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Ways to Increase the Loan Income of Commercial Banks

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Abstract
Relevance of the topic. Since loans have the highest share in the structure of assets in universal commercial banks, income from loans plays an important role in shaping their income base. In turn, the change in the level of return on loans is directly related to changes in the quality of the bank's loan portfolio. Therefore, the analysis of the quality of the loan portfolio allows to identify problems associated with increasing the profitability of loans.
The purpose of the study is to develop scientific proposals aimed at increasing the profitability of loans of commercial banks of the Republic of Uzbekistan.
Results. The article substantiates ways to ensure a stable level of interest income from loans in the gross profit of commercial banks; the expediency of increasing the profitability of loans by ensuring that the level of reserve allowances for loan losses is at the level generally recognized in international banking practice.
Practical significance. The proposals developed in the course of the research can be used in the development of measures aimed at increasing the profitability of loans of commercial banks.
Research limitation. The low level of diversification of the loan portfolio of large commercial banks of the Republic of Uzbekistan hinders the reduction of credit risk in their activities.

Key-words: Commercial Bank, Asset, Loan, Loan Portfolio, Gross Income, Interest Income, Reserve, Spread, Margin, Interest Rate.

1. Introduction

According to the strategy of reforming the banking system of the Republic of Uzbekistan for 2020-2025, the main directions of reforming the country's banking system are the implementation of lending only on market terms, improving the quality of credit portfolio and risk management, moderate growth in lending [1]. Ensuring the implementation of the tasks set in these areas requires the development of solutions to problems related to the quality of the loan portfolio of commercial banks (large overdue loans, low profitability of loans, lack of resources in banks, etc.). This, in turn, creates

the need for scientific research on the issue of ensuring the profitability of loans, which is an important indicator of the quality of the loan portfolio.

2. Literature Review

In Uzbekistan, the issues of development and management of the regional economy, the effective use of the economic potential of the regions are the areas of scientific interest of economists in this area. In particular, issues such as modeling the socio-economic development of regional industrial complexes, integrated development of regions, territorial location and management of productive forces, improving the methodological framework for increasing the competitiveness of the country's regions were discussed by Uzbek economists A. Burkhanov [7], Kalandarovna, A.G. [18], B. Tursunov [19;23], S. Najimudinova [20], Sh.B. Imamov, P.Z. Khashimov, F.T. Egamberdiev, A.J. Siddikov, I.O. Yakubov and others. Economic and socio-cultural impacts of the world nomad games [21], A fuzzy methodology for local entrepreneurial culture evaluation [22], Tourism Competitiveness in Central Asian Turkish Republics [24] were investigated by Maksudunov A., Asanbekova M. [24] and others.

According to J. Sinki, the change in the level of net losses on loans relative to total loans plays an important role in ensuring the profitability of loans. This is because an increase in the level of net losses indicates an increase in the amount of non-performing loans [2].

According to V.Usoskin, the bank's income from loans is directly related to risk management, and their loan portfolio is prone to all major types of risks: liquidity risk, interest rate risk, credit risk [3].

The results of a study conducted by N.Valentseva showed that the possibility of reducing the interest rate on loans at the expense of interest margins is determined by a decrease in the cost of banking products. In this case, the percentage is the overall lower limit of the spread amount, which is a sufficient percentage margin. An important condition for reducing costs in banks is the introduction of monitoring of the cost of banking products in banking practice [4].

According to Huerta de Soto, first, the reduction in interest rates on loans from commercial banks will turn previously unprofitable investment projects into profitable investment projects; secondly, the financing of investment projects by banks at the expense of loans not secured by voluntary funds, which ultimately leads to the failure of investment projects and non-repayment of loans [5].

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According to E. Litvinov, the use of the annuity method of collecting interest payments on retail loans by commercial banks will increase the payment burden on loans to individuals. Therefore, giving borrowers the opportunity to choose payment methods on the loan (stratified or annuity) will increase the incentive content of interest rates [6].

Research by A. Mian and A. Safi has shown that households have significantly more limited control over their own risks than firms. This increases the likelihood that loans to tsui farms will not be repaid on time [7].

A competitive survey of 7,000 companies by Dando and Skodberg found that the assessment of transition matrices (migration matrices) and extrapolations based on them provides a clear assessment of the transition to default status for high-rated loan portfolios, including low-default loan portfolios [; 8].

Wei and Yuan proposed the creation of a boundary distribution to determine the share of losses in the event of a default on loans (Loss Given Default, LGD) [9]. However, a comparative analysis of the approach proposed in this study with other approaches in this field has not been performed.

D. Tasche concludes that if the standard method of selecting the upper limits of a reliable interval is used to estimate the probability of default under conditions of small correlation of assets (18%), then the optimal correction corresponds to a significance level of 50-75%, large correlation (R = 24%) under conditions of - 75-90% corresponds to the level of significance [10]. This is an important conclusion for the practical modeling of LDP. This is because if LDP is a retail product (in which the correlation is usually small), then the conservative level of significance is 75%. If LDP is not a retail segment product, then the conservative level of significance should be 90%.

Prof. J. According to Isakov, an average annual increase in the interest rate on loans provided by commercial banks to the services sector will increase the yield on loans by 0.8%, an increase in the volume of loans by 1% will reduce the yield on loans by 1.8% [11].

F. Kholmamatov studied the issue of improving the lending practices of commercial banks on a scientific basis and formed the following conclusions: In order to improve the methodology of formation of reserves to cover possible losses on loans to improve the quality of the loan portfolio of commercial banks, the following criteria were proposed : 1% to 10% on substandard loans; on non-performing loans from 11% to 25%; from 26% to 50% on doubtful loans; up to 100 percent on bad loans [12].

3. Materials and Methods

The article uses official statistics of the Central Bank of the Republic of Uzbekistan, financial statements of foreign and domestic commercial banks, as well as current instructions of the Central Bank.

Expert assessment, statistical grouping, induction and deduction methods of scientific analysis were also used in the study of the profitability of loans of commercial banks.

4. Analysis and Results

According to the Instruction of the Central Bank of the Republic of Uzbekistan dated July 14, 2015 No 2696 "On the classification of asset quality in commercial banks and the order of formation and use of reserves to cover possible losses on assets" reserve reserves will be formed for five categories of loans:

standard loans - 1%;

substandard loans - 10%;

unsatisfactory loans - 25%;

doubtful loans - 50%;

bad loans - 100% [13].

Table 1- Composition of Assets of Commercial Banks of the Republic of Uzbekistan, as a Percentage of Total [14]

Asset structure	**2018 y.**	**2019 y.**	**2020 y.**
Cash on hand	2,5	2,7	3,2
Funds in the Central Bank	5,3	4,4	3,9
Funds in other banks	9,3	9,6	9,1
Investments	1,1	1,7	2,6
Credit inflows	76,8	76,0	74,7
Basic tools	1,6	2,2	2,3
Other assets	3,4	3,4	4,2
Assets - total	100,0	100,0	100,0

As can be seen from Table 1, loans account for the largest share of the assets of commercial banks in the Republic of Uzbekistan. This is explained by the following reasons: - Lending is the main activity for commercial banks; - underdevelopment of investment operations of commercial banks with

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securities. Loans issued by commercial banks of the Republic of Uzbekistan are divided into two terms: - short-term loans; - long-term loans. Loans issued by banks for up to one year are short-term loans, and loans for more than one year are long-term loans. There is no category of medium-term loans.

Table 2 - Describing the Profitability of Loans of the National Bank for Foreign Economic Activity of the Republic of Uzbekistan Indicators [15], Percent

Indicators	**2017 y.**	**2018 y.**	**2019 y.**
The rate of return on loans	3,2	4,6	6,0
The share of interest income from loans in gross income	47,9	59,8	55,4
The growth rate of loans	272,4	134,7	118,1
The growth rate of interest income from loans	193,1	194,1	156,8

Table 2 shows that in 2017-2019, the yield on TIF National Bank loans had an upward trend. This is a positive situation in terms of ensuring the profitability of loans.

The main indicator that characterizes the profitability of loans is the rate of return, which corresponds to 1 unit of credit. To determine this figure, the amount of interest income from loans is divided by the total amount of loans and the result obtained is multiplied by 100 percent. In addition, to assess the level of profitability of loans, the ratio of interest income from loans to gross bank income and the method of comparing the growth rate of loans with the growth rate of interest income from loans are used. From the data in Table 2, it can be seen that the share of interest income from loans in the National Bank of TIF in gross income in 2019 decreased significantly compared to 2018. This decrease is explained by the increase in the share of interest-free income in gross income during this period. The share of interest-free income in the gross income of the National Bank of TIF in 2019 increased by 2.8 percentage points compared to 2018. This is a negative situation in terms of ensuring the profitability of commercial bank loans.[25]

The data in Table 2 show that in 2017, there was no correlation between the growth rate of loans and the growth rate of interest income from loans. This is due to the fact that during this period the annual growth rate of loans was 272.4%, while the growth rate of interest income from loans was 193.1%.

The data in Table 2 show that in 2018 and 2019, there is a correlation between the growth rate of loans and the growth rate of interest income from loans.

The change in the amount of interest income from loans depends on two factors, namely, the change in the volume of loans and the change in interest rates on loans. Therefore, ensuring the stability of lending volumes and interest rates on loans is important in the lending practice of banks.

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Table 3- Bank of America (USA) and Industrial and Commercial Bank of China (China), as a Percentage [16]

Banks	2017 y.	2018 y.	2019 y.
Bank of America	1,1	1,3	1,2
Industrial and Commercial bank of China	4,1	4,3	4,3

From the data in Table 3, it can be seen that in 2017-2019, the rate of return on loans in the Bank of America was low, and on top of that, this figure decreased in 2019 compared to 2018. This is a negative situation in terms of ensuring the level of profitability of these bank loans.

Table 3 shows that the rate of return on loans in the Industrial and Commercial Bank of China in 2018 increased compared to 2017. Moreover, this figure remained unchanged in 2019 at 4.3%. These cases are a positive situation in terms of ensuring the profitability of loans.

Figure 1- The Ratio of Reserve Allocations to the National Bank for Foreign Economic Activity to Cover Loan Losses Relative to Gross Assets, % [17]

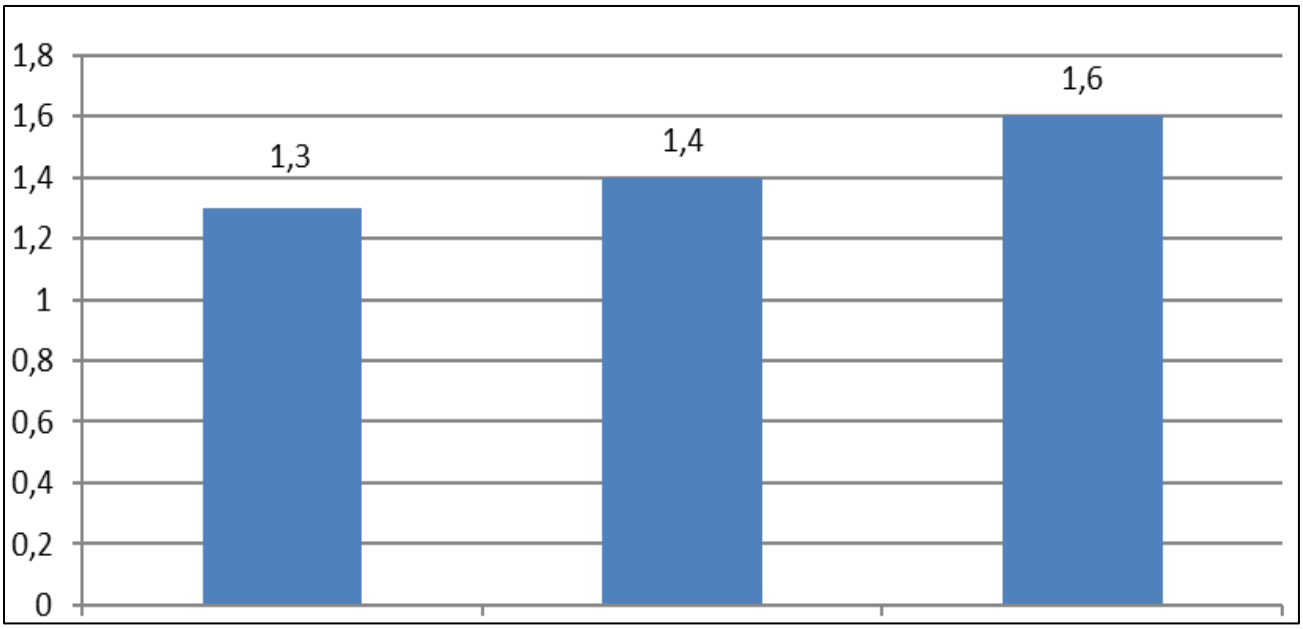

Figure 1 shows that in 2017-2019, the National Bank of TIF observed an increase in the level of reserve allocations to cover loan losses. Moreover, the actual level of this indicator was higher than the generally accepted level in international banking practice (1.0%). This is a negative situation in terms of ensuring the level of profitability of loans of the National Bank of TIF.

TIF The following factors were taken for the analysis and econometric modeling of the National Bank's activities: As a result factor - the National Bank's interest income, bln. soums (Y), and as the

influencing factors - the capital of the National Bank, bln. soums (X1), loans of the National Bank, bln. soums (X2), National Bank deposits, bln. soums (X3), Central Bank refinancing rate,% (X4), Central Bank's required reserve ratio against banks 'deposits in national currency,% (X5), Inflation rate,% (X6), average annual interest rate of commercial banks' loans in national currency ,% (X7).

Before constructing a multi-factor econometric model, we logarithmize them, taking into account that the data are in different units of measurement (some indicators are in billions of soums, some in percent). We check that the logarithmic data obey the law of normal distribution. To do this, we calculate the descriptive statistics of all the factors included in the model (Table 4).

Table 4- Descriptive Statistics of Factors

	LN_Y	LNX1	LNX2	LNX3	LNX4	LNX5	LNX6	LNX7
Mean	6.859716	7.848930	9.668049	8.780618	2.497505	2.334306	2.161823	2.797016
Median	6.387632	7.450648	9.294644	8.497089	2.484907	2.525729	1.987029	2.744055
Maximum	8.686260	9.537700	11.09129	9.752316	2.772589	2.525729	2.721295	3.165475
Minimum	5.736572	6.647688	8.452334	7.981733	2.197225	1.386294	1.722767	2.525729
Std. Dev.	1.103046	1.101424	1.018338	0.676379	0.213495	0.371030	0.407803	0.228682
Skewness	0.607517	0.493511	0.277889	0.300302	-0.171611	-1.884942	0.366121	0.560846
Kurtosis	1.783273	1.705887	1.413766	1.448573	1.780302	5.352787	1.423741	1.808984
Jarque-Bera	1.231972	1.103725	1.177095	1.153187	0.668943	8.228178	1.258655	1.115296
Probability	0.540108	0.575876	0.555133	0.561809	0.715716	0.016341	0.532950	0.572554
Sum	68.59716	78.48930	96.68049	87.80619	24.97505	23.34306	21.61823	27.97016
Sum Sq. Dev.	10.95039	10.91821	9.333117	4.117398	0.410223	1.238972	1.496730	0.470660
Observations	10	10	10	10	10	10	10	10

From the descriptive statistics table, it can be seen that the probability values of a number of factors according to Jacques-Bera statistics are greater than 0.05. To explain this situation, we examine the graphs of normal distribution functions for all factors (Figure 1). The normal distribution function is calculated according to the following formula:

$$f(x|\mu,\sigma) = \frac{1}{\sqrt{2\pi}\sigma} e^{\left(-\frac{1}{2\sigma^2}(x-\mu)^2\right)}. \qquad (1)$$

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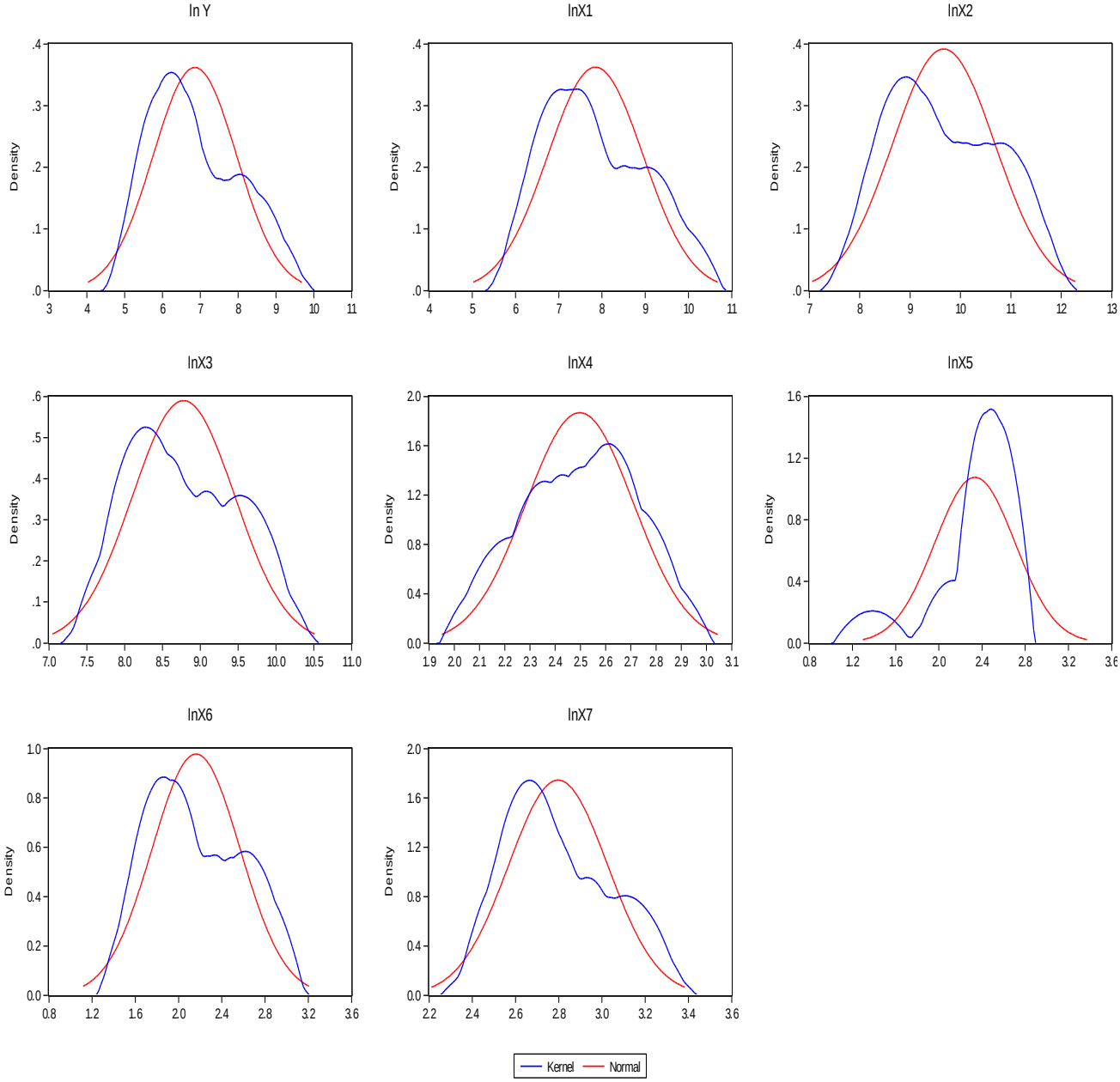
Figure 2- Checking Factors for Normal Distribution



As can be seen from Figure 2, all factors are subject to the law of normal distribution. This allows the study of linear relationships between factors.

Of course, in order to create a multi-factor econometric model, it is first necessary to identify the relationships between the factors. If there are no links between one factor and another, then this factor cannot be included in the model. We therefore find the relationships between the factors by calculating a matrix of specific and double correlation coefficients (Table 5).

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Table 5- A Matrix of Specific and Double Correlation Coefficients between Factors

Covariance Analysis: Ordinary (Covariance Analysis: The Method of Smallest Squares)

Date: 05/01/21 Time: 17:20 (Date: 05/01/21 Time: 17:20) Sample: 2011 2020

Included observations: 10

Correlation

t-Statistic

Probability

	LNY	LNX1	LNX2	LNX3	LNX4	LNX5	LNX6	LNX7
LNY	1.000000							
LNX1	0.990603	1.000000						
	20.48564	-----						
	0.0000	-----						
LNX2	0.979618	0.985701	1.000000					
	13.79397	16.54549	-----					
	0.0000	0.0000	-----					
LNX3	0.972365	0.979144	0.990515	1.000000				
	11.78015	13.63131	20.38956	-----				
	0.0000	0.0000	0.0000	-----				
LNX4	0.697387	0.681004	0.682587	0.678520	1.000000			
	2.752231	2.630378	2.641810	2.612569	-----			
	0.0250	0.0302	0.0296	0.0310	-----			
LNX5	-0.841850	-0.793257	-0.743431	-0.744759	-0.525196	1.000000		
	-4.411831	-3.684872	-3.143991	-3.156586	-1.745608	-----		
	0.0023	0.0062	0.0137	0.0135	0.1190	-----		
LNX6	0.802656	0.813190	0.833012	0.835715	0.934201	-0.508696	1.000000	
	3.806325	3.951988	4.258646	4.304282	7.406687	-1.671193	-----	
	0.0052	0.0042	0.0028	0.0026	0.0001	0.1332	-----	
LNX7	0.937728	0.915934	0.905218	0.899081	0.756430	-0.782789	0.785107	1.000000
	7.635344	6.455164	6.025095	5.808786	3.271041	-3.557937	3.585338	-----
	0.0001	0.0002	0.0003	0.0004	0.0113	0.0074	0.0071	-----

It can be concluded from Table 5 that there is a close relationship between the National Bank's interest income (lnY) and the National Bank's capital (lnX1) ($r_{\ln y \ln x1} = 0{,}9906$).

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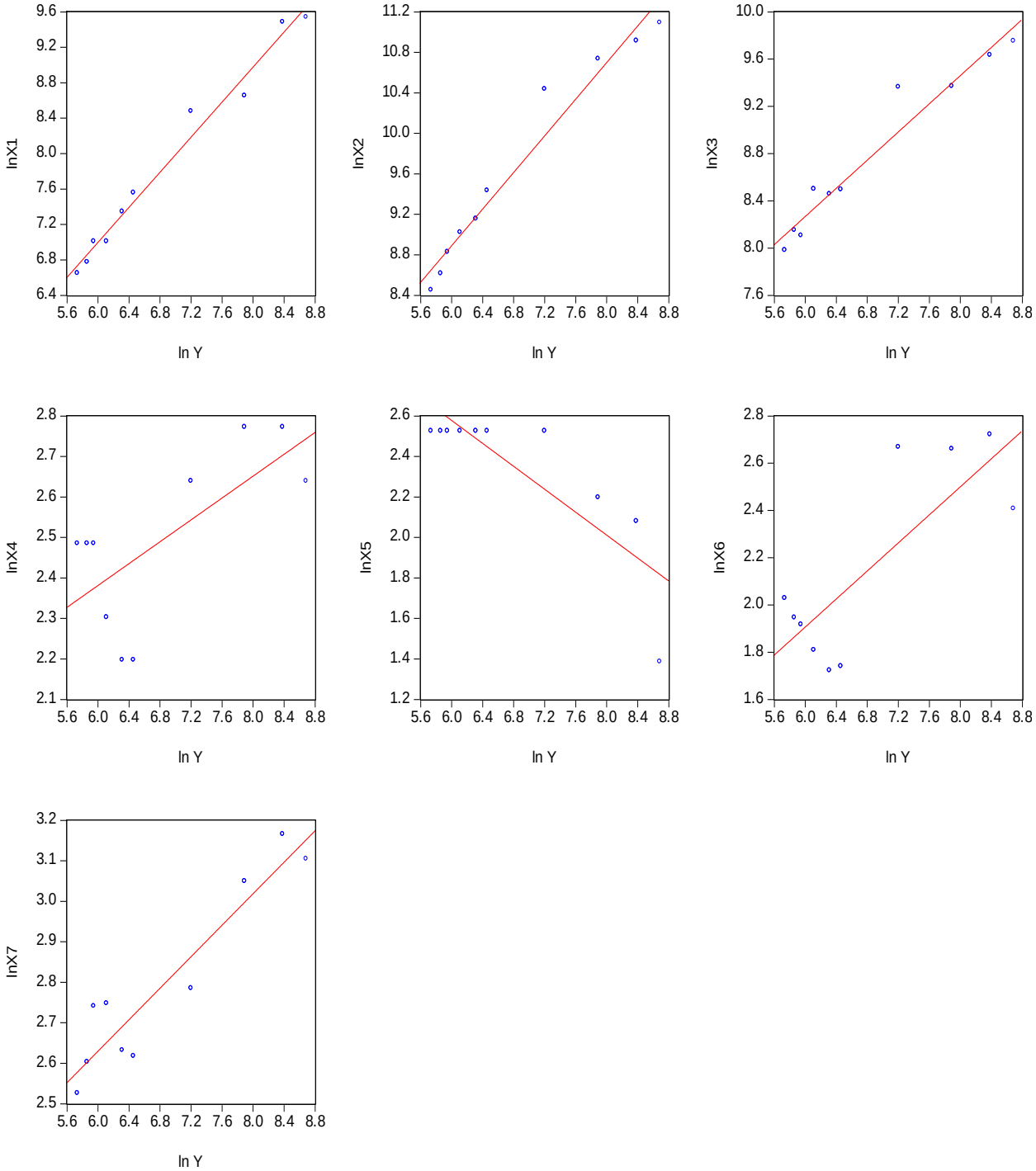
Figure 3 - Graph of Relationships between Resultant Factor ($\ln y$) and influencing factors ($\ln x_i$)



There is also a strong link between the National Bank's interest income (lnY) and National Bank loans, (lnX2) ($r_{\ln y \ln x2} = 0{,}9796$). There is a strong correlation between the National Bank's interest income (lnY) and the National Bank's deposits (lnX3) ($r_{\ln y \ln x3} = 0{,}9724$). There is a moderate correlation between the National Bank's interest income (lnY) and the Central Bank's refinancing rate

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(lnX4) ($r_{\ln y \ln x4} = 0{,}6974$), the National Bank's interest income (lnY) and the Central Bank's required reserve ratio (lnX5) against banks' deposits in national currency. ($r_{\ln y \ln x5} = -0{,}8418$), While there is a strong link between the National Bank's interest income (lnY) and the Inflation Rate (lnX6) ($r_{\ln y \ln x6} = 0{,}8026$) and the weak link between the National Bank's interest income (lnY) and the average annual interest rate on commercial banks' national currency loans (lnX7) ($r_{\ln y \ln x7} = 0{,}9377$) was found to be present.

There is a relationship between each influencing factor ($\ln x_i$) and a consequential factor ($\ln y$) as follows (Figure 3).

As can be seen from Figure 3, all factors (lnx1) have a linear relationship with the resultant factor lnu, except that (lnx5) is inversely related to the resultant indicator.

We will create a multifactor econometric model of the National Bank on interest income and factors affecting it, using the following linear multifactor model:

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + ... + \beta_n x_n , \qquad (2)$$

here: y - outcome factor (interest income of the National Bank), x_1, x_2,..., x_n - influencing factors and β_0, β_1, β_2,..., β_n - model parameters.

The calculated parameters of the multifactor econometric model of the National Bank's interest income on the above factors are given in the following table (Table 6):

Table 6- Calculated Parameters of a Multifactor Econometric Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
lnX1	0.370320	0.357205	1.036715	0.4088
lnX2	0.403059	0.456077	0.883753	0.4701
lnX3	-0.327872	0.847802	-0.386731	0.7362
lnX4	-0.994374	2.746456	-0.362057	0.7520
lnX5	-0.692966	0.556529	-1.245157	0.3392
lnX6	0.722144	1.861846	0.387864	0.7355
lnX7	0.947686	1.193951	0.793739	0.5106
C	2.824437	8.106496	0.348417	0.7608
R-squared	0.995870	Mean dependent var		6.859716
Adjusted R-squared	0.981417	S.D. dependent var		1.103046
S.E. of regression	0.150366	Akaike info criterion		-0.960921
Sum squared resid	0.045220	Schwarz criterion		-0.718853
Log likelihood	12.80460	Hannan-Quinn criter		-1.226469
F-statistic	68.90209	Durbin-Watson stat		2.505156
Prob(F-statistic)	0.014379			

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Dependent Variable: LNY; Method: Least Squares; Date: 04/12/20 Time: 16:58; Sample: 2011 2020; Included observations: 10

The multi-factor linear econometric model based on Table 6 looks like this:

$$\hat{y} = 2{,}824 + 0{,}3703\ln x_1 + 0{,}4030\ln x_2 - 0{,}3278\ln x_3 - 0{,}9944\ln x_4 - \\ - 0{,}6929\ln x_5 + 0{,}7221\ln x_6 + 0.9477\ln x_4 \quad (3)$$

$$R^2 = 0{,}9959,\ F_{\text{хисоб}} = 68{,}902,\ DW_{\text{хисоб}} = 2{,}505$$

If we look at the probabilities of these (3) model parameters, we can see that the probabilities of all factor parameters are greater than 5 percent (Table 7 last Prob (probability) column).

Table 7 - Calculated Parameters of a Multifactor Econometric Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
lnX1	0.617643	0.322976	1.912350	0.1518
lnX2	0.311985	0.489732	0.637051	0.5694
lnX3	0.406014	0.662967	0.612420	0.5836
lnX4	2.004382	1.436219	1.395596	0.2572
lnX6	-1.347962	0.911792	-1.478366	0.2358
lnX7	-0.067169	0.949153	-0.070767	0.9480
C	-6.473486	3.432445	-1.885969	0.1558
R-squared	0.992669	Mean dependent var		6.859716
Adjusted R-squared	0.978008	S.D. dependent var		1.103046
S.E. of regression	0.163580	Akaike info criterion		-0.587003
Sum squared resid	0.080275	Schwarz criterion		-0.375193
Log likelihood	9.935015	Hannan-Quinn criter.)		-0.819358
F-statistic	67.70532	Durbin-Watson stat (Дарбин-Уотсон статистикаси)		1.992456
Prob(F-statistic)	0.002722			

Dependent Variable: LNY

Method: Least Squares

To improve this situation, we remove some of the factors included in the model from the model. To do this, we find a factor that is weakly or inversely related to the resulting factor and subtract it from the model (3). We deduce this factor (3) from the multifactor econometric model.

Thus, if we examine the matrix of correlation coefficients in Table 6, the resulting factor is an inverse relationship between the National Bank's interest income (lnY) and the Central Bank's required reserve ratio (lnX5) for banks' deposits in national currency.

If we look at the probabilities of the parameters of this multi-factor econometric model, we can see that the probabilities of the parameters of all factors are greater than 5 percent. To improve this situation, we remove some of the factors included in the model from the model.

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We deduce the lnX3 and lnX7 factors from the multivariate econometric model. As a result, we have the following multi-factor econometric model (Table 8).

Table 8 - A Multifactor Econometric Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
lnX1	0.663335	0.257903	2.572029	0.0499
lnX2	0.492591	0.210408	2.341123	0.0434
lnX4	1.751330	0.715782	2.446736	0.0582
lnX6	-1.167031	0.495684	-2.354386	0.0652
C	-4.960184	1.683995	-2.945485	0.0321
R-squared	0.991710	Mean dependent var		6.859716
Adjusted R-squared	0.985079	S.D. dependent var		1.103046
S.E. of regression	0.134740	Akaike info criterion		-0.864086
Sum squared resid	0.090774	Schwarz criterion		-0.712794
Log likelihood	9.320432	Hannan-Quinn criter.		-1.030054
F-statistic	149.5413	Durbin-Watson stat		2.085485
Prob(F-statistic)	0.000022			

(3) After subtracting the lnX3 and lnX7 factors from the model, we obtained the following multivariate econometrics:

$$\hat{y} = -4{,}9602 + 0{,}6633\ln x_1 + 0{,}4926\ln x_2 + 1{,}7513\ln x_4 - 1{,}1670\ln x_6 \qquad (4)$$

$$R^2 = 0{,}9917,\ F_{\text{хисоб}} = 149{,}54,\ DW_{\text{хисоб}} = 2{,}085$$

Analysis of the parameters of the obtained multifactor econometric model (4) shows that if the National Bank's capital increases by 1% (lnX1), the National Bank's interest income increases by an average of 0.6633%, National Bank loans (lnX2) increases by one percent, the National Bank's interest income increases by 0.4926 while the Central Bank's refinancing rate (lnX4) increases by 1 percent, the National Bank's interest income increases by an average of 1.7513 percent, and finally as the Inflation rate increases by 1 percent, the National Bank's interest income decreases by an average of 1.1670 percent.

(4) We check the adequacy of the model using Fisher's F-criterion ($\alpha = 0{,}05, k_1 = 4, k_2 = 10$ $F_{\text{жадвал}} = 3{,}48$). $F_{\text{жадвал}} = 3{,}48$ and $F_{\text{хисоб}} = 149{,}54 > F_{\text{жадвал}} = 3{,}48$ (4) is called statistically significant because

In addition, 99.17% of the National Bank's interest income depends on the factors included in the (4) model.

As long as there is no autocorrelation in the resulting factor residues, DW = 2,085.

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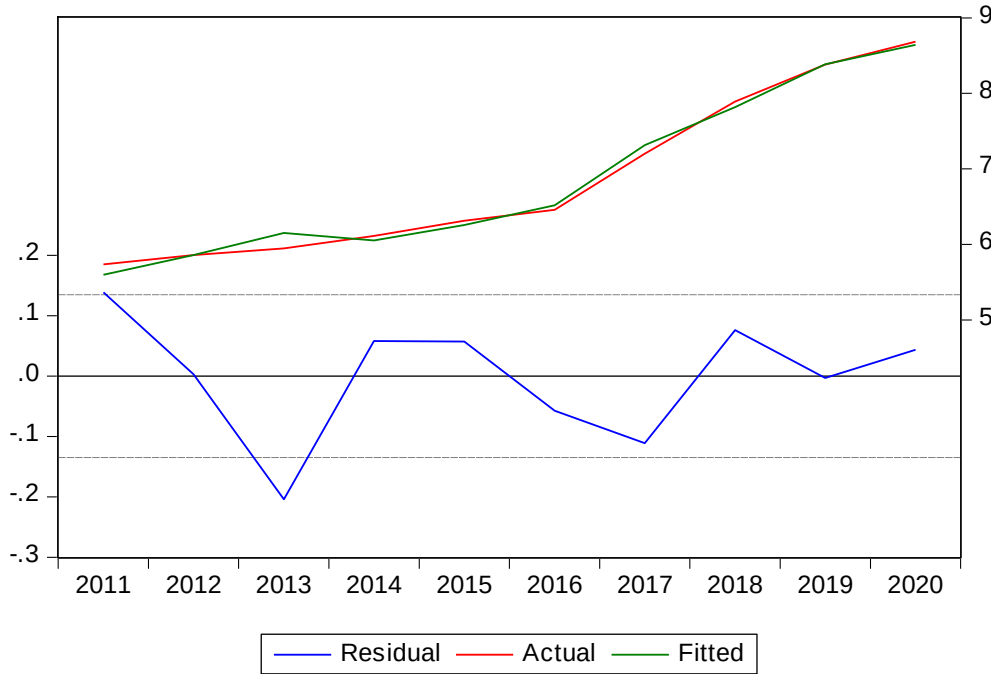
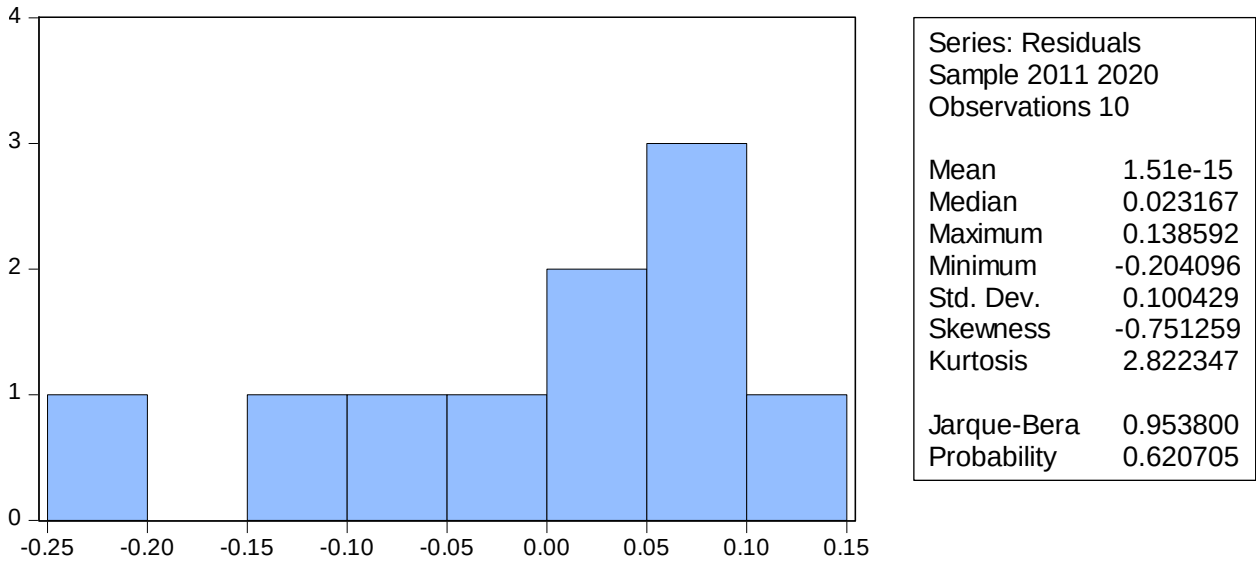
If we compare the actual and calculated values of the studied process, the obtained model is much older approximation of the process (Fig. 4).

Figure 4- Actual and Calculated Values of Interest Income of the National Bank



We check the reliability of the parameters in front of the factors in the constructed model (4) using the Student's t-criterion. If the calculated values of the t-criterion are greater than the table value and their probability is less than 0.05, the model parameters are called confidence and vice versa.

Figure 5- Check the Residue for Normal



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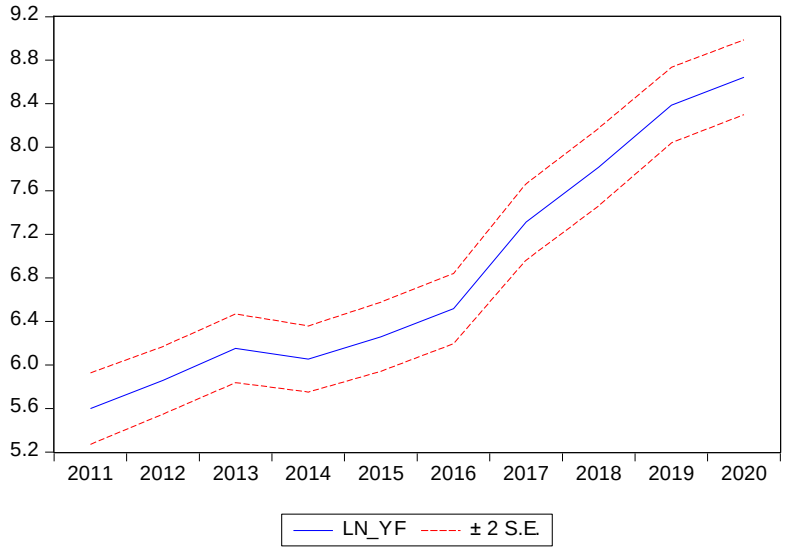
The student's t-test table value is 2.2281. As can be seen from Table 5 (t-statistic column), the calculated values of all influencing factors (ln) are greater than the table value of the t-criterion and the probability of the parameters (lnx1 and lnx2) (Prob. Column) is less than 0.05. The two factors lnx4 and lnx6 are greater than 0.05 and less than 0.1. This means that the lnx4 and lnx6 factors are also important at 10% accuracy.

Figure 5 shows the results of the normalization check of the residues

The Jacques-Bera test does not rule out the hypothesis that the model residues are normally distributed. This test checks the distribution for normality by comparing the values of the asymmetry and excess indicators with the values characteristic of a normal distribution (asymmetry = 0, excess = 3). However, this test is a sluggish tool in checking the normality of residues.

However, let us consider the average absolute error in percentages on a multifactor econometric model (MARE) (Figure 6).

Figure 6 - Check the Average Absolute Error in Percent (MARE Coefficient)



Forecast: LN_YF	
Actual: LN_Y	
Forecast sample: 2011 2020	
Included observations: 10	
Root Mean Squared Error	0.095276
Mean Absolute Error	0.075177
Mean Abs. Percent Error	1.168118
Theil Inequality Coefficient	0.006865
Bias Proportion	0.000000
Variance Proportion	0.002081
Covariance Proportion	0.997919

Hence, the average absolute error in percentages in the forecast model is 1,168 percent. This suggests that the model can be used to forecast the National Bank's interest income.

5. Conclusions

The results of the analysis of the issue of profitability of loans of commercial banks showed:

- The highest share of loans in the approximate assets of commercial banks of the Republic of Uzbekistan is due to the fact that lending is the main activity for commercial banks and the underdevelopment of investment operations of banks with securities;
- The fact that the level of profitability of loans of the National Bank of TIF in 2017-2019 has a tendency to increase is a positive situation in terms of ensuring the profitability of loans;
- The significant decrease in the share of interest income from loans in the total income of the National Bank of TIF in 2019 compared to 2018 is explained by the increase in the share of interest-free income in gross income during this period and is negative in terms of profitability of commercial bank loans;
- TIF National Bank did not provide a balance between the growth rate of loans in 2017 and the growth rate of interest income on loans, but in 2018 and 2019 these indicators are balanced;
- The low level of loan yields in the Bank of America in 2017-2019, the decline in this indicator in 2019 compared to 2018 is a negative situation in terms of ensuring the level of loan yields;
- The fact that the rate of return on loans in the Industrial and Commercial Bank of China increased in 2018 compared to 2017 and remained unchanged at 4.3% in 2019 is a positive situation in terms of ensuring the profitability of loans;
- The fact that in 2017-2019 the National Bank of TIF observed an increase in the level of reserves for loan losses and the actual level of this indicator is higher than its normative level (1.0%) is a negative situation in terms of ensuring the return on loans of TIF National Bank.

The results of the econometric analysis showed that a 1% increase in the National Bank's capital increased its interest income by an average of 0.6633%, a 1% increase in the National Bank's loans increased its interest income by an average of 0.4926%, and a 1% increase in the Central Bank's refinancing rate increased the bank's interest income by 1.7513%. and a 1 percent increase in the inflation rate would cause the National Bank’s interest income to decrease by an average of 1.1670 percent.

In our opinion, in order to ensure the profitability of loans of commercial banks of the Republic of Uzbekistan, the following measures should be taken:

1. In order to ensure a stable level of the share of interest income on loans in the gross profit of commercial banks, first of all, it is necessary to ensure a high and stable level of the share of loans in gross assets; second, it is necessary to ensure a balance between the growth rate of interest income on loans and the growth rate of gross loans; third, it is necessary to increase the amount of interest income from loans through the introduction of innovative credit products in the lending practice of banks.

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2. In order to ensure that the level of provisioning for loan losses is at the level generally accepted in international banking practice, it is necessary, first, to prevent the increase in the share of doubtful and bad loans in the volume of classified loans by improving the structure of classified loans; second, the growth rate of the amount of reserve provisions on loans should not be allowed to exceed the growth rate of gross assets.

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