of the formation of a mechanism for overcoming the criminalization of relations in the banking sector to counteract the legalization of proceeds from crime and the financing of terrorism are substantiated and proposed.

However, many issues of ensuring the security of the banking system at the state level remain insufficiently investigated So far, the very concept of "security of the banking system" has not been developed, its specifics and composition of threats that can cause significant damage to it have not been sufficiently investigated, approaches to analysis, criteria and indicators for assessing the level of economic security of the banking system, as well as their marginal (threshold) values, exceeding which leads to the destruction of this system, have not been developed. The problems of theoretical substantiation of the concept of formation of a system of regulation of safe functioning and development of banks require special attention.

METHODOLOGY :

The development of economic aspects of the banking sector to market relations implies the possibility of various forms of ownership of turnover funds. Under these conditions, the development of effective management decisions is impossible without the use of appropriate financial tools that allow performing a systematic analysis and shaping the development of the turnover and structure of banking resources both in the primary links and in the banking system as a whole. In modern conditions, the financial and credit value of justifying the development strategy of the banking sector in order to solve the problem of economic security of the bank is significantly increasing taking into account the impact of parameters (Abdullaev A., 2019).

The study of the banking resources market situation has shown that the banking sector plays an important role in solving the resource problem. Therefore, in the long term, an increase in the volume of banking resources should be envisaged both by deepening the intensification of turnover and

structure, and by taking drastic measures to improve the composition and structure of banking sector resources and improve the productive qualities of cash.

Effective implementation of these procedures is associated with the use of financial tools that take into account the qualitative characteristics of the structures of banking resources, the principles of market relations. One of the most efficient financial tools for solving these problems is mathematical modeling methods. They allow multivariate calculations on a PC based on the model, which makes it possible to identify certain reserves for increasing the volume of funds in the banking sector.

Solving such problems is particularly relevant in modern conditions, where the economic security of the banking sector of Uzbekistan does not fully meet the requirements of the recommendations of the Basel Committee on Banking Supervision and the Financial Action Task Force on Money Laundering. Overall, the results of the retrospective analysis economic security data on various types show that the development and implementation of algorithms in them is of fundamental importance. In this regard, there is a great interest in the model and algorithm of perspektivnogo functioning banking sector, taking into account economic security in a two-level system "branch – main office". To implement these tasks, a system of models and algorithms for the safe development of the banking sector should be developed on a PC.

It is known that intensive growth in the volume of cash flow is ensured by improving the qualitative composition and level of profitability of bank resources. At the same time, scientific justification of the turnover and structure of banking resources plays an important role. As already noted, the turnover and structure of banking resources is the core of the main strategy of the banking sector of Uzbekistan.

Our goal is to systematize the interrelated elements of the process of reproduction of banking resources generated in banks. To simplify the mathematical description of the turnover and structure of bank resources, we will consider the following reproduction groups by sources of funds: own funds; household deposits; loans received by banks from the Central Bank; bank accounts; interbank loans; funds received from economic entities; debt obligations issued and other liabilities. Characteristics of each reproduction group: urgency, payment, repayment, security, target use in this group, etc.

The long-term development of the banking sector's cash turnover leads to the implementation of a complex of forecast-analytical, balance-optimization calculations, which form the organizational basis for the introduction of banking sector management systems aimed at increasing the profitability of banking resources. To do this, it is necessary to ensure: improving the efficiency of the banking sector through the introduction of methods of reproductive and parallel absorption crossing; justification of the effectiveness of organizational decisions made, etc.

The organization and management system of the banking sector is based on various directions of cash turnover, taking into account various methods of expanding the structure of banking resources. In general, increasing the profitability of the bank's financial resources is carried out in two ways: reproduction by attracting money; reproductive and parallel-absorbing crossing.

Raising money together with the reproductive crossing of the structure of banking resources allows for the improvement of the banking sector. At the same time, in the overwhelming majority of cases, intensive reproduction occurs simultaneously with a qualitative improvement in the turnover and structure of the bank's banking resources. In the case of reproductive and parallel-absorbing crossbreeding, extended reproduction occurs mainly due to the improvement of the system of

maintenance of banking resources. The principles of market relations presuppose the transition of banks to an intensive path of reproduction, which allows them to increase profitability and reduce the cost of reproduction 1 sum a banking sector resource (Abdullaev A., 2019).

In a market economy, there is a real opportunity to implement in the banking sector a system of incentives to increase the efficiency of the turnover of banking resources. To do this, the bank's internal settlement and external economic relations should be strengthened , a system of management and incentives should be implemented, which together contribute to improving the efficiency and increasing the turnover of the bank's banking resources.

Optimization of the turnover and structure of the banking resource allows you to: determine the composition and structure of banking resources in the bank; maximize the profit from the turnover and sale of banking resources. For the entry economic and mathematical model of turnover and structure of bank resources, we will introduce the following symbols: ***indexes****:* j_1, J_1- index and a number of signs that the movement of bank resources; j_2, J_2- index and many production groups of bank resources; μ **-** month reporting period; t – the number of the duration of the various elements (accommodation, service period, the payment, repayment); i – the number of the month of the forecast period; α –repayment rate; β –coefficient of the enlarged part of the involved resources; k_1 – the rate of renewal of borrowed resources; k_2 –factor updates its own resources; ***production groups and subgroups of liability****:* WS – return tool on banking resources; DS – deposit facility; SS – own tool; OS – updated tool; CI - updated the tool to the beginning of the forecast period; SP-overdue to the beginning of the forecast period, the updated tool; OR - the updated tool in the composition of own funds; SO – beyond the updated tool; PS – deposit facility by the beginning of the forecast period; NS –deposit facility, located in the service period to the beginning of the forecast period; SD - structural share of production groups of bank resources; RS – deposit facility, located in the reporting period; VS – return to the beginning of the forecast period, escrow agent; ***signs of movement of Bank resources****:* NP – the beginning of the forecast period; PD – admission of the enlarged section of bank resources; PV – internal transfer from other groups; PK – intake side; PP – incoming part of the turnover of bank resources; PG – translation in other groups; PS – implementation on the side; NO - no updated tools in the forecast period; RP - expenditure part оборотаof bank resources turnover; KP-end of the forecast period; ***characteristics of signs of movement of income and expenses of the liability:*** R– the resources of the bank; DC_{pr} - net interest income; DV_{pr} - total interest income; RV_{pr} - total interest expense; DP_{vu}- net interest income after provisions for possible losses; VU_{oc} - assessment of possible losses - loans and advances; DI_{pr} - total income; DV_{bp} - total noninterest income; DO_{or} - net income before incurring operating expenses; RJ_{bp} - total noninterest expenses; DN_{cd} - net income excluding income tax; RV_{op} - total operating expenses; PN_{oc} - assessment income tax; DU_{op} - net income (loss) for the period; ***the parameters of the circulation of Bank resources****:* V - duration of maintenance of repayable bank resources; W - duration of maintenance of bank resources in the reproduction group; B - duration of placement; S - duration of the service period; T - duration of the forecast period. Then the economicand mathematical model of the turnover and structure of the bank's banking resources is formalized as follows.

1. Establishing the relationship of time parameters turnover and structures banking resources

$$V \le W^{WS} < S < B < T;$$

$$T < W^{OS} \le W^{OR} \le W^{SO} \le W^{SS};$$

$$Z_1 = S + B;$$

$$Z_2 = S + B + V;$$

$$Z_3 = B + V;$$

$$T < B + V + W^{WS};$$

$$Z_1 < T < 2Z_1.$$

2.Initial stateproduction groups:

$$DS^{NP} = \sum_{t=1}^{B} PS_t + \sum_{t=1}^{S} NS_t + \sum_{t=1}^{V} VS_t$$

$$SS^{NP} = \sum_{t=1}^{W^{SS}} SS_t;$$

$$OS^{NP} = \sum_{t=1}^{W^{SP}} SP_t + \sum_{t=1}^{B} CI_t;$$

$$OR^{NP} = \sum_{t=1}^{W^{OR}} OR_t;$$

$$SO^{NP} = \sum_{t=1}^{W^{SO}} SO_t;$$

$$WS^{NP} = \sum_{t=1}^{W^{WS}} WS_t;$$

3. Forecast banking assets of the liability by signs of movement:

1. Deposit agreement monetary value instrument:

$$DS^{PP} = OS^{PG} + DS^{PK};$$

$$DS^{PG} = \begin{cases} \sum_{t=1}^{V} VS_t + \sum_{t=1}^{B} PS_t\alpha_t^{\mu} + \sum_{t=1}^{S} NS_t\alpha_t^{\mu} \text{ при } Z_3 < Z_2 \leq T, \\ \sum_{t=1}^{V} VS_t + \sum_{t=Z_2-T+1}^{B} PS_t\alpha_t^{\mu} \text{ при } Z_2 > Z_3 > T, \\ \sum_{t=1}^{V} VS_t + \sum_{t=1}^{B} PS_t\alpha_t^{\mu} \, when \, Z_3 \leq T < Z_2; \end{cases}$$

$$DS^{RP} = OS^{PG} + DS^{PS};$$

$$DS^{NO} = OS^{NP} - DS^{RP};$$

$$DS^{KP} = OS^{NO} + DS^{PP};$$

$$DS^{PD} = OS^{NP} + OS^{PG} - \left(\sum_{t=1}^{S} NS_t\alpha_t^{\mu} + \sum_{t=1}^{V} VS_t\right).$$

2. Own cash:

$$SS^{PP} = OR^{PG} + SS^{PK};$$

$$SS^{PG} = SS^{NP}\alpha^{SS};$$

$$SS^{NO} = SS^{NP} - SS^{RP};$$

$$SS^{KP} = SS^{NO} + SS^{PP}.$$

3.3 **Updated monetary value instrument:**

$$\begin{cases} OS^{PD} = DS^{PD}\beta k_1, \\ OR^{PD} = DS^{PD}\beta k_2; \end{cases}$$

$$\begin{cases} OS^{PP} = OS^{PD} + OS^{PK}, \\ OR^{PP} = OR^{PD} + OR^{PK}; \end{cases}$$

$$\begin{cases} OS^{PS} = \sum_{t=1}^{W^{OS}} OS\alpha^{OS}, \\ OR^{PS} = \sum_{t=1}^{W^{OR}} OR\alpha^{OR}; \end{cases}$$

$$\begin{cases} OS^{PG} = \sum_{t=1}^{W^{OS}} CI_t + \sum_{t=W-T+1}^{W^{SP}} SP_t(1-\alpha^{SP}), \\ OR^{PG} = \sum_{t=W^{OR}+T+1}^{W} OR_t(1-\alpha^{OR}); \end{cases}$$

$$\begin{cases} OS^{NO} = \sum_{t=1}^{W^{OS}-T} SP_t(1-{\alpha_t}^{SP}), \\ OR^{NO} = \sum_{t=1}^{W^{OR}-T} OR_t(1-{\alpha_t}^{OR}); \end{cases}$$

$$\begin{cases} OS^{KP} = OS^{NO} + OS^{PP}, \\ OR^{KP} = OR^{NO} + OR^{PP}; \end{cases}$$

3.4. **Aboveupdated monetary value instrument:**

$$SO^{PD} = DS^{PD}\beta(1-k_1-k_2);$$

$$SO^{PP} = SO^{PD} + SO^{PK};$$

$$SO^{PS} = \sum_{t=W^{SO}-T+1}^{W^{SO}} SO_t + \sum_{t=1}^{W^{SO}-T} SO_t\alpha^{SO};$$

$$SO^{NO} = \sum_{t=1}^{W^{SO}-T} SO_t(1-{\alpha_t}^{SO});$$

$$SO^{KP} = SO^{NO} + SO^{PP}$$

3.5. Refundable cash on bank resources:

$$WS^{PP} = DS^{PG} + \sum_{t=1}^{T} {SS_t}^{PG} + WS^{PK});$$

$$WS^{PS} = WS^{NP} + \sum_{t=1}^{V} VS_t{\alpha_t}^{\mu} + \sum_{t=Z_3+W^{WS}-T+1}^{V} PS_t{\alpha_t}^{\mu} + \sum_{t=1}^{T-W^{WS}} {SS_t}^{PG} + {WS_t}^{PK})$$

$$when \begin{cases} V + W^{WS} < B, \\ B + V + W^{WS} > T; > \end{cases}$$

$$WS^{KP} = WS^{NP} + WS^{PV} - WS^{PS}.$$

4. Calculation of the structure of bank resources at the beginning and end of the forecast period:

$$R_{j_1} = \sum_{j_1<j_2} R_{j_1}^{j_2}; \quad SD_{j_1} = R_{j_1}^{j_2} / R_{j_1}.$$

where$j_{j1} < \{NP, KP\}$.

Thus, this model serves as the main one for compiling the structure and turnover of the bank's banking resources for a specific period of time (month, quarter, year). At the same time, we summarize the typical conditions for the reproduction of banking resources and the peculiarities of the movement of reproduction groups in the forecast period, taking into account quantitative and qualitative characteristics .

In addition, for each group of banking resources as a whole, it is important to take into account quantitative and qualitative indicators of cash flow. Within a certain period (time), the initial state of each reproduction group of banking resources is subject to full or partial renewal. Updating a group of banking resources means changing the initial state based on the incoming (purchase from the outside, receipt from other groups) and outgoing (implementation (mobilization) to the side, transfer to other groups) part of the forecast cash flow (Abdullaev A., 2019).

When a group of banking resources is fully updated, the original state of the resources is fully used in the expenditure part of the movement. In case of partial renewal, a certain part of the funds is not used in the expenditure part of the movement and is left in this group.

In practice, when calculating the turnover and structure of the bank's banking resources, the balance sheet method is used. At the same time, a set of standard fundamental conditions for the turnover and structure of banking resources is observed. The following is a list of standard terms of turnover and structure of bank resources.

1. The incoming part of the movement (R_{pp}) of bank resources consists of cash receipts (R_{pd}), transfers from other groups (R_{pv}), and external receipts (R_{pk}):

$$R_{pp} = R_{pd} + R_{pv} + R_{pk}$$

2. The expenditure part of the movement (R_{rp}) of bank resources includes transfer to other groups (R_{rv}) and implementation on the side (R_{rs}):

$$R_{rp} = R_{rv} + R_{rs}$$

3. The amount of bank resources at the beginning of the forecast period (R_{np}) in the incoming part of the movement (R_{pp}) must be equal to the amount of resourcesprojected at the end of the period (R_{kp}) in the expenditure part of the movement of resources (R_{rp}) in this period:

$$R_{np} + R_{pp} = R_{kp} + R_{rp}$$

4. The amount of bank resources transferred to other groups (R_{rv}) of resources is equal to the amount of bank resources received from other groups (R_{pv}) of resources, by the amount of cash received (R_{pd}):

$$R_{rv} = R_{pv} + R_{pd}$$

5. The volume of Bank resources (R_{op}) is the sum of equity (R_{ss}), deposits ($R_{,vn}$), loans received by banks from the Central Bank (R_{kb}), accounts of banks (R_{sb}); interbank loans ($R_{,mk}$), the funds received from business entities (R_{xs}), debt securities issued (R_{do}), other liabilities (R_{bp}) during the forecast period, as well as at the beginning and at the end of the period:

$$R_{op} = R_{ss} + R_{vn} + R_{kb} + R_{sb} + R_{mk} + R_{xs} + R_{do} + R_{bp}$$

6. Interest income (DC_{pr})is calculated on a daily basis based on the annual base period of the number of days per year:

$$DC_{pr} = (R_{op} * SP_{ps} * FD_{kd})/KD$$

whereR_{op}- placed funds in active operations (the amount of bank resources); SP_{ps}- the interest rate; FD_{kd}–the actual number of days; KD - the number of days per year (365 or 366 days per year).

7. Interest expense$\left(RV_{pr\ interest\ expense}\right)$is calculated on a daily basis based on the annual base period number of days per year

$$RV_{pr} = (RS_{br} * SP_{ps} * FD_{kd})/KD$$

WhereRS_{br}- attracted funds in bank resources; SP_{ps}- interest rate; FD_{kd} – actual number of days; KD - number of days per year (365 or 366 days per year).

8. Interest-free income (DV_{bp}) is calculated daily from commissions and fees for all services and interest rates

$$DV_{bp} = KU_{pu} * SP_{ps}/100$$

Where$KU_{pu}$is the commission and fee for all services, $and\ SP_{ps}$is the interest rate.

9. Interest-free expenses (RJ_{bp})are calculated daily from commissions and fees for all services and interest rates $RJ_{bp} = UK_{pu} * SP_{ps}/\ 100$

where$UK_{pu}$is the commission and fee for all services, $and\ SP_{ps}$is the interest rate.

10. The calculation of net income (losses) is calculated in the following way.

10.1. Net interest income $\left(DC_{pr}\right)$ is equal to the difference between interest income (DV_{pr}) and interest expense $\left(RV_{pr}\right)$:

$$DC_{pr} = DV_{pr} - RV_{pr},$$

10.2. Net interest income after deduction of allowance for possible losses(DP_{vu}) equals net interest income$\left(DC_{pr}\right)$and estimate of possible losses-loans and advances(VU_{oc}):

$$DP_{vu} = DC_{pr} - VU_{oc},$$

10.3. Total income $\left(DI_{pr}\right)$consists of net interest income after deducting the allowance for possible losses(DP_{vu}) and all interest-free income(DV_{bp}):

$$DI_{pr} = DP_{vu} + DV_{bp},$$

10.4. Net income before operating expenses (DO_{or})equals total income $\left(DI_{pr}\right)$and total interest-free expenses (RJ_{bp}):

$$DO_{or} = DI_{pr} - RJ_{bp},$$

10.5. Net income excluding income tax (DN_{cd})consists of net income before operating expenses (DO_{or}) and total operating expenses(RV_{op}):

$$DN_{cd} = DO_{or} - RV_{op},$$

10.6. Net income (loss) for the reporting period (DU_{op}) is equalfrom net income excluding income tax (DN_{cd}) and the estimate of income tax (PN_{oc}):

$$DU_{op} = DN_{cd} - PN_{oc,}$$

11. Conditions for expanded and intensive reproduction of banking resources:

$$R_{pp}>R_{pd};\ DC_{kp}>DC_{np};\ DV_{kp}>DV_{np};\ DU_{kp}>DU_{np};\ KU_{kp} > KU_{np};\ R_{op}>R'_{op}$$

whereR_{op} and R'_{op}R'op are the volume of bank resources at the beginning and end of the period (Abdullaev A., 2019).

FINDINGS AND DISCUSSIONS :

A methodology has been developed influence the structure and turnover of banking resources on ensuring the economic security of banks, based on the identification and use of indicators that take into account the influence of internal and external factors, it has been tested on banks, which proves its practical significance.

It is known that the developed economic and mathematical model and algorithms turnover and structure of bank resources they were the basis for creating a system that allows you to implement the tasks of managing the purposeful development of the cash flow process in the bank.

The managed parameters of the model for substantiating the directions of prospective development of the bank's bank resources turnover are: the actual composition and structure of financial resources; dynamics of profitability of bank resources; transfer rates from one short - term and long-term group to another; maximum and minimum limits of content in the structure of individual short-term and long-term groups of bank resources; dynamics of the cost price of a unit of bank resources; differentiated price of bank resources by their sales channels; share of written-off funds (credit, leasing, factoring, etc.) for a short-term and long-term group and receipts of repaid funds in the balance sheet asset; total amount of bank resources in the liability; data describing the amount of funds raised for short-term and long-term groups and specific compositions; labor costs per turnover norms1 sum of monetary funds etc (Abdullaev A., 2019).

Output parameters are generated as a result of the implementation of each model and algorithms, some of which are then used as input for solving subsequent predictive and analytical problems. Based on the principle of information and logical connection and the structure of the system of tasks, we developed an integrated scheme for their implementation on a PC (Fig.1)

The following symbols are used in the figure: 1 – decision maker; 2-database; 3-set of algorithms for analyzing retrospective data on the development of the bank's activities; 4 – balance sheet model of turnover and placement of cash in assets; 5 - economic and mathematical model of bank resources turnover; 6-algorithm for calculating the receipt of redeemed funds in an asset; 7-economic and mathematical model for predicting bank resources turnover; 8 – model for predicting the profitability of bank resources by short – term and long – term groups; 9 – checking the balance and acceptability of results; 10-model results for analyzing and evaluating the consequences of decisions made; 11-economic and mathematical model for predicting the need and implementation of bank resources.

Based on the implementation of the algorithm for calculating the receipt of repaid funds in an asset, the number of repaid funds entering the liability is determined (factoring, credit, leasing, etc.).

The latter indicator, together with the amount of money raised, is used as an input for implementing an economic and mathematical model for optimizing the turnover of banking resources by short-and long-term groups. On the basis of a comprehensive accounting of the influence of the main factors, a forecast of the profitability of bank resources is made for short-term and long-term groups, which, in turn, is used in the implementation of an economic and mathematical model for predicting the turnover and sale of bank resources in liabilities. This model is directly related to the economic and mathematical model of the same problem solved at the level of the republic.

Table 1. Calculation of the banking resource structure for 2020 by joint-stock companies-commercial " Alokabank»[1]

Indicator	Short-term		Long-term		Total
	Million sum	%	Million sum	%	
Availability at the beginning of the year	4 9289 23	42,309 3,30	3 5395 3	18,256 6,70	5 282876 4 0,94
Arrival (attracted):					
Deposits	2 4857 32	21,333	3 3255 8	16,555	2 818290 2 1,84

		8 8 , 2 0		1 1 , 8 0	
for payment to other banks and financial institutions	2 5822 21	2 2 , 1 6 8 7 , 7 0	3 6215 9	2 8 , 9 1 1 2 , 3 0	2 944380 2 2,82
translation from other groups	7 7165 3	6 , 6 2 8 6 , 2 0	1 2353 6	9 , 8 6 1 3 , 8 0	8 95189 6 ,94
issued debt securities	1 9640	0 , 1 7 8 9 , 0 0	2 449	0 , 1 9 1 1 , 0 0	2 2067 0 ,17
Equity	8 6332 5	7 , 4 1 9 1 , 7	7 8142	6 , 2 4 8 , 3 0	9 41167 7 ,30

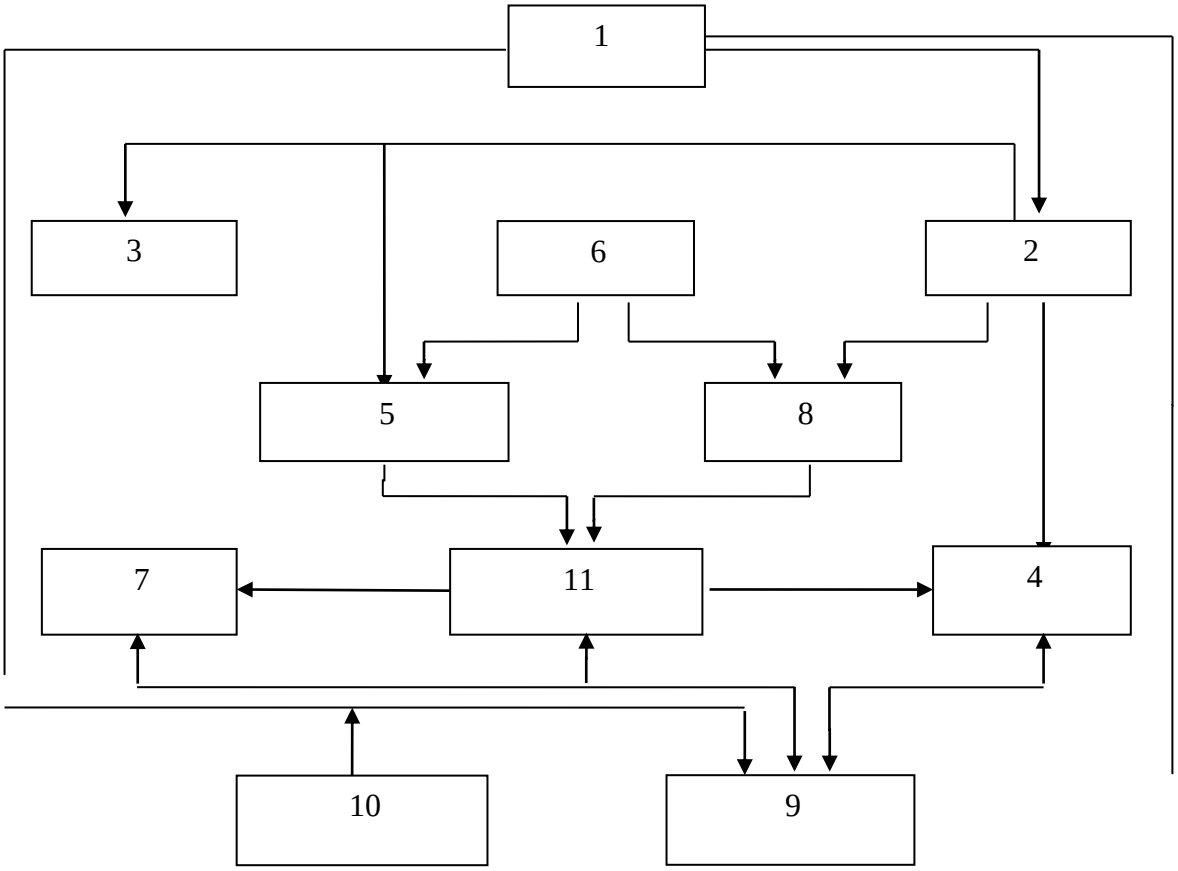
		0			
Total	1 1249 942	1 0 0 8 7 , 1 8	1 6543 27	1 0 0 8 , 8 2	1 290426 9 1 00
Consumption (posted):					
Money in hand	3 0554	0 , 6 5 1 0 0 , 0 0	0	0 , 0 0 0 , 0 0	3 0554 0 ,41
receivable from the Central Bank and other banks	4 3844 3	9 , 2 6 8 7 , 7 0	6 1492	2 , 3 0 1 2 , 3 0	4 99935 1 2,09
Investments	1 9640	0 , 4 1 8 9 , 0 0	2 427	0 , 0 9 1 , 0 0	2 2067 0 ,30
loans and avana customers	3 4717	7 3	2 4832	9 2	5 954986

	57	, 36 58 , 30	29	, 98 1 , 70	8 0,44
transfer to other groups	7 71653	1 6 , 30 8 6 , 20	1 23536	4 , 63 1 3 , 80	8 95189 1 2,09
other disposals	6 86	0 , 00 8 8 , 90	8 6	0 , 00 1 1 , 10	7 72 0 ,01
Total	6 453701	1 00 8 7 , 18	9 49030	1 00 1 2 , 82	7 402731 1 00
Availability at the end of the year	4 796241	1 00 8 7 ,	7 05297	1 00 1 2 ,	5 501538 1 00

		1 8		8 2	
Annual average	4 7009 26	3 6 , 8 8 8 7 , 1 8	6 9128 1	3 6 , 8 8 1 2 , 8 2	5 392207 1 00

After achieving a balance in all indicators, a comparative assessment of the decision maker of the consequences of decisions made on alternative options is made. If none of the alternative options satisfies the decision maker in terms of financial and economic values, then the decision maker also re-enters the database and implements the models with a quantitatively new array of information. This procedure is repeated until a satisfactory calculation is achieved. The database structure provides for the possibility of reflecting all the necessary data, taking into account the economic conditions and content systems of each liability structure in a commercial bank (Abdullaev A., 2019).

The developed models and algorithms are used to substantiate the possible directions of prospective development of the turnover and structure of banking resources of the commercial bank "Alokabank".



R is. 1. Structure assessment mechanism banking resources on ensuring economic security functioning banking sector

*Source: authors ' calculations

Table 1 :

shows the data describing the parameters of these models and algorithms. As can be seen from this table, the availability of cash at the beginning of the planned year was equal to bank resources in the bank's liability amounted to 5282876 million rublesum of these, 93,3% are short-term funds, and 6,70% are long-term funds. In general, the structure and amount of bank resources in liabilities differ both by short-term and long-term groups, and by specific composition. For example, according to calculations, deposits amount to 2818290 million rubles sum of these, 88,2% are short-term funds and 11,80% are long-term funds.

The developed models and algorithms are used to substantiate the possible directions of prospective development of the turnover and structure of banking resources of the commercial bank "Alokabank".

The situation is similar for optimal short-and long-term groups and compositions of bank resources. Thus, the total amount of bank resources transferred from other groups for all funds amounted to 895,189 million rublesum, of which 771653 million sum or 86,2% short-term loan, a 123536 million sum or 13,80% long-term remedy.

It is easy to see that long-term cash is predominant in all items of the incoming part of the turnover of banking resources.

In the banking resources of the bank's total liabilities at the end of the year 7402731 million sum, including, short-term facility 6453701 millionsum or 87,18%, and the long-term facility is 949030 million sum or 12,82%.

The situation is similar for optimal short-and long-term groups and compositions of bank resources. Thus, the total amount of bank resources transferred from other groups for all funds amounted to 895,189 million rublesum, of which 771653 million sum or 86,2% short-term loan, a 123536 million sum or 13,80% long-term remedy.

It is easy to see that long-term cash is predominant in all items of the incoming part of the turnover of banking resources.

In the banking resources of the bank's total liabilities at the end of the year 7402731 million sum, including, short-term facility 6453701 millionsum or 87,18%, and the long-term facility is 949030 million sum or 12,82%.

The dynamics of changes in the incoming and outgoing parts of bank resources by short-term and long-term groups and specific compositions determines the difference between the average annual bank funds and their availability at the beginning of the year.

Thus, the average annual amount of short-term funds is lower than the availability at the end of the year – 5,5%, and long-term funds are higher than 6,12%.

Table 2. Results of calculating bank volume options on a PC resources for joint-stock commercial "Alokabank"

Indicator	Fact for 2020 r.	Variants of model calculations			Calculation options in % of actual 2020		
		1	2	3	1	2	3
Interest income	3632522	37741 9	38759 0	39049 6	103.9	106.7	107.5
Interest free income	398.68	4130 3	417.41	42180	103.6	104.7	105.8
Interest expense	1690866	17551 1	17466 5	17432 7	103.8	103.3	103.1
Operating expense	181	186	186	185	102	102	102

	4.38	7.00	3.36	9.74	.9	.7	.5
Net profit for the year	2450.7	2555.61	2614.49	2668.88	104.3	106.7	108.9

An increase in the volume of bank resources is provided for all funds functioning banking sector (Table 2). The calculation of the increase is achieved due to the influence of factors of intensification, structure and improvement of the productive qualities of banking resources, which occurs on the basis of various methods of cash dilution.

For all funds, an increase in the volume of bank resources of a commercial bank is provided (Table 2). The calculation of the increase is achieved due to the influence of factors of intensification, structure and improvement of the productive qualities of bank resources, which occurs on the basis of various methods of cash dilution.

The results of calculating the indicators presented in Table 2 and their comparative assessment with the actual data for 2020 showed the economic efficiency of the proposed methodological approach and a set of models and algorithms. Efficiency is achieved on the basis of finding reserves to increase the volume of bank resources of the bank by rational use of the potential possibility of cash in a commercial bank.

CONCLUSION :

In this study, an economic and mathematical model of the structure and turnover of the bank's banking resources has been developed. It serves to compile the structure and turnover of banking resources for a specific period of time (month, quarter, year), and also affects the optimal structure and turnover of banking resources on the economic security of the bank, based on the allocation and use of indicators that take into account the influence of factors.

At the same time, the typical conditions of reproduction of banking resources and the features of the movement of reproduction groups in the forecast period are summarized, taking into account quantitative and qualitative characteristics. In addition, for each group of banking resources as a whole, it is important to take into account quantitative and qualitative indicators of cash flow. Within a certain period (time), the initial state of each reproduction group of banking resources is subject to complete or partial updating. The renewal of a group of banking resources means a change in the initial state based on the incoming (purchase from outside, receipt from other groups)

and expenditure (implementation (mobilization) to the side, transfer to other groups) part of the projected cash flow.

When a group of bank resources is fully updated, the initial state of the resources is fully used in the expenditure part of the movement. In case of partial renewal, a certain part of the funds is not used in the expenditure part of the movement and is left in this group.

In practice, when calculating the turnover and structure of the bank's banking resources, the balance method is used. At the same time, a set of standard basic conditions for the turnover and structure of banking resources is observed.

The process of finding reserves for increasing the volume of banking resources involves carrying out multivariate calculations on a computer using economic and mathematical models, reproducing, unlike other works in a single system of conditions of maintenance in a group of several types of deposits, scientifically sound bank management, principles of implementing monetary relations between customers and banks of funds, etc.

In order to maximize the adaptation of these models to the economic conditions of specific banks in the country, they are used in a combination of optimization and simulation methods. The parameters are coordinated based on the interaction of these models according to the feedback principle.

The advantage of the proposed method of influencing the optimal structure and turnover of banking resources on the economic security of the bank, according to the criterion of forecasting economic threats, is complex calculations, visibility, which allows you to assess the level of economic security, increases the adoption and effectiveness of management decisions. This gives advantages: firstly, the implementation of specific measures to prevent a decrease in the level of economic security; secondly, by providing a level of economic security, maintaining the image of a safe bank to attract new investors, depositors, thereby increasing the bank's capital, its profitability, which allows purposefully using the tools of banking management.

The given variant calculations of the volume of bank resources of the bank are made on the basis of maneuvering the values of the model parameters according to the ratio in a group of several types of deposits.

The analysis of the results of model calculations allowed us to identify and justify the reserves for the growth of reproduction of funds for the "Alokabank", which should amount to 9,3 – 12,8%, and for a long-term facility – 9,6 – 13,2% relative to 2020. Such growth is ensured by improving the structure of banking resources and increasing the productive qualities of funds

According to calculations based on the model of the bank's resource structure by composition, the availability of funds for the bank "Alokabank" at the beginning of the year amounted to 93,3 and 6,7%, respectively, for the short-term, relative to the total article on the incoming part. Approximately the same situation has developed regarding the expenditure part of the bank's resource turnover. So, for this article, short-term funds amounted to 87,18%, and long–term funds – 12,82%.

The economic and mathematical models developed in the work can be used by counterparty banks, bank supervisory authorities, rating agencies both to compare the security of banks relative to each other at different points in time, and to determine the probability of safe functioning of individual banks in the future.

ACKNOWLEDGEMENTS :

The authors would like to thank the anonymous reviewer and editor for their helpful comments and suggestions on the previous draft of this article, which allowed them to make significant improvements. The authors also thank Takhir Kuchkarov for his help in programming the problem turnover and structure of the bank's banking resources as well as Narbay Karimov for their help in improving the project. Guzal Abdullayeva thanks the staff of the Service Department of the Jizzakh Polytechnic Institute for their hospitality during his research visit. The authors are responsible for any remaining errors.

REFERENCES :

1. Abdullaev, A.Y.& Abdullaeva, G.A. (2021). Research on economic security of commercial banks. *SAARJ Journal on Banking & Insurance Research*, 10(6): 21- 36.
2. Abdullaev, A.Y. (2019). Forecasting of processes the turnover and structure of the financial resources of the banking sector. *SAARJ Journal on Banking & Insurance Research*,8(5): 28 – 44.
3. Abdullaev, A. (2014): Development of a methodology for determining the rating assessment of the liquidity of commercial banks in Uzbekistan. *Russian scientific journal Financial management*, 61, 83 – 90.
4. Abdullaev, A. (2015): The development of methods of analysis and forecasting of the liquidity of commercial banks in Uzbekistan. *SAARJ Journal on Banking & Insurance Research*, 4(6), 73-87.
5. Abdullaev, A. (2015): Working out under methods of the construction of a rating of liquidity while functioning commercial banks of Uzbekistan. *International Journal of Economics, Commerce and Management*, 3(11), 241 – 249.
6. Abdullaev, A. (2016): Withonceptual bases of the study of the crisis and liquidity of commercial banks. *Journal of Management Value & Ethics, India*, 6, 31 – 51.
7. Akimov, A., & Dollery, B. (2009): Financial development policies in Uzbekistan: an analysis of achievements and failures*. Economic Change and Restructuring*, 42(4), 293-318.
8. Akimov, A. V., & Dollery, B. (2006): Uzbekistan's Financial System. An Evaluation of Twelve Years of Transition.*Problems of Economic Transition*, 48(12), 6-31.
9. Andreeva, E (2013): Economic security of a Russian bank as part of an international financial group (theoretical assessment of the problem). Bulletin of the Institute of Economics of the Russian Academy of Sciences, 4, 128-133.
10. Afanasev M., Bagrinovskij K., Matuychok V. (2006): Prikladnye of the Research problem of operations. - M: : INFRA-M, 2006. pp. 1 - 352.
11. Beatty, R., & Ritter, J. (1986): Investment banking, reputation, and the underpricing of initial public offerings*. Journal of Financial Economics*, 15, 213-232.

12. Baltensperger, E. (1980): Alternative Approaches to the Theory of the Banking Firm. *Journal of Monetary Economics, 6, 1 - 37.*

13. Berger, A. & Humphrey, D. (1991): The dominance of inefficiencies over scale and product mix economies in banking. *Journal of Monetary Economics*, 28, 117-148.

14. Ezangina, I. & Popova S. (2016): Analysis of topical problems of economic security of a modern commercial bank. *Bulletin of the Dagestan State University*, 3, 19 - 23.

15. Gruzinov A. S. (2009): Methodology for substantiating the organizational structure of the banking corporation's security department.*Economic Sciences*: 7(52): 16 – 25.

16. Gruzinov A. S. (2009): Methodology of the system-process approach to ensuring the economic security of the banking network of a banking corporation. *Economic issues sciences*: 8(69): 31 – 38.

17. Grafova, I. & Emelyanov R. (2016): Economic security of a commercial bank as an element of the country's banking system. Economic Journal, 42, 42 - 55.

18. Handbook of Applied Statistics / Ed. E. Lloyd, W. Lederman (1990): - M .: Finance and Statistics, 1990. p. 526.

19. Kornienko, M. (2004): Issues of ensuring the economic security of a commercial bank. *Collected scientific work of the South Russian State University of Economics and Service*, 5, 34 - 42.

20. Melnik, D. (2018): Basic elements and basic components of the economic security of the bank. *Bulletin of Eurasian Science*, 4, 8 - 16

21. Natocheeva, N. (2003): Internal factors of the environment for ensuring the economic security of banks. *Topical issues of economic policy in modern conditions: Interuniversity collection of scientific papers*, 4, 11 - 18.

22. Natocheeva, N. (2003): On some external threats to the economic security of banks. *Topical issues of economic policy in modern conditions: Interuniversity collection of scientific papers*, 3, 52 - 59.

23. Natocheeva, N. (2004): System of indicators of economic security of commercial banks: Actual problems of economics and organization of production: *Sat. scientific works*, 1, 46 -52.

24. Natocheeva, N. (2004): Methodology for sketches of financial security of commercial banks. *Modern problems and prospects for the development of financial and credit spheres of the economy of Russia in the XXI century: Interuniversity collection of scientific papers*, 2, 35-44.

25. Sealy, C. & Lindlcy, J. (1977): Inputs, Outputs, and Theory of Production and Cost at Depos itory Financial Institutions. *Journal of Finance*, 4, 1251 - 1266.

26. Sealy, C. (1980): Deposit Rate Setting, Risk Aversion, and the Theory of Depository Financial Intermediates. *Journal of Finance,* 5, 1139 - 1154.

27. Storozhuk, I. (2007): Fundamental standards and special requirements for the development of a commercial bank information security policy. *Problems of the development of socio-economic processes in modern economic conditions: collection of scientific works*, 2 , 51 - 56.

28. Storozhuk, I. (2007): Development of information security policy for a commercial bank. *Problems of the development of socio-economic processes in modern economic conditions: collection of scientific works*, 2, 60 - 65.

29. Storozhuk, I. (2008): Financial stability as an integral part of the economic security of commercial banks. *Problems of the development of socio-economic processes in modern economic conditions: collection of scientific works*, 4, 132 - 140.

30. Storozhuk, I. (2008): Analysis of the loan portfolio of a commercial bank as the basis for ensuring economic efficiency. *Problems of the development of socio-economic processes in modern economic conditions: collection of scientific papers*, 4, 140 - 143.

31. Svetlova, V. (2013): Objectively-oriented approach to ensuring the economic security of the banking sector. *The science. Scientific Personnel*, 8, 143-145.

32. Vedernikova, T. (2016): Management of economic and financial security of banks. *Innovative development of the economy*, 2, 97 - 101.