# WAYS TO ENSURE SUSTAINABLE GROWTH OF COMMERCIAL BANKS' LOANS IN THE PERIOD OF DIGITALIZATION

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## ABSTRACT

Commercial bank loans are an important source of financing for current and investment costs of companies. Therefore, ensuring a stable growth of loans from commercial banks is one of the necessary conditions for the stable development of the country's economy. The article identifies urgent problems related to ensuring a stable growth of loans issued by commercial banks of the Republic of Uzbekistan, and developed scientific proposals aimed at solving them.

## CCS CONCEPTS

• **commercial bank, loan, problem loan, classified loans, interest rate, interest income, required reserve, deposit, resource.**;

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## 1 INTRODUCTION

In the strategy for reforming the banking system of the Republic of Uzbekistan for 2020-2025, lending to commercial banks only on market conditions, after a moderate increase in lending volumes, is recognized as priority areas of the country's banking system [1]. This creates the need to identify urgent problems associated with ensuring a stable growth in commercial bank loans, and to develop evidence-based ways to solve them.

At the same time, there are factors that negatively affect the stable growth of commercial bank loans in our republic. These factors include low money supply in the country's economy, high interest rates on loans, high required reserve rates set by the Central Bank for deposits of commercial banks.

## 2 LITERATURE REVIEW

According to M. Matovnikov, the main factor hindering the improvement of the practice of long-term lending to commercial banks is the lack of long-term resources in banks. A simple and real way to solve this problem is to get a loan from the Central Bank by pledging liquid assets [2].

This conclusion of M. Matovnikov is of practical importance for the banking practice of Uzbekistan. Since there is a problem of lack of long-term resources in commercial banks of our republic, the risk of transformation in banks deepened due to the fact that long-term loans were issued at the expense of short-term resources.

According to G. Panova, in order to increase the creditworthiness of commercial banks, first of all, it is necessary to ensure the sufficiency of their deposit base. At the same time, it is important to prevent transaction deposits from exceeding 30 percent of gross deposits, to introduce limits on a part of deposits directed to credit operations, based on the experience of German banking practice. In Germany, 60% of term deposits and 10% of transaction deposits are directed to credit operations [3].

According to O. Lavrushin, there is a system of indicators that characterize the effectiveness of a loan, among which an important place is occupied by indicators characterizing problem loans and profitability of loans [4].

According to the conclusion of N. Sokolinskaya, careful monitoring of risks, the formation of a high-quality loan portfolio, the availability of a good basis for managing the lending process are the main aspects of ensuring the quality content of the loan [5].

According to the five-factor Z-model proposed by I. Altman (the weight of working capital in total assets; return on assets; the ratio of profit before tax to assets; the ratio of capital to short-term liabilities; the ratio of income to total assets), depending on the level of Z, the company's bankruptcy probability is determined: if Z is less than 1.81, then the risk of bankruptcy of the company is from 80 to 100 percent; With Z in the range from 1.81 to 2.77, the average probability of a company going bankrupt is from 35 to 50%; when Z is in the range of 2.77 to 2.99, the company has a 15 to 20 percent chance of going bankrupt; if Z is greater than 2.99, then the company is considered financially stable and has a very low probability of bankruptcy in the next two years [6].

The results of a scientific study conducted by J. Majidov showed that, without taking into account other factors, an increase in the annual rate of devaluation of the soum by 1% against 1 US dollar increases the loan portfolio of commercial banks by 0.52%, and an increase by 1% of the required reserves of the Central Bank on deposits in the national currency of the loan portfolio of commercial banks by 7.19% and the annual increase in the refinancing rate of the Central Bank by 1% will lead to a decrease in the loan portfolio of commercial banks by 7.53%. However, an increase in inflation by 1% compared to the annual level leads to an increase in the volume of the loan portfolio of commercial banks by 5.69%. In general, without taking into account other factors, the annual rate of devaluation of the soum against 1 US dollar, the annual inflation rate, the required reserve ratio of the Central Bank in relation


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**Table 1: Descriptive statistics of factors influencing the volume of loans "Sanoatkurilishbank" in the Republic of Uzbekistan**

| Date: 09/16/22 Time: 13:15 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample: 1 45 | | | | | | | | |
| | X1 | X2 | X3 | X4 | X5 | X6 | X7 | Y |
| Mean | 4914.480 | 2827.389 | 13488.74 | 12.66667 | 9.277778 | 13.02222 | 9.911111 | 19434.51 |
| Median | 3070.581 | 1657.323 | 15211.00 | 14.00000 | 12.50000 | 6.500000 | 10.00000 | 19555.78 |
| Maximum | 12607.32 | 7700.913 | 29478.54 | 16.00000 | 12.50000 | 23.70000 | 15.20000 | 43147.81 |
| Minimum | 1426.575 | 358.8673 | 2471.999 | 9.000000 | 4.000000 | 4.700000 | 5.600000 | 3792.202 |
| Std. Dev. | 3788.513 | 2638.946 | 9097.904 | 2.654328 | 3.924798 | 8.468763 | 3.833597 | 13954.01 |
| Skewness | 0.879871 | 0.796406 | 0.279090 | -0.225323 | -0.520413 | 0.229538 | 0.172045 | 0.387742 |
| Kurtosis | 2.233518 | 1.974532 | 1.507106 | 1.565557 | 1.404076 | 1.083535 | 1.359239 | 1.576899 |
| Jarque-Bera | 6.907854 | 6.728689 | 4.763057 | 4.238829 | 6.806802 | 7.281725 | 5.269676 | 4.924857 |
| Probability | 0.031621 | 0.034585 | 0.092409 | 0.120102 | 0.033260 | 0.026230 | 0.071731 | 0.085228 |
| Sum | 221151.6 | 127232.5 | 606993.3 | 570.0000 | 417.5000 | 586.0000 | 446.0000 | 874552.9 |
| Sum Sq. Dev. | 6.32E+08 | 3.06E+08 | 3.64E+09 | 310.0000 | 677.7778 | 3155.678 | 646.6444 | 8.57E+09 |
| Observations | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 |

to deposits in the national currency and the annual level of the central bank refinancing rate, factors of a simultaneous increase by 1%, credit the portfolio of commercial banks will decrease by 9.55 percent [7].

## 3 RESEARCH METHODOLOGY

Wei and Yuan proposed a margin allocation to determine the proportion of losses in a loan default (Loss Given Default, LGD) [8].

According to D. Tashe, if we use the standard method of choosing the upper bounds of the confidence interval to assess the probability of default in the case of a low correlation of assets (18%), then the optimal correction corresponds to a significance level of 50-75%, the conditions of high correlation (R=24%) - 75-90% corresponds to the significance level [9].

According to the current requirements of the Central Bank of the Republic of Uzbekistan, commercial banks are required to create reserves at the following rates for all categories of classified loans:

*standard loans - 1%;

*non-standard loans - 10%;

* bad loans - 25%;

* doubtful loans - 50%;

* bad loans - 100% [10].

## 4 ANALYSIS AND RESULTS

The following factors were selected that affect the annual growth rate of "Sanoatkurilishbank" loans: the resulting factor - loans, billion rubles. soums (Y1), and as influencing factors - deposits, billion soums (X1), capital, billion soums (X2), loans received from other banks, billion soums (X3), refinancing rate of the Central Bank, in percent ( X4), the required reserve ratio of the Central Bank in relation to bank deposits in national currency, in percent (X5) and the average annual rate on loans, in percent (X6) and the inflation rate in percent (X7).

The Eviews 10 program was used to conduct descriptive statistics on factors before creating a multivariate econometric model on factors affecting the volume of loans of "Sanoatkurilishbank" in the Republic of Uzbekistan. The results of descriptive statistics by factors are presented in Figure 1 below.

From the data in Figure 1 above, you can see the mean (mean), median (median), maximum and minimum values (maximum, minimum) of each factor. In addition, the standard deviation of each factor is presented (std. dev. (Standart Devation) - the standard deviation coefficient shows how much each variable deviates from the mean value).

Correlation analysis is necessary to select the factors of a multivariate econometric model. For this, special and paired correlation coefficients are calculated between the factors. The matrix of individual and pairwise correlation coefficients between factors is presented in Table 3 below.

Table 3 shows that the partial correlation coefficients are obtained as the resulting factor (loans, billion soums (Y1)) and its influencing factors:

* deposits, billion soums (X1);

* capital, billion soums (X2);

* loans received from other banks, billion soums (X3);

* central bank refinancing rate, in percent (X4);

* rate of required reserve of the central bank in relation to deposits of banks in the national currency, in percent (X5);

* average annual rate on loans, in percent (X6);

* indicates the density of the relationship between inflation rates, in percent (X7).

Thus, the partial correlation coefficients show that there is a close relationship between the resulting factor and the influencing factors, that is, the value of the partial correlation coefficients is in the range of 0.5-0.7.

When checking the above, we look at their dot plots to determine the relationship of each factor with the resulting indicator (Figure 2).

We also check the reliability of the parameters of a multifactorial econometric model created on the basis of loans from "Sanoatkurilishbank" in the Republic of Uzbekistan. The probability of reliability is $\alpha = 0,05$, *the tabular value of the t-test is* $t_{\text{жадвал}} = 2{,}1190$. It can be seen that the calculated values of the t-criterion for this enterprise

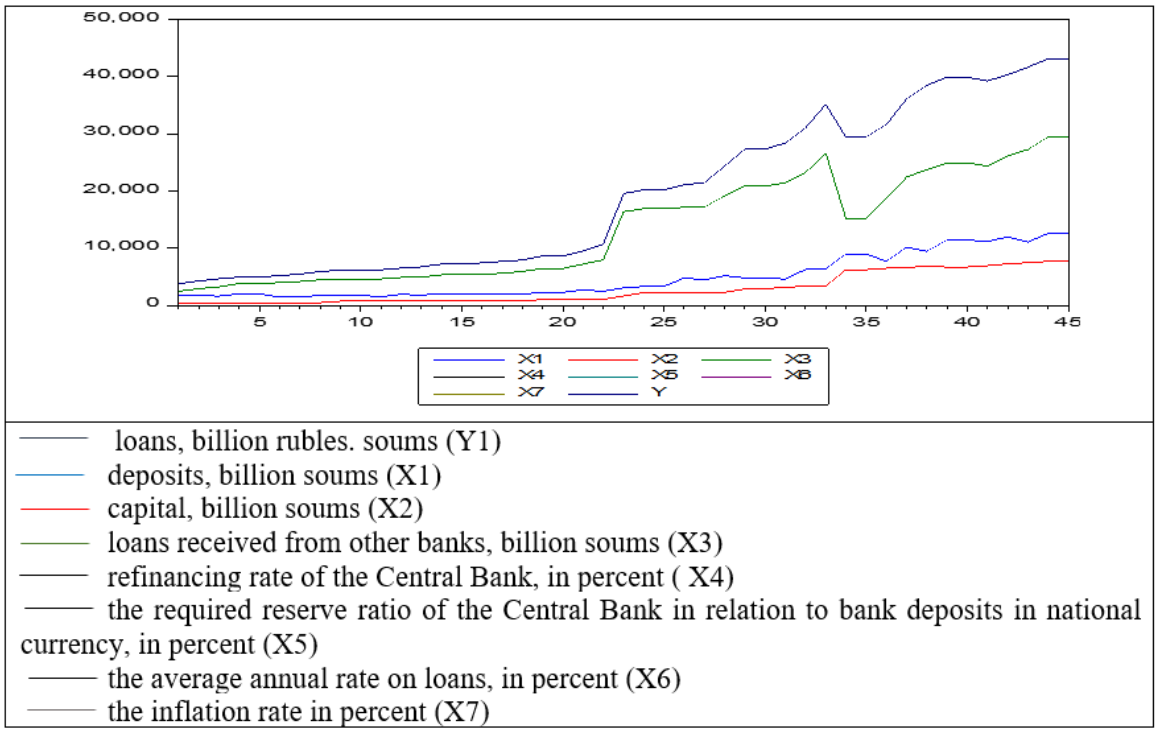


**Figure 1: Descriptive statistics of factors affecting the volume of loans of "Sanoatkurilishbank" in the Republic of Uzbekistan**

are greater than the tabular value with an accuracy of $\alpha = 0,05$ (Table 3.6). In a multi-factor econometric model (3.5), all influencing factors remain in the model and are used in the forecast.

We use the Durbin-Watson (DW) test to test the autocorrelation of the resultant factor residuals according to multivariate econometric models (3.4) and (3.5).

The calculated $DW$ value is compared with $DW_L$ and $DW_U$ in the table:

* if the $DW_{\text{account}}$ is less than$<DW_{L,}$ the residuals are said to be autocorrelated;

* if the $DW_{\text{account}}$ is greater than$>DW_{U,}$ the residuals are said to have no autocorrelation.

Using the data in Table 4 below, we will conduct a regression analysis of the factors affecting the volume of Sanoatkurilishbank loans.

In this model, the p-value of $X_{1,}$ $X_4$ and $X_6$ is greater than 0.005, the model is not statistically significant..

According to a multivariate econometric model based on data from Sanoatkurilishbank loans in the Republic of Uzbekistan, the lower limit of the Durbin-Watson criterion is $DW_L$=0,71 and the upper limit is $DW_U$=1,45. $DW_{\text{account}}$=2,2546. Therefore, since the $DW_{\text{account}}>DW_{U,}$ there is no autocorrelation of the residuals of the resulting factor ($y$).

According to the multivariate econometric model (3.5), compiled on the basis of loans from "Sanoatkurilishbank" in the Republic of Uzbekistan, the lower limit of the Durbin-Watson criterion is $DW_L$=1,07, and the upper limit is $DW_U$=1,43. $DW_{\text{account}}$=1,884.

Therefore, since the $DW_{\text{account}}>DW_{U,}$ there is no autocorrelation of the residuals of the resulting factor ($y$).

Even in this model, the p-value $X_7$ is greater than 0.005, the model is not statistically significant.

The absence of autocorrelation in the residuals of the resulting factor (the volume of textile products (lny)) for the two objects of study also indicates the possibility of using the above multifactorial econometric models (3.4) and (3.5) for forecasting.

$$Y= 1.704x_2 + 0.92x_3 - 378.02x_5 + 5604,46 \quad (3.1)$$

Linguistically, an increase in capital by one unit increases the loans of Sanoatkurilishbank by 1704 units, an increase in the volume of loans received from other banks by one unit increases the loans of Sanoatkurilishbank by 0.92 units, the central bank reserve requirement rate on bank deposits in national currency decreases loans of "Sanoatkurilishbank" by 378.02 units.

Table 7 presents the results of the heteroscedastic test of the econometric model on the volume of loans from Sanoatkurilishbank in the Republic of Uzbekistan.

According to the calculated multi-factor econometric models (3.4) and (3.5), the MAPE coefficient (Mean absolute percent error) is calculated when predicting the effective indicator for future periods, and it is calculated using the following formula:

$$MAPE = \frac{1}{n}\sum_{i=1}^{n}\frac{|y_i - \hat{y}_i|}{y_i} \cdot 100\%, \quad (1)$$

here $y_i$ - are the actual values of the resulting factor, $\hat{y}_i$ - are the calculated values of the resulting factor.

**Table 2: Correlograms of Factors Affecting the Volume of "Sanoatkurilishbank" Loans in the Republic of Uzbekistan**

| Autocorrelation | Partial Correlation | | AC | PAC | Q-Stat | Prob |
|---|---|---|---|---|---|---|
| . \|******* | . \|******* | 1 | 0.921 | 0.921 | 40.774 | 0.000 |
| . \|****** | . \| . | 2 | 0.858 | 0.062 | 76.958 | 0.000 |
| . \|****** | . \| . | 3 | 0.798 | -0.003 | 108.99 | 0.000 |
| . \|***** | .*\| . | 4 | 0.722 | -0.130 | 135.90 | 0.000 |
| . \|***** | . \| . | 5 | 0.666 | 0.066 | 159.34 | 0.000 |
| . \|**** | **\| . | 6 | 0.579 | -0.224 | 177.51 | 0.000 |
| . \|**** | . \| . | 7 | 0.496 | -0.045 | 191.19 | 0.000 |
| . \|*** | . \| . | 8 | 0.425 | -0.003 | 201.51 | 0.000 |
| . \|** | .*\| . | 9 | 0.343 | -0.067 | 208.43 | 0.000 |
| . \|** | . \|*. | 10 | 0.289 | 0.092 | 213.49 | 0.000 |
| . \|** | .*\| . | 11 | 0.217 | -0.132 | 216.41 | 0.000 |
| . \|*. | .*\| . | 12 | 0.136 | -0.106 | 217.58 | 0.000 |
| . \|*. | . \|*. | 13 | 0.084 | 0.076 | 218.05 | 0.000 |
| . \| . | . \| . | 14 | 0.031 | 0.017 | 218.12 | 0.000 |
| . \| . | . \| . | 15 | -0.007 | 0.007 | 218.12 | 0.000 |
| . \| . | . \| . | 16 | -0.043 | -0.021 | 218.26 | 0.000 |
| .*\| . | . \| . | 17 | -0.088 | -0.046 | 218.84 | 0.000 |
| .*\| . | .*\| . | 18 | -0.132 | -0.135 | 220.21 | 0.000 |
| .*\| . | . \| . | 19 | -0.173 | -0.014 | 222.64 | 0.000 |
| **\| . | .*\| . | 20 | -0.217 | -0.114 | 226.64 | 0.000 |

Date: 09/16/22 Time: 13:18.
Sample: 1 45
Included observations: 45

If the calculated MAPE ratio is less than 15.0 percent, the model can be used to predict the resulting ratio, otherwise it cannot be used. In the Republic of Uzbekistan, the MAPE ratio for "Sanoatkurilishbank" loans is 5.22 percent and 6.24 percent, respectively (Figures 3.7 and 3.8).

Thus, the MAPE coefficients are less than 15.0 percent, so multifactor econometric models (3.4) and (3.5) can be used to predict the volume of Sanoatkurilishbank loans in the Republic of Uzbekistan.

## 5 CONCLUSION

Ensuring a stable growth rate of loans issued by commercial banks is one of the priorities for reforming the banking system of the Republic of Uzbekistan in 2020-2025.

At the request of the Central Bank, reserve allocations are established for all categories of classified loans (standard, non-standard, bad, doubtful, bad).

An increase in capital by one unit increases the loans of "Sanoatkurilishbank" by 1.704 units, an increase in the volume of loans received from other banks by one unit increases the loans of "Sanoatkurilishbank" by 0.92 units, the required reserve ratio of the Central Bank in relation to bank deposits in national currency reduces the loans of "Sanoatkurilishbank" by 378.02 units.

In our opinion, in order to ensure stable growth rates of loans provided by commercial banks of the Republic of Uzbekistan, it is necessary to take the following measures:

1. To ensure a stable growth rate of loans from commercial banks, firstly, it is necessary to ensure a balance between the profitability of loans and credit risks; secondly, it is necessary to ensure a balance between the weight of loans in gross assets and the weight of interest income received from loans in the gross income of a commercial bank; thirdly, it is necessary to ensure the sufficiency of deposits of commercial banks.

Deposits are the main source of loans from commercial banks. Therefore, ensuring the sufficiency of deposits of commercial banks plays an important role in increasing the volume of their loans.

2. In order to increase the role of monetary policy in stimulating the lending activities of commercial banks, firstly, it is necessary to reduce the required reserve ratio established for deposits of commercial banks in foreign currency to the level of the required reserve ratio established for deposits in national currency; secondly, it is necessary to increase the volume of operations of the Central Bank in the open market by issuing its bonds and government

**Table 3: Matrix of private and pairwise correlation coefficients between factors affecting the volume of loans "Sanoatkurilish-bank" in the Republic of Uzbekistan**

| Covariance Analysis: Ordinary | | | | | | |
|---|---|---|---|---|---|---|
| Date: 05/16/22 Time: 20:24 | | | | | | |
| Sample: 1 11 | | | | | | |
| Included observations: 11 | | | | | | |
| Covariance | | | | | | |
| Correlation | | | | | | |
| t-Statistic | | | | | | |
| Probability | X1 | Y2 | X2 | X4 | X5 | X6 |
| X1 | 6.86E+12 | | | | | |
| | 1.000000 | | | | | |
| | —– | | | | | |
| | —– | | | | | |
| Y2 | 2.99E+09 | 2535653. | | | | |
| | 0.717929 | 1.000000 | | | | |
| | 3.094004 | —– | | | | |
| | 0.0128 | —– | | | | |
| X2 | 7.57E+11 | 2.10E+08 | 1.02E+11 | | | |
| | 0.902796 | 0.412446 | 1.000000 | | | |
| | 6.297547 | 1.358247 | —– | | | |
| | 0.0001 | 0.2075 | —– | | | |
| X4 | 6262607. | -246.3058 | 1148828. | 22.61157 | | |
| | 0.502742 | -0.032529 | 0.755035 | 1.000000 | | |
| | 1.744750 | -0.097637 | 3.454564 | —– | | |
| | 0.1150 | 0.9244 | 0.0072 | —– | | |
| X5 | 1.69E+09 | 557993.2 | 2.07E+08 | 2086.682 | 448524.0 | |
| | 0.964056 | 0.523228 | 0.968179 | 0.655236 | 1.000000 | |
| | 10.88515 | 1.841936 | 11.60621 | 2.602127 | —– | |
| | 0.0000 | 0.0986 | 0.0000 | 0.0286 | —– | |
| X6 | 2.36E+10 | 10402952 | 2.75E+09 | 23140.80 | 5992163. | 89453105 |
| | 0.954233 | 0.690739 | 0.908639 | 0.514536 | 0.946004 | 1.000000 |
| | 9.572165 | 2.865724 | 6.527871 | 1.800189 | 8.755128 | —– |
| | 0.0000 | 0.0186 | 0.0001 | 0.1054 | 0.0000 | —– |

securities; thirdly, it is necessary to create a special reserve fund that will eliminate the risk of a sharp increase in interest rates on loans, which will occur as a result of an increase in demand for credit resources; Fourthly, the Central Bank should control changes in interest rates through REPO auctions.

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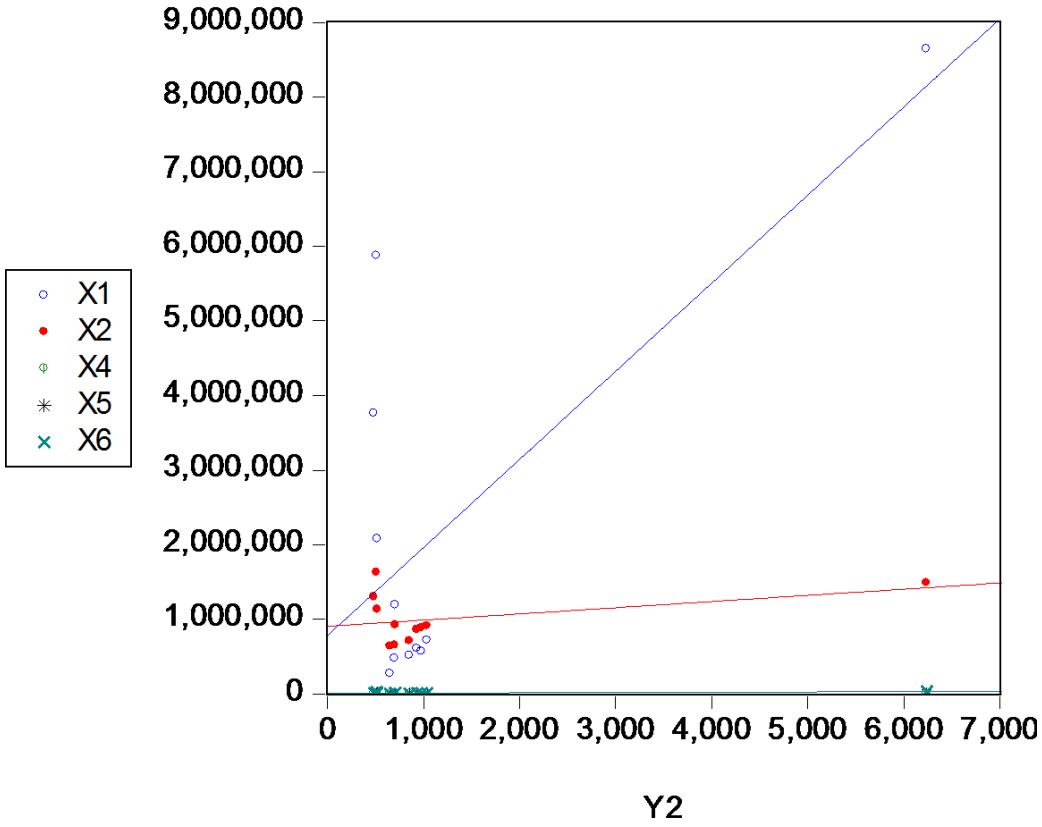


**Figure 2: View of the type of relationship between factors (Xn) and the resulting factor (Y) affecting the volume of loans of "Sanoatkurilishbank" in the Republic of Uzbekistan.**

**Table 4: Regression analysis of factors influencing the volume of loans "Sanoatkurilishbank" in the Republic of Uzbekistan**

| Dependent Variable: Y | | | | |
|---|---|---|---|---|
| Method: Least Squares | | | | |
| Date: 09/16/22 Time: 13:19 | | | | |
| Sample: 1 45 | | | | |
| Included observations: 45 | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| X1 | 0.284534 | 0.163756 | 1.737551 | 0.0906 |
| X2 | 1.471612 | 0.226965 | 6.483877 | 0.0000 |
| X3 | 0.874156 | 0.030119 | 29.02324 | 0.0000 |
| X4 | -224.3614 | 143.9678 | -1.558414 | 0.1276 |
| X5 | -296.5668 | 107.5761 | -2.756810 | 0.0090 |
| X6 | 42.79390 | 41.47403 | 1.031824 | 0.3089 |
| X7 | 191.7242 | 84.71604 | 2.263139 | 0.0296 |
| C | 5220.009 | 1640.296 | 3.182359 | 0.0030 |
| R-squared | 0.998478 | Mean dependent var | | 19434.51 |
| Adjusted R-squared | 0.998190 | S.D. dependent var | | 13954.01 |
| S.E. of regression | 593.6990 | Akaike info criterion | | 15.77043 |
| Sum squared resid | 13041705 | Schwarz criterion | | 16.09162 |
| Log likelihood | -346.8347 | Hannan-Quinn criter. | | 15.89017 |
| F-statistic | 3467.038 | Durbin-Watson stat | | 1.008583 |
| Prob(F-statistic) | 0.000000 | | | |

**Table 5: Regression analysis of factors influencing the volume of loans "Sanoatkurilishbank" in the Republic of Uzbekistan.**

Dependent Variable: Y

Method: Least Squares
Date: 09/16/22 Time: 13:22
Sample: 1 45
Included observations: 45

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| X2 | 1.778301 | 0.106897 | 16.63565 | 0.0000 |
| X3 | 0.900132 | 0.027158 | 33.14391 | 0.0000 |
| X5 | -356.2605 | 68.67458 | -5.187662 | 0.0000 |
| X7 | 61.78868 | 35.18197 | 1.756260 | 0.0867 |
| C | 4957.822 | 1015.650 | 4.881427 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.998301 | Mean dependent var | 19434.51 |
| Adjusted R-squared | 0.998131 | S.D. dependent var | 13954.01 |
| S.E. of regression | 603.2081 | Akaike info criterion | 15.74684 |
| Sum squared resid | 14554400 | Schwarz criterion | 15.94758 |
| Log likelihood | -349.3039 | Hannan-Quinn criter. | 15.82167 |
| F-statistic | 5876.493 | Durbin-Watson stat | 0.958377 |
| Prob(F-statistic) | 0.000000 | | |

**Table 6: Regression analysis of factors influencing the volume of loans "Sanoatkurilishbank" in the Republic of Uzbekistan.**

Dependent Variable: Y

Method: Least Squares
Date: 09/16/22 Time: 13:21
Sample: 1 45
Included observations: 45

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| X2 | 1.704479 | 0.100754 | 16.91730 | 0.0000 |
| X3 | 0.928039 | 0.022578 | 41.10407 | 0.0000 |
| X5 | -378.0276 | 69.24268 | -5.459460 | 0.0000 |
| C | 5604.468 | 970.3244 | 5.775871 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.998170 | Mean dependent var | 19434.51 |
| Adjusted R-squared | 0.998036 | S.D. dependent var | 13954.01 |
| S.E. of regression | 618.3516 | Akaike info criterion | 15.77668 |
| Sum squared resid | 15676707 | Schwarz criterion | 15.93727 |
| Log likelihood | -350.9753 | Hannan-Quinn criter. | 15.83655 |
| F-statistic | 7455.268 | Durbin-Watson stat | 0.896408 |
| Prob(F-statistic) | 0.000000 | | |

**Table 7: Results of a heteroscedastic test of an econometric model based on the volume of loans from "Sanoatkurilishbank" in the Republic of Uzbekistan.**

Heteroskedasticity Test: Breusch-Pagan-Godfrey

| | | | |
|---|---|---|---|
| F-statistic | 7.571518 | Prob. F(5,39) | 0.0000 |
| Obs*R-squared | 22.16556 | Prob. Chi-Square(5) | 0.0005 |
| Scaled explained SS | 19.98969 | Prob. Chi-Square(5) | 0.0013 |

Test Equation:
Dependent Variable: RESIDˆ2
Method: Least Squares
Date: 09/16/22 Time: 13:24
Sample: 1 45
Included observations: 45

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | -366118.8 | 942857.0 | -0.388308 | 0.6999 |
| X2 | -23.09918 | 67.57549 | -0.341828 | 0.7343 |
| X3 | 46.75861 | 17.12254 | 2.730822 | 0.0094 |
| X4 | 53289.26 | 74336.93 | 0.716861 | 0.4777 |
| X5 | -1180.806 | 45851.62 | -0.025753 | 0.9796 |
| X7 | -54810.46 | 45543.62 | -1.203472 | 0.2360 |

| | | | |
|---|---|---|---|
| R-squared | 0.492568 | Mean dependent var | 320095.0 |
| Adjusted R-squared | 0.427513 | S.D. dependent var | 501632.2 |
| S.E. of regression | 379549.5 | Akaike info criterion | 28.65492 |
| Sum squared resid | 5.62E+12 | Schwarz criterion | 28.89581 |
| Log likelihood | -638.7358 | Hannan-Quinn criter. | 28.74472 |
| F-statistic | 7.571518 | Durbin-Watson stat | 1.602404 |
| Prob(F-statistic) | 0.000048 | | |