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	GIF (Australia) = 0.564	ESJI (KZ) = 8.771	IBI (India) = 4.260
	JIF = 1.500	SJIF (Morocco) = 7.184	OAJI (USA) = 0.350

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Issue Article

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ASSESSING THE FINANCIAL CONDITION OF JOINT STOCK COMPANIES THROUGH ECONOMETRIC RESEARCH OF ASSET PROFITABILITY DIRECTIONS

Abstract: *ROA (Return on Assets) is a crucial indicator utilized by analysts and investors for making investment decisions and ensuring the financial stability of a company. Factors such as profits from sales, the total operational cost of the company, and the composition of its assets affect the financial stability of the company. This article investigates the extent of the impact of these factors on asset profitability based on data from three companies operating in the production sector in the Republic of Uzbekistan. According to the research results, a significant correlation exists between the net profit factor and asset profitability. There is a strong correlation between the operational expenses factor and asset profitability. However,it was determined that there is an inverse moderate correlation between the asset value factor and asset profitability.*

Key words: *Assets, profit, income, profitability, return on assets, ROA, financial soundness, corporate governance, joint stock company.*

Language: *English*

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Introduction

Today, improving the financial stability indicators of joint-stock companies operating in our country is closely related to effectively organizing corporate governance. The more financially stable joint-stock companies are, the more competitive they become.

One of the main indicators of a joint-stock company's financial activity is its financial stability. Absolute financial stability provides companies with several advantages when borrowing from other companies in the same field, attracting investments, and entering into contracts with suppliers. Therefore, assessing the financial stability of companies is considered one of the crucial steps in corporate governance. The primary aim of examining corporate financial stability is to identify weaknesses in corporate financial activity in time and to eliminate them. This means studying the distribution of assets and liabilities in the company structure and taking measures to improve its financial condition. Today, in the context of developing international relations, One of the indicators expressing the financial stability of a company is profitability indicators, which help evaluate the socio-economic condition of the company in market relations. Profitability is an economic indicator expressing how effectively resources, such as material goods, personnel, funds, and other tangible and intangible assets, are used. It's possible to determine not only a particular asset profitability but also the overall profitability of the company.

Analysis of microeconomic theories shows that in all developed countries, as well as in Uzbekistan, the Return on Assets (ROA) is considered one of the most effective indicators for evaluating a company's financial condition. Additionally, literature published by several foreign authors indicates the significant role of income from sales, the company's total operating costs, and asset structure in forming the Return on Assets (ROA) indicator. Below, the impact of these factors on the Return on Assets (ROA) is econometrically analyzed using the example of three large joint-stock companies in the Republic of

Uzbekistan, namely "Tashkent Mechanical Plant" JSC, JSC "Kuyuv Mechanical Plant" and " Uzvagontamir" JSC.

Return on Assets (ROA) is a financial indicator expressing the efficient use of company assets to generate income, and analyzing this indicator is of great importance in establishing effective corporate governance in joint-stock companies."

2. Literature Review

Asset profitability is one of the issues that is widely discussed today, and is widely discussed by economists, and it is one of the important indications of the company's economic success and the profitability of the company for investors. Asset profitability and its effect on the company's economic efficiency and effective corporate governance are being studied from a theoretical and practical point of view as a result of research conducted by economists.

Shoyb Rostamia emphasized that the role and importance of corporate governance for the success of companies has become increasingly important due to the recent events and financial crises of companies all over the world. In his scientific research, he studied the impact of corporate governance components on profitability assessment criteria such as profitability of assets and profitability of company shares. The results show that there is a positive relationship between asset profitability and the concentration of ownership, the independence of the Board of Directors, the activity of the vacant director, and a negative relationship between institutional ownership and the size of the Board of Directors.

Vladimir Ivanovich Boboshko, while making scientific findings about the importance of asset profitability analysis, emphasizes the possibility of asset optimization to increase the income of the organization without increasing the resources and even reducing the production profitability. At the same time, he emphasizes that if the increase in assets does not improve the use of assets, it may have a negative effect on the financial results of the organization and lead to a loss of income from the economic point of view.

Anvar Mahlik Avlokulov emphasizes that in his scientific research, assets, profitability, capital, income, profit, expenses, balance and assets reflect the general financial situation and play an important role in strategic management and decision-making and in the investor's evaluation of the company . As a result of the research, it was determined that there is a strong correlation between asset profitability and income from sales, asset composition and operating expenses have a negative impact on the overall financial balance. Anvar Avlokulov, based on his scientific research, proposed the following to strengthen financial stability:

It is the main factor in increasing the company's financial stability indicators, especially ROA. Usually, companies try to reduce net costs by optimizing the use of raw materials, which ultimately leads to significant changes in the quality of goods or services. It is necessary to reduce costs by introducing raw materials and labor-intensive technologies instead of changing the composition of goods.

Moliavii stability sofa serves to balance the cost-related aspects while remaining committed to cost reduction and technological modernization. Income-related aspects can be promoted by expanding consumer geography, diversifying manufactured goods and services, and increasing trade volumes by equalizing market share.

According to Utomo Dwi Pangestu, asset profitability analysis is very useful for company management to increase the efficiency of the company's activities, for investors and creditors to assess the company's financial stability and efficiency. If a company uses its resources more efficiently, it tends to be a profitable company or a company with high profitability.

If the company's ROA is low, the company's management still faces problems in managing the company's resources related to the ROA, so the company experiences inefficiency. However, the higher the ROA, the more effective asset management will be, and the more efficient the company's operations and management will be in managing the company's resources.

According to the research results, it was found that the profitability of the assets does not have a significant effect on the profitability, but the total turnover of the assets affects the profitability. This means that the higher the value of the total asset turnover, the higher the equity value, and the variable value of the total asset turnover is the decrease of the equity value of Islamic insurance companies.

Basic means of rotation affect productivity. This means that the main tools of the trade are changing their prices, increasing their prices.

3. Methodology

Research methodology is based on financial reporting data and macroeconomic indicators. The company's sales revenue reflects its production and market conditions. Total cost includes all the costs that the company spends on its activities. The composition of assets shows the dynamics of investment capital and the development of the company.

4. Data analysis

The following factors were selected for multifactor econometric analysis. The resulting factor is return on assets (Y), and the influencing factors are net profit, thousand soums (X1), operating expenses, thousand soums (X2) and value of assets, thousand soums (X3).

The "Least Squares" method is used to create econometric models based on the factors affecting the

return on assets of companies. First, descriptive statistics on the factors for conducting econometric studies based on this method are conducted.

Based on the data of "Tashkent Mechanical Plant" JSC, we conduct descriptive statistics on factors (Table 1).

Table 1. Descriptive statistics on the data of JSC "Tashkent Mechanical Plant".

Indicators	ROA, *Y*	Net Income, X1	operational expenses, X2	asset value, X3
Mean	9.113764	22800896	52895688	2.67E+08
Median	3.721319	11005791	53141403	2.69E+08
Maximum	23.18000	56942172	63541254	3.02E+08
Minimum	0.424469	1201202.	42375359	2.40E+08
Std. Dev.	10.87099	26027733	8810684.	26096259
Skewness	0.645583	0.609585	-0.013377	0.078976
Kurtosis	2.496624	2.496461	3.337456	2.401670
Jarque-Bera	0.001812	0.001751	0.000192	0.001902
Probability	0.612071	0.626018	0.707798	0.724372
Sum	54.68258	1.37E+08	3.17E+08	1.60E+09
Sum Sq. Dev.	590.8917	3.39E+15	3.88E+14	3.41E+15
Observations	6	6	6	6

The average values (mean), median (median), maximum and minimum values (maximum, minimum) of each variable in the monitored sample can be seen from the table data. For example, the average value of the resulting factor (return on assets, Y) is 9.11, the median value is 3.72, the maximum value is 23.18, and the minimum value is 0.42.

Std. Dev. (Standard Deviation) – the coefficient of standard deviation shows how much each variable deviates from the average value.

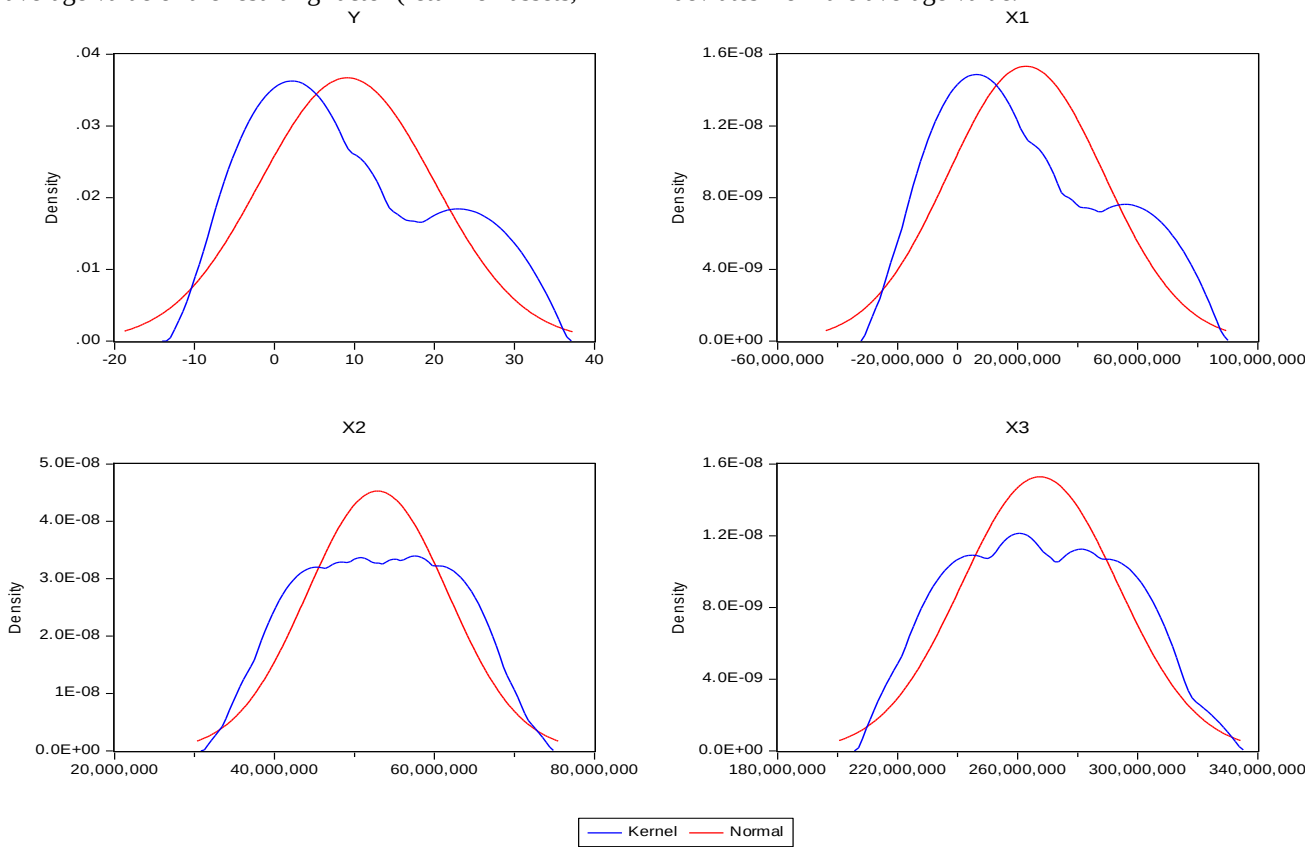

Figure 1. Graphs of factor distribution functions

Skewness is a coefficient of asymmetry, and if it is equal to zero, it means that the distribution is normal and that the distribution is symmetrical. If this coefficient is significantly different from 0, then the distribution is asymmetric (that is, not symmetrical). If the coefficient of asymmetry is greater than 0, then

the distribution is shifted to the right, if it is less than 0, then the distribution is shifted to the left. Graphs of distribution functions of all factors are presented in Figure 1 below.

Therefore, it can be seen from the graphs presented in Figure 1 that the values of the asymmetry coefficients of all factors except the factor X2 are positive (Table 1), which indicate that the distribution is shifted to the right. This shows that the studied factors obey a normal distribution.

Kurtosis is the coefficient of kurtosis (it is equal to 3 in a normal distribution) which measures the sharpness of the peak of the distribution (Figure 1). If the kurtosis coefficient is greater than 0, then the distribution is sharp-peaked, if it is less than 0, then it is flat (flat-peaked). Since the value of the kurtosis coefficients of all factors is less than 3.0, they do not have a sharp peak (Figure 1).

Using the Jarque-Bera statistic, we check whether the factors obey a normal distribution. In addition, Jarque-Bera statistics also show probabilities for each factor. If the probability of a factor is greater than 0.05 according to Jarque-Bera statistics, it is not necessary to include it in the multifactor econometric model.

Therefore, it can be seen from the data of Table 1 that the probability of the values of the Jarque-Bera statistics of the factors (Probability) is less than 0.05. Before deciding whether or not to include these factors in a multivariate econometric model, it is necessary to calculate the correlations between the factors. Correlation coefficients should be calculated to find relationships between factors.

The correlation coefficient is calculated according to the following formula:

$$r_{yx_i} = \frac{\overline{Y \cdot X} - \overline{Y} \cdot \overline{X}}{\sigma_X \cdot \sigma_Y},$$

where - indicates the mean square deviation of the factors;

Below are the values of correlations between the factors (Table 2).

Table 2. Matrix of correlation coefficients between factors

Covariance Analysis: Ordinary
Date: 04/09/23 Time: 23:16
Sample: 2017 2022
Included observations: 6
Correlation
t-Statistic
Probability

	Y	X1	X2	X3
Y	1,000,000			
X1	0.999017	1,000,000		
	45.06482	-----		
	0.0000	-----		
X2	0.835706	0.641762	1,000,000	
	4.343488	1.965455	-----	
	0.0383	0.0793	-----	
X3	-0.516938	-0.485624	-0.304246	1,000,000
	-3.232197	-1.111054	-0.638773	-----
	0.0479	0.3288	0.5577	-----

It can be seen from the data of Table 2 that the indicators of connection densities between the factors included in the multifactor econometric model are presented here - the correlation matrix. In this correlation matrix, 2 different correlation coefficients were calculated.

1) Specific correlation coefficients, that is, connection densities between the resulting factor (Y) and influencing factors (Xi).

2) Pair correlation coefficients, that is, connection densities between influencing factors (Xi, Xj).

It can be seen from the data of the table that the private correlation coefficients show sufficiently strong connections between the factors. There is a close relationship between the return on assets (Y) and the factor of net profit (X1). There is a strong correlation ($r_{Y,X_1} = 0{,}9990$) between the return on assets (Y) and the operating expenses (X2) factor. But it can be seen that there is an inverse average relationship ($r_{Y,X_2} = 0{,}8357$) between the return on assets (Y) and the value of assets (X3).

In addition, we check the reliability of correlation coefficients using the t-Student test. For this, we compare the t-statistics and probability of the calculated correlation coefficients with the table values of the t-statistics.

The degree of freedom is equal $df = 3$ to the table value $\alpha = 0{,}05$ of the t-statistic in the probability $t_{kp} = 3{,}182$ of employment.

If we look at the t-statistics and probabilities on private correlation coefficients between the resulting factor - return on assets (Y) and the factors affecting it in Table 2, they are as follows.

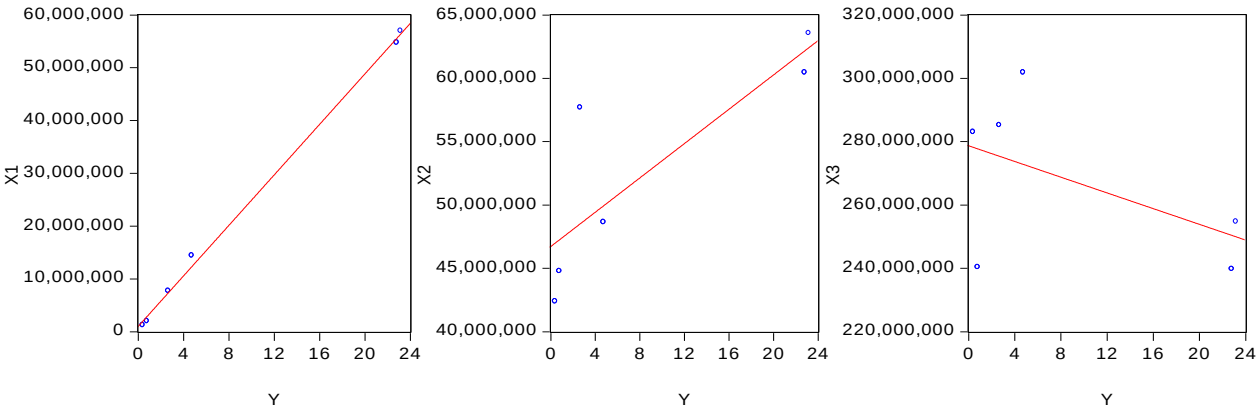

Figure 2. Density of connection of factors with the resulting indicator

It should be noted that the validity of the final results in the formation of the multifactor regression model is explained by the condition of the low joint effect between the factors (the absence of multicollinearity). If the value of the pair correlation coefficient, which takes into account the strong relationship between two factors, is greater than 0.7, then such factors are multicollinear. No signs of multicollinearity are observed in the data of Table 2 (it can be seen that the connection densities between all influencing factors (Xi, Xj) are less than 0.7).

Based on the correlation analysis presented above, we will create a multifactor econometric model. The appearance of a multifactor econometric model is as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon, \qquad (1)$$

where: Y - return on assets of the company;

X_1 - net profit of the company;

X_2 - operating expenses of the company;

X_3 - the value of the company's assets;

ε - random error.

We will perform calculations to create an econometric model in the EViews 9 program based on the data of JSC "Tashkent Mechanical Plant". The results are presented in Table 3 below.

Table 3. Regression results

Dependent Variable: Y
Method: Least Squares
Date: 04/09/23 Time: 23:25
Sample: 2017 2012
Included observations: 6

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X_1	4.10E-07	5.56E-08	26.50378	0.0000
X_2	-3.91E-09	9.93E-09	-2.933191	0.0212
X_3	-1.71E-08	7.19E-09	-1.961246	0.0565
C	4.557641	0.388299	1.644784	0.0124
R-squared	0.999360	There is a mean dependent		9.113764
Adjusted R-squared	0.998399	SD dependent		10.87099
SE of regression	0.434967	Akaike info criterion		1.407630
Sum squared resid	0.378393	Schwarz criterion		1.268803
Log likelihood	-0.222890	Hannan-Quinn criterion.		0.851894
F-statistic	1040,387	Durbin-Watson stat		2.097863
Prob(F-statistic)	0.000960			

A multifactor econometric model looks like this:

$$Y = 4{,}5576 + (4{,}10E-07)\cdot X_1 - (3{,}91E-09)\cdot X_2 - (1{,}71E-08)\cdot X_3 \quad (2)$$
$$(1{,}644) \quad (26{,}503) \quad (-2{,}933) \quad (-1{,}961)$$

(The values given in parentheses are the values of the t-Student test, which determines the reliability of each factor).

We evaluate the coefficient of determination (R-squared) to check the statistical significance of the constructed (2) multifactor econometric model. The coefficient of determination is equal to 0.99936, which means that the profitability of assets in JSC "Tashkent Mechanical Plant" is 99.936% of the factors included in the multi-factor econometric model. The remaining 0.064 percent is the effect of factors that have not been taken into account.

We use Fisher's F-criterion to check the suitability (adequacy) of the constructed model (2) to the process under study.

The calculated value of the F-criterion is calculated using the following formula:

$$F_{\text{хисоб}} = \frac{R^2}{1-R^2}\cdot\frac{n-m-1}{m}, \quad (3)$$

here: R^2 - coefficient of determination; n - number of observations; m - the number of factors.

F- the calculated value of the criterion $F_{\text{хисоб}} = 1040{,}387$ is equal to If the calculated value is greater than the value in the table, then the constructed multifactor econometric model is said to be statistically significant or adequate for the studied process.

F- we find the tabular value of the criterion. degrees of freedom for this $k_1 = m$ and $k_2 = n-m-1$ and α we calculate the values according to the level of significance. Level of importance $\alpha = 0{,}05$ and degrees of freedom $k_1 = 3$ and $k_2 = 6-3-1 = 2$ Based on the table value of the F-criterion $F_{\text{жадвал}} = 19{,}16$ is equal to

Account>The table satisfies the condition, which indicates that the calculated value of the F-criterion is greater than the value in the table and that the constructed multifactor econometric model is statistically significant.

It can be seen from the multifactor econometric model (2) compiled based on the data of JSC "Tashkent Mechanical Plant" that if the net profit (X1) of the enterprise increases by one thousand soums, the return on assets (Y) increases by 0.000000410% on average. If the total operating costs of the enterprise (X2) increase by one thousand soums, the return on assets (Y) decreases by an average of 0.000000004 percent. If the value of the company's assets (X3) increases by 1 thousand soums, the return on assets (Y) of the company decreases by 0.000000017% on average.

(2) the graph obtained based on the model has the following appearance (Fig. 3).

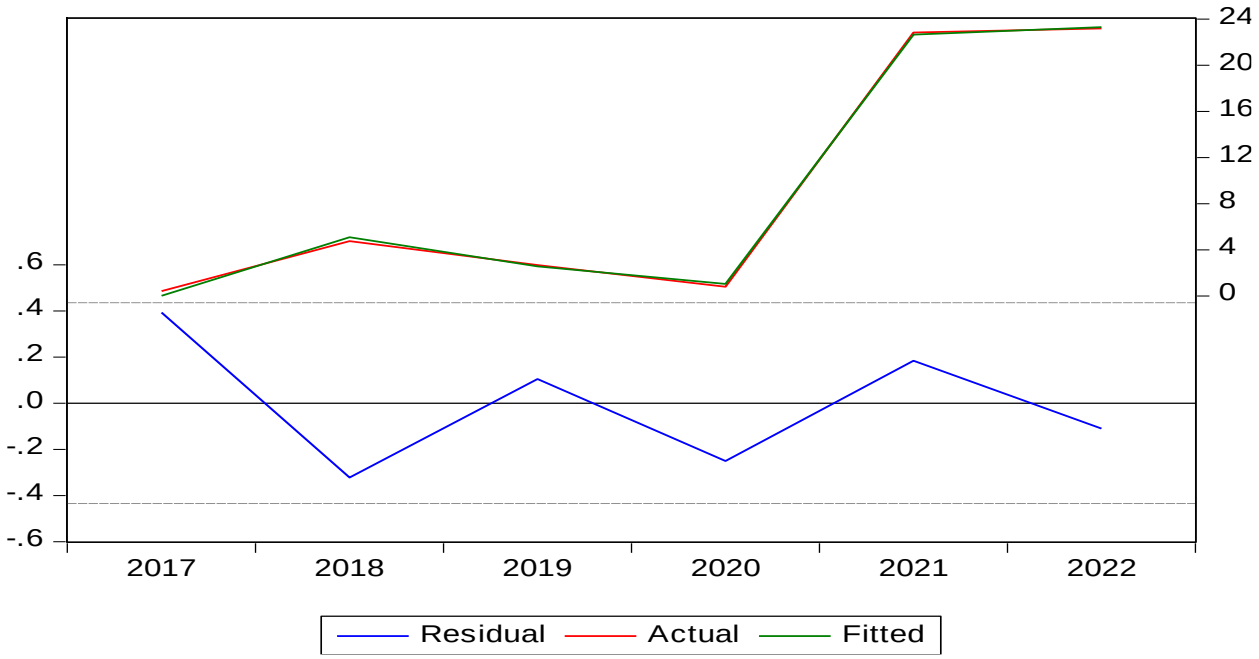

Figure 3. Actual (Actual), calculated (Fitted) and difference (Residual) graph of the resulting factor

It can be seen from Figure 3 that the differences between the actual data (Actual) of JSC "Tashkent Mechanics Plant" and the values of (2) multifactor econometric model constructed on their basis (Fitted)

are not significant. This situation also indicates that the constructed multifactor econometric model (2) is adequate (suitable) for the researched process.

The Hannah-Quinn criterion selected the best model with a coefficient value of 0.851892.

(2) we use the Darbin-Watson (DW) test to check for autocorrelation in the residuals of the resulting factor according to the model, and it is calculated according to the following formula:

$$DW = \frac{\sum_{t=2}^{T}(e_t - e_{t-1})^2}{\sum_{t=1}^{T} e_t^2} = \frac{\sum_{t=2}^{T} e_t^2 + \sum_{t=2}^{T} e_{t-1}^2 - 2\sum_{t=2}^{T} e_t e_{t-1}}{\sum_{t=1}^{T} e_t^2} = 2 - 2\frac{\sum_{t=2}^{T} e_t e_{t-1}}{\sum_{t=1}^{T} e_t^2} \approx 2(1-\rho_1), \quad (4)$$

here ρ_1 - correlation coefficient of the first order.

If there is no autocorrelation among the residuals of the resulting factor, $DW = 2$, in positive autocorrelation DW tends to zero, and tends to 4 in case of negative autocorrelation.

$$\begin{cases} \rho_1 = 0 \to DW = 2; \\ \rho_1 = 1 \to DW = 0; \\ \rho_1 = -1 \to DW = 4. \end{cases}$$

The calculated DW value is compared with the DW value in the table. If there is no autocorrelation in the residuals of the resulting factor, then the value of the calculated DW criterion will be around 2. In our example, the value of the calculated DW criterion is 2.0978. This indicates that there is no autocorrelation from the resulting factor residuals.

We will also conduct an econometric study according to the above algorithm based on the data of DP "Casting Mechanics Plant" JSC.

Now we will create a multi-factor econometric model based on the data of DP "Casting Mechanics Plant" JSC for 2017-2022.

Based on the data of DP "Casting Mechanics Plant" JSC, we conduct descriptive statistics on factors (Table 4).

Table 4. According to the information of JSC DP "Casting Mechanics Plant". descriptive statistics

Indicators	return on assets, Y	Pure benefit, X1	Operating expenses, X2	Assets value, X3
Mean	0.053682	301301.8	1.75E+08	5.84E+08
Median	0.039473	213540.0	1.83E+08	6.16E+08
Maximum	0.128575	624323.0	2.47E+08	6.71E+08
Minimum	0.009578	55461.00	87587694	4.46E+08
Std. Dev.	0.046660	250688.7	54905546	98395350
Skewness	0.679519	0.510653	-0.380627	-0.450886
Kurtosis	1.999993	1.511574	2.286119	1.507648
Jarque-Bera	2.711749	1.814620	2.272283	3.760077
Probability	0.004561	0.015438	0.007719	0.000835
Sum	0.322091	1807811.	1.05E+09	3.51E+09
Sum Sq. Dev.	0.010886	3.14E+11	1.51E+16	4.84E+16
Observations	6	6	6	6

The mean value of the outcome variable, return on assets (Y), is 0.0537, the median value is 0.0395, the maximum value is 0.1286, and the minimum value is 0.0096.

The values of the asymmetry coefficients of Y and X1 of the resulting and influencing factors are positive. This is in relation to the normal distribution function of the factorsmeans that the distribution is shifted to the right, but X_2 and X_3 the asymmetry coefficients of the factors are negative(Figure 4). This is itwith respect to the normal distribution function of the factors means that the distribution is shifted to the left. This shows that the studied factors obey a normal distribution.

The kurtosis coefficients for all factors are greater than 0, which means that the distribution has a sharp peak (Figure 4).

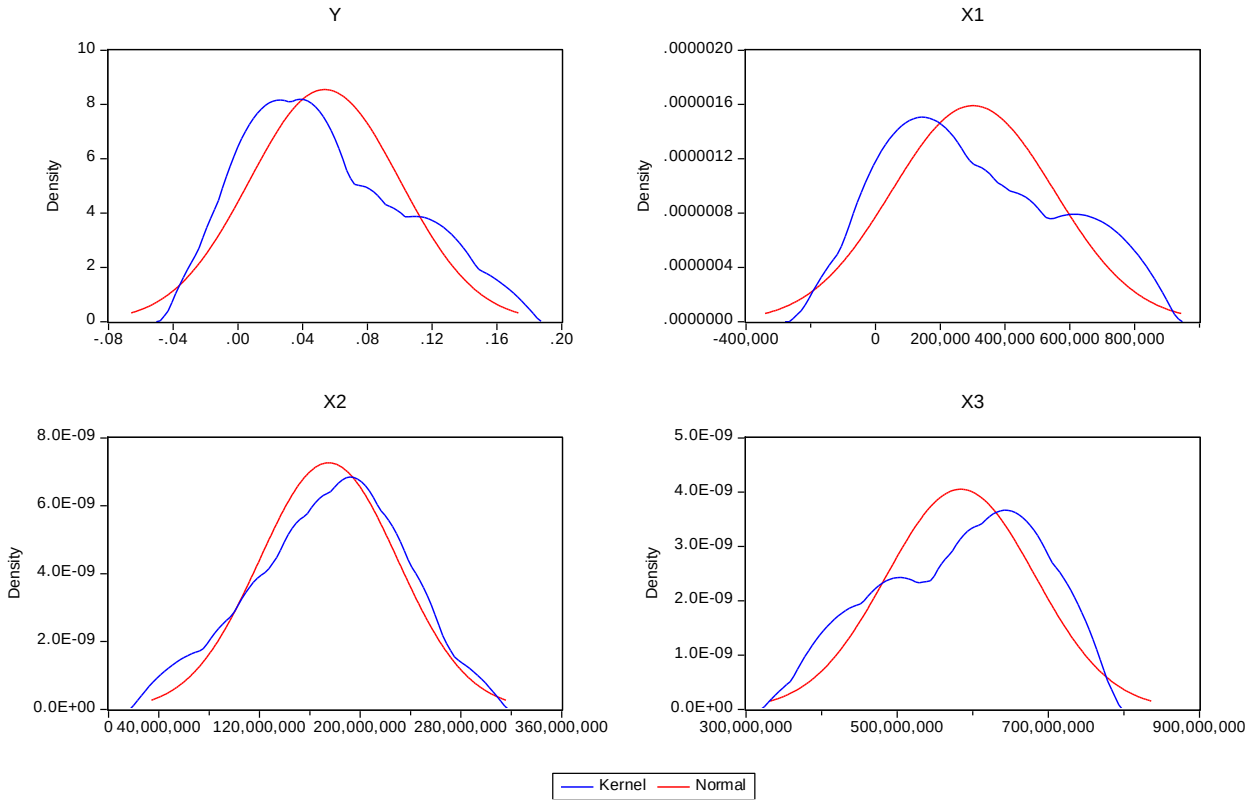

Figure 4. Graphs of factor distribution functions

From the data of Table 4, it can be seen that the probability of the values of Jarque-Bera statistics of the factors (Probability) is less than 0.05. Before deciding whether or not to include these factors in a multivariate econometric model, we estimate the correlations between the factors.

Below we present the values of correlations between factors in JSC "Puyuv Mechanics Plant" (Table 5).

Table 5. Matrix of correlation coefficients between factors

Covariance Analysis: Ordinary
Date: 04/10/23 Time: 00:07
Sample: 2017 2022
Included observations: 6
Correlation
t-Statistic
Probability

	Y	X1	X2	X3
Y	1,000,000			
X1	0.965359	1,000,000		
	7.399473	-----		
	0.0018	-----		
X2	0.657601	0.223153	1,000,000	
	3.210138	0.457852	-----	
	0.0071	0.6708	-----	
X3	-0.741300	-0.098617	-0.466482	1,000,000
	-3.851782	-0.198199	-0.913444	-----
	0.0052	0.8526	0.4284	-----

From the data in Table 5, it can be seen that the private correlation coefficients indicate that there are sufficiently good relationships between the factors. A close relationship between the return on assets (Y) and the factor of net profit (X1) ($r_{Y,X_1} = 0{,}9654$) is available. The average relationship between the return on assets (Y) and the operating expenses (X2) factor (

$r_{Y,X_2} = 0{,}6576$) is available. But there is a strong inverse relationship between the asset yield (Y) and the asset value (X3) factor ($r_{Y,X_3} = -0{,}7413$) can be seen to exist.

We check the reliability of the correlation coefficients using the t-Student test and compare the t-statistics and probability of the correlation coefficients with the table values of the t-statistics.

Degree of freedom $df = 3$ and $\alpha = 0{,}05$ table value of the t-statistic in the probability of employment $t_{kp} = 3{,}182$ is equal to

If we look at the t-statistics and probabilities on the private correlation coefficients between the resulting factor (Y) and the factors affecting it in Table 5, they are as follows.

Calculated between the return on assets (Y) and the net profit (X1) factor $t_{Y,X_1} = 7{,}3995$, $prob = 0{,}0018$ is equal to This is greater than the table value of the calculated t-statistics ($t_{Y,X_1} = 7{,}3995 > t_{kp} = 3{,}182$) and the relationship between them is reliable.

Calculated between return on assets (Y) and operating expenses (X2) factor $t_{Y,X_2} = 3{,}2101$, $prob = 0{,}0071$ is equal to This is greater than the table value of the calculated t-statistics ($t_{Y,X_2} = 3{,}2101 > t_{kp} = 3{,}182$) shows that

Calculated between the return on assets (Y) and the cost of assets (X3) factor $t_{Y,X_3} = -3{,}8518$, $prob = 0{,}0052$ is equal to This is greater than the table value of the calculated t-statistics ($t_{Y,X_3} = -3{,}8518 > t_{kp} = 3{,}182$) shows that

The relationship between the factors can also be seen in Figure 5 below.

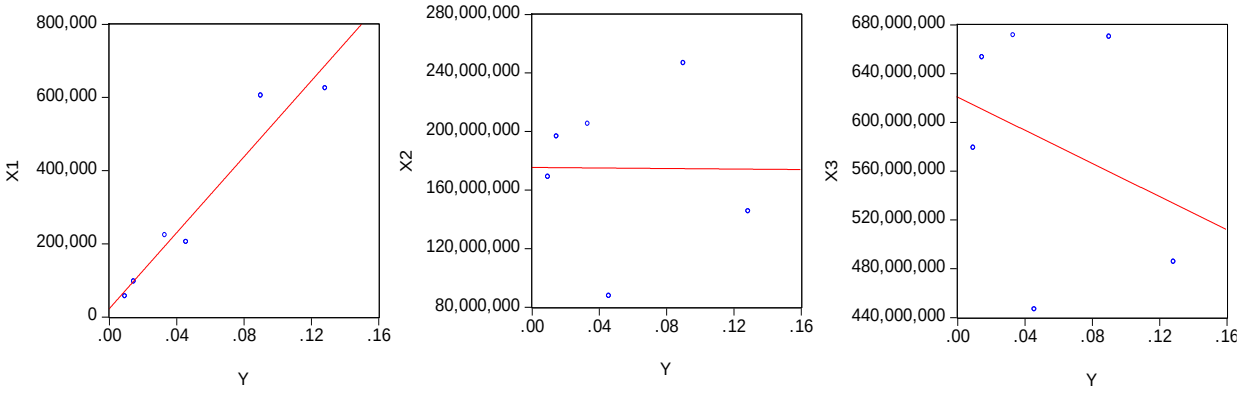

Figure 5. Density of connection of factors with the resulting indicator

We consider the presence of multicollinearity between the factors. As mentioned above, if the value of the pairwise correlation coefficient, which takes into account the strong relationship between two factors, is greater than 0.7, then such factors are multicollinear. No signs of multicollinearity were observed in the data of Table 5.

Therefore, due to the absence of multicollinearity between the factors, we will perform calculations to create a multifactor econometric model for the data of DP "Casting Mechanics Plant" JSC. The results are presented in Table 6 below.

Table 6. Regression analysis results

Dependent Variable: Y
Method: Least Squares
Date: 04/10/23 Time: 00:20
Sample: 2017 2022
Included observations: 6

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X_1	1.84E-07	3.69E-08	4.992110	0.0379
X_2	-1.23E-10	4.73E-9	-3.260859	0.0486
X_3	-4.22E-11	2.58E-9	-3.463098	0.0394
C	0.044433	0.080453	0.552288	0.6362
R-squared	0.984470	There is a mean dependent		0.053682
Adjusted R-squared	0.961176	SD dependent		0.046660
SE of regression	0.009194	Akaike info criterion		-6.305856
Sum squared resid	0.000169	Schwarz criterion		-6.444683

Log likelihood	22.91757	Hannan-Quinn criterion.	-6.861592
F-statistic	42.26206	Durbin-Watson stat	2.045005
Prob(F-statistic)	0.023204		

A multifactor econometric model looks like this:

$$ROA = 0{,}0444 + (1{,}84E-07)\cdot X_1 - (1{,}23E-10)\cdot X_2 - (4{,}22E-11)\cdot X_3 \quad (5)$$
$$(0{,}552) \qquad (4{,}992) \qquad (-3{,}2608) \qquad (-3{,}463)$$

(The values given in parentheses are the values of the t-Student test, which determines the reliability of each factor).

To check the statistical significance of the constructed (5) multifactor econometric model, the coefficient of determination (*R*-squared) we evaluate. The coefficient of determination is equal to 0.984470, which means that the profitability of assets in DP "Kyuyuv Mechanika Zavodi" JSC is 98.45% of the factors included in the multi-factor econometric model. The remaining 1.25 percent is the effect of factors that have not been taken into account.

We use Fisher's F-criterion to check the suitability (adequacy) of the constructed model (5) to the process under study.

F- the calculated value of the criterion $F_{\text{хисоб}} = 42{,}2621$ is equal to Table value of F-criterion $F_{\text{жадвал}} = 19{,}16$ is equal to Fcalc>Table satisfies the condition, which indicates that the calculated value of the F-criterion is greater than the value in the table and the constructed multifactor econometric model is statistically significant.

It can be seen from the multi-factor econometric model (5) compiled based on the data of DP "Casting Mechanics Plant" JSC that if the net profit (X1) increases by one thousand soums, the return on assets (Y) increases by 0.00000018% on average. If the operating costs of the enterprise (X2) increase by one thousand soums, the return on assets (Y) decreases by an average of 0.00000000012 percent. If the value of the company's assets (X3) increases by 1 thousand soums, the return on assets (Y) decreases by 0.000000000042% on average.

The graph based on model (5) looks like this (Fig. 6).

Figure 6. Actual (Actual), calculated (Fitted) and difference (Residual) graph of the resulting factor

(5) we use the Darbin-Watson (DW) test to test for autocorrelation in the resulting factor residuals under model (5). In our example, the value of the calculated DW criterion is 2.045. This indicates that there is no autocorrelation from the resulting factor residuals.

Now we will create a multifactor econometric model based on the data of "Uzvagontamir" JSC. For this, we will make the same calculations as for the two joint-stock companies mentioned above.

Based on the data of JSC "Uzvagontamir" we will conduct descriptive statistics on factors (Table 7).

Table 7. Descriptive statistics on the data of "Uzvagontamir" JSC

	return on assets, Y	Pure benefit, X1	Operating expenses, X2	Assets value, X3
Mean	0.777525	133745.3	51226686	16536585
Median	0.689792	120036.0	51445925	15610566
Maximum	1.216510	259895.0	71247932	21363979
Minimum	0.570623	75141.00	28716323	13168233
Std. Dev.	0.234676	67194.68	14831821	3347147.
Skewness	1.226305	1.209998	-0.188073	0.473716
Kurtosis	3.122953	3.185435	2.163103	1.637716
Jarque-Bera	3.507604	4.472692	3.210471	2.688361
Probability	0.030574	0.007861	0.037113	0.048011
Sum	4.665150	802472.0	3.07E+08	99219511
Sum Sq. Dev.	0.275363	2.26E+10	1.10E+15	5.60E+13
Observations	6	6	6	6

The mean value of the outcome variable (Y) is 0.777, the median value is 0.689, the maximum value is 1.21, and the minimum value is 0.57.

The asymmetry coefficients of X1 and X3 from the resulting and influencing factors took positive values. Only the coefficient of asymmetry of factor X2 took a negative value. This is in relation to the normal distribution function of the factorsmeans that the distribution is shifted to the left.Only X2 of the factorthe distribution is shifted to the right (Fig. 7). In turn, this indicates that the studied factors obey a normal distribution.

The kurtosis coefficients for all factors are greater than 0, which means that the distribution has a sharp peak. However, the excess coefficients of the resulting factor (Y) and the influencing factor (X1) are greater than 3, which indicates that they have a sharper peak (Figure 7).

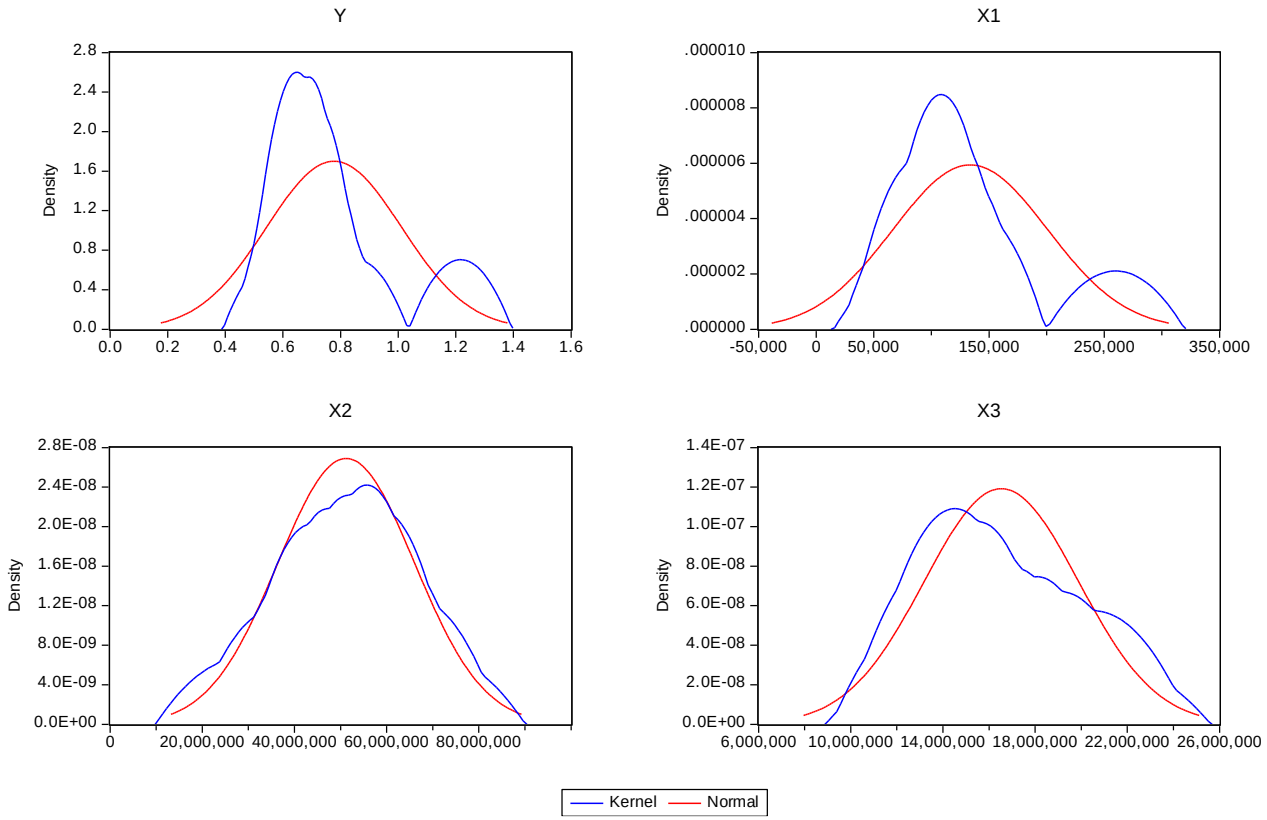

Figure 7. Graphs of factor distribution functions

From the data of Table 7, it can be seen that the probability of the values of Jarque-Bera statistics of the factors (Probability) is less than 0.05. Before deciding whether or not to include these factors in a multivariate econometric model, we estimate the correlations between the factors.

Below we present the values of correlations between factors in "Uzvagontamir" JSC (Table 8).

Table 8. Matrix of correlation coefficients between factors

Covariance Analysis: Ordinary
Date: 04/11/23 Time: 22:26
Sample: 2017 2022
Included observations: 6
Correlation
t-Statistic
Probability

	Y	X1	X2	X3
Y	1,000,000			
X1	0.976578	1,000,000		
	9.077546	-----		
	0.0008	-----		
X2	0.805706	0.570606	1,000,000	
	3.720526	1.539191	-----	
	0.0030	0.0740	-----	
X3	0.789708	0.494450	0.639466	1,000,000
	3.574507	1.100509	1.883633	-----
	0.0047	0.1161	0.0654	-----

From the data of Table 8, it can be seen that the private correlation coefficients show sufficiently strong connections between the factors. A close relationship between the return on assets (Y) and the factor of net profit (X1) ($r_{Y,X_1} = 0{,}9766$) is available. A strong relationship between the return on assets (Y) and the factor operating costs (X2) ($r_{Y,X_2} = 0{,}8057$) is available. A strong relationship between the return on assets (Y) and the value of assets (X3) factor ($r_{Y,X_3} = 0{,}7897$) can be seen to exist.

We check the reliability of the correlation coefficients using the t-Student test and compare the t-statistics and probability of the correlation coefficients with the table values of the t-statistics.

Degree of freedom $df = 3$, as well as $\alpha = 0{,}05$ table value of the t-statistic in the probability of employment $t_{kp} = 3{,}182$ is equal to If we look at the t-statistics and probabilities on the private correlation coefficients between the resulting factor (Y) and the factors affecting it in Table 8, they are as follows.

Calculated between the return on assets (Y) and the net profit (X1) factor $t_{Y,X_1} = 9{,}0775$, $prob = 0{,}0008$ is equal to This is greater than the table value of the calculated t-statistics ($t_{Y,X_1} = 9{,}0775 > t_{kp} = 3{,}182$) and the relationship between them is reliable.

Calculated between return on assets (Y) and operating expenses (X2) factor $t_{Y,X_2} = 3{,}7205$, $prob = 0{,}0030$ is equal to This is greater than the table value of the calculated t-statistics ($t_{Y,X_2} = 3{,}7205 > t_{kp} = 3{,}182$) shows that

Calculated between the return on assets (Y) and the cost of assets (X3) factor $t_{Y,X_3} = 3{,}5745$, $prob = 0{,}0047$ is equal to This is greater than the table value of the calculated t-statistics ($t_{Y,X_3} = 3{,}5745 > t_{kp} = 3{,}182$) shows that

The relationship between the factors can also be seen in Figure 8 below.

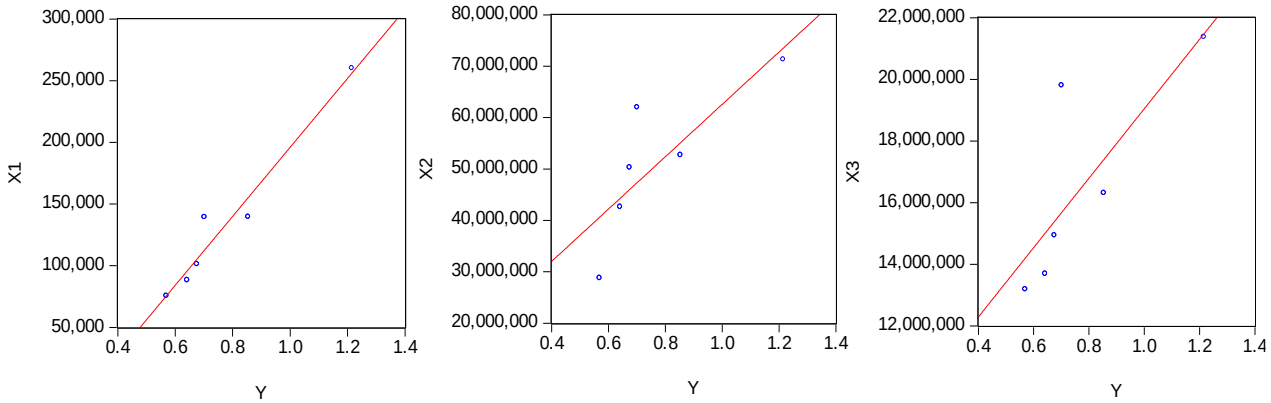

Figure 8. Density of connection of factors with the resulting indicator

We consider the presence of multicollinearity between the factors. As mentioned above, if the value of the pairwise correlation coefficient, which takes into account the strong relationship between two influencing factors, is greater than 0.7, such factors are considered multicollinear. No signs of multicollinearity are observed in the data of Table 8.

Therefore, since there is no multicollinearity between the factors, we will perform calculations to create a multifactor econometric model for the data of JSC "Uzvagontamir". The results are shown in Table 9 below.

Table 9. Regression analysis results

Dependent Variable: Y
Method: Least Squares
Date: 04/11/23 Time: 22:41
Sample: 2017 2022
Included observations: 6

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1	4.61E-06	4.56E-07	10.11352	0.0096
X2	3.21E-09	2.70E-09	6.388662	0.0256
X3	-4.08E-08	1.31E-08	-3.103440	0.0900
C	0.671096	0.104651	6.412695	0.0235
R-squared	0.993447	There is a mean dependent		0.777525
Adjusted R-squared	0.983617	SD dependent		0.234676
SE of regression	0.030037	Akaike info criterion		-3.938034
Sum squared resid	0.001804	Schwarz criterion		-4.076861
Log likelihood	15.81410	Hannan-Quinn criterion.		-4.493770
F-statistic	101.0666	Durbin-Watson stat		2.291803
Prob(F-statistic)	0.009814			

A multifactor econometric model looks like this:

$$Y = 0{,}6711 + (4{,}61E-06)\cdot X_1 + (3{,}21E-09)\cdot X_2 - (4{,}08E-08)\cdot X_3 \quad (6)$$
$$(6{,}413) \qquad (10{,}113) \qquad (6{,}389) \qquad (-3{,}103)$$

(The values given in parentheses are the values of the t-Student test, which determines the reliability of each factor).

To check the statistical significance of the constructed (6) multifactor econometric model, the coefficient of determination (*R*-squared) we evaluate. The coefficient of determination is equal to 0.993447, that is, the profitability of assets in "Uzvagontamir" JSC is 99.34% of the factors included in the multi-factor econometric model. The remaining 0.66 percent is the effect of factors that have not been taken into account.

We use Fisher's F-criterion to check the suitability (adequacy) of the constructed model (6) to the process under study.

F- the calculated value of the criterion $F_{\text{хисоб}} = 101{,}0666$ is equal to Table value of F-criterion $F_{\text{жадвал}} = 19{,}16$ is equal to

Account>The table satisfies the condition, which indicates that the calculated value of the F-criterion is greater than the value in the table and that the

constructed multifactor econometric model is statistically significant.

It can be seen from the multifactor econometric model (6) compiled based on the data of "Uzvagontamir" JSC that if the net profit (X1) increases by one thousand soums, the return on assets (Y) increases by 0.00000461% on average. If the total operating costs of the enterprise (X2) increase by one thousand soums, the return on assets (Y) increases by an average of 0.0000000032 percent. If the amount of assets (X2) of the enterprise increases by 1 thousand soums, the return on assets (Y) decreases by 0.0000000408% on average.

The graph based on model (6) looks like this (Figure 9).

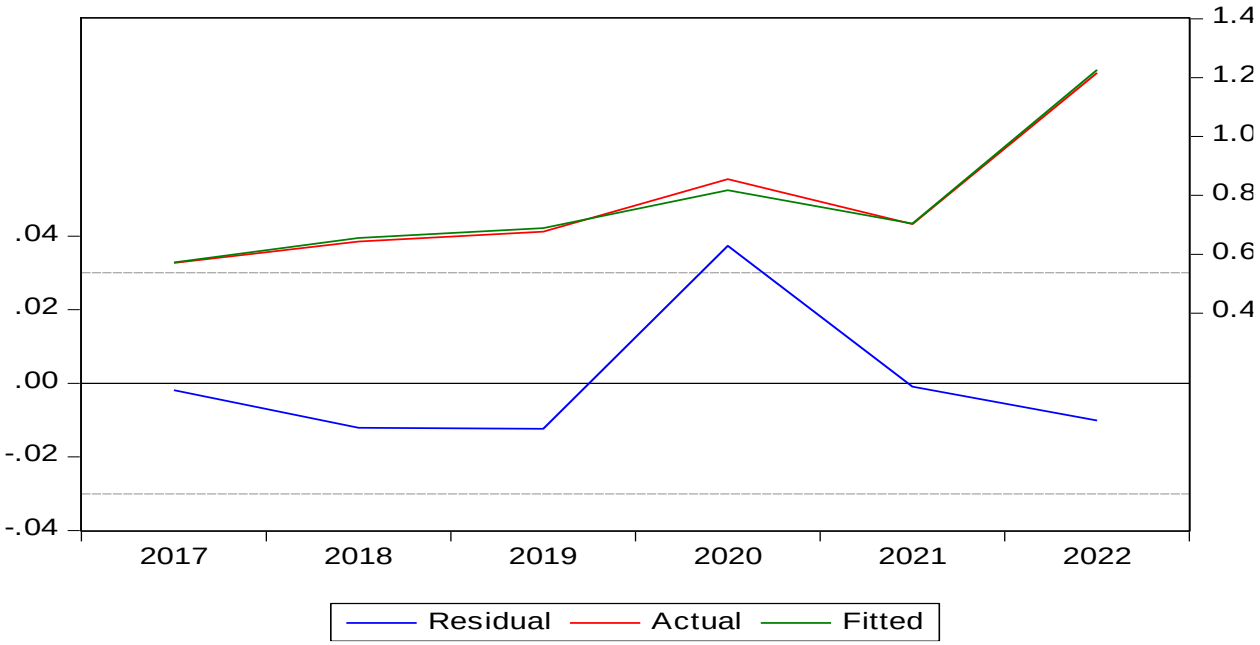

Figure 9. Actual, Fitted and Residual graph of the resulting factor

(6) we use the Darbin-Watson (DW) test to test for autocorrelation in the resulting factor residuals under model (6). In our example, the value of the calculated DW criterion is 2.2918. This indicates that there is no autocorrelation from the resulting factor residuals.

5. Conclusion

To sum up, it can be seen that the influence of the influencing factors on the profitability of the assets of the 3 joint-stock companies discussed above, that is, the resulting factor, is different. For example, in JSC "Tashkent Mechanical Plant" return on assets (Y) is positively affected by net profit (X1), while operating expenses (X2) and cost of assets (X3) have the opposite effect.

While the net profit (X1) has a positive effect on return on assets (Y), operating expenses (X2) and cost of assets (X3) have an inverse effect on DP "Casting Mechanics Plant" DP.

Net profit (X1) and operating expenses (X2) have a positive effect on return on assets (Y) at Uzvagontamir JSC, while asset value (X3) has an inverse effect.

Therefore, it should be concluded that all enterprises must ensure net profit (X1), operating expenses (X2) and asset value (X3) within certain optimal limits in order to maintain profitability of assets in a stable state.

Based on the results obtained for selected companies operating in the production sector of the Republic of Uzbekistan, we have developed the following proposals to strengthen financial stability:

1. The increase in ROA is of great importance in ensuring the financial stability of the company.

2. In order to ensure an increase in ROA, the following indicators should be increased:

- to increase the income from sales, it is necessary to increase the volume of production of products (services) that are in high demand by the consumer.

-to optimize the production (service) costs;

-to increase labor productivity;

3. In order for the company to maintain the profitability of assets in a stable state, it is necessary to ensure net profit, operating expenses and the value of assets within certain optimal limits.

CONCLUSION

1. The stability of the company's activity is one of the main indicators for assessing the continuity of their activity. Financial stability is a very comprehensive concept that includes many indicators. In determining the important indicators of efficiency

in companies, the indicators of financial stability occupy a central place.

2. In the conditions of competition among companies, the main focus is on increasing profitability indicators. Profitability is an important indicator justifying the performance of the activity during the reporting period. There are many types of profitability indicators. However, the main ones include return on assets, return on equity and return on investments.

3. During the study, the return on assets was evaluated in 3 companies. The analysis conducted evaluated the return on assets through net profit, operating expenses and changes in the value of assets. In our opinion, every company can achieve an increase in return on assets by effectively using the assets at its disposal and saving on unproductive costs.

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