



STATISTICAL ASSESSMENT OF POPULATION EMPLOYMENT

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ABSTRACT

When analyzing the labor market, it is important to quantify the relationship between the employed population and general indicators that reflect the development of the economy. To do this, the number of people employed in the economy and the factors affecting this indicator, as well as forecast values, were determined. In this regard, it is important to create multifactorial econometric models based on the study of the labor market of our country, taking into account the factors affecting the employment rate.

KEYWORDS: *labor market, employment, unemployment, average nominal wages, sums, volume of capital investments.*

INTRODUCTION

The development of market relations in the field of labor requires new approaches to the study of population employment and its structure. An independent approach is needed to solve the problems of employment and to revise the unemployment status, as well as to revise the duration and scope of this status. The need to transition from full employment to market relations was determined by the State Senate on August 7, 2020, based on the law on providing employment to the population of the Republic of Uzbekistan.

Article 4 provides for employment - activities related to satisfying personal and social needs of citizens and bringing them income (labor income), not prohibited by law. The following citizens are considered employed:

- persons working under an employment contract for payment;
- people who are temporarily absent from the workplace;
- persons elected or appointed to paid positions;
- those passing the service;
- self-employed persons;
- People temporarily working outside the Republic of Uzbekistan;

people working in non-governmental non-profit organizations, including religious organizations that carry out their activities in accordance with the law.

The basis of the research is the basic foundations of the theory of statistics, the works of representatives of world economic opinion, the methodological developments of scientists in the field, the study of quantitative aspects of unemployment and population employment, forecasting and modeling of development, as well as the methodological recommendations and official data of the state statistics and its territorial divisions, the main indicators of the development of the labor market. organizes scientific periodicals devoted to research problems.

LITERATURE REVIEW

In the International Covenant on Social, Economic and Cultural Rights of Man, employment means free and socially necessary activity of a person. Such a concept is characteristic of economists such as V.G. Kastakov, A.L. Nikifirov, E.I. Ruzavina, who understand employment as the process of labor activity. According to A.E. Kotlyar, employment is not an activity, but a social relationship between people.

The following economists contributed to the study of the problem: M.S.Maslova, S.Yu.Roshchin, E.R.Sarukhanov, E.V.Shuvaeva and others engaged in scientific developments on the study of employment problems. Many Russian and foreign scientists B.I.Bashkatov, G.N.Vukovich, A.Ya.Kibanov, O.V.Kuchmaeva, V.N.Logunov, N.P.Maslova, S.Yu.Nikitina, P.O.Rudakova, V.M.Simchera and others' scientific works are devoted to the modern study of the level of development of problems, the formation and development of the labor market.



T.N. Agapova, S.A. Ayvazyan, V.F. Voronin, E.K. Vasileva, G.L. Gromyko, M.R. Efimova, A.V. Kuznetsov, B.T. Ryabushkin, N.A. Sadovnikova and M. M. Yuzbashev's scientific research deals with the formation and improvement of methodological tools of statistical research. The analysis of labor market activity and structural structures in its development is studied in the works of S.D. Ilenkova, I.A. Polyakova, V.A. Sivelkin, N.V. Savchuk and others.

Problems of statistical research of employment and unemployment. Analyzed in the works of N. Salin and others.

Employment means employment of a person, i.e., income-generating labor activity. With this approach, employment represents the level of people's conscious participation in the labor process, employment of the population, production of spiritual and material benefits. According to A.L. Orlova, this interpretation of this category is rather limited, because it is wrong to equate concepts such as "job", "employment" and "labor activity".

N.N. Danilenko, V.G. Kostakov, A.L. Nikiforova, E.I. Ruzavina defined employment as a labor activity process. Employment is a set of various economic, administrative and legal relations related to the involvement of employees in the labor process.

In this regard, A.E. Kotlyar argues that employment is not an activity. At the same time, according to the current legislation, those who are not directly involved in production can be considered employed. To be considered employed, a person must have a specific job, and work and employment represent a single system. In this case, employment is primary.

It follows from the above that employment is a certain socio-economic relationship aimed at satisfying both social and personal needs through the participation of the working population in socially beneficial activities that generate income. The process of regulating employment is a mechanism for the development of the national economy.

The specific features of providing employment to the population are determined by the development of production, as well as the current situation in the market of national commercial products, which, in turn, is determined by the objective and subjective factors of the activity of industry complexes of the country's economy. This allows scientific justification of the main principles of the national labor market in the context of economic reforms and further development of human capital.

RESEARCH METHODOLOGY

In recent years, changes have been made in the labor market of our republic. As a result of the creation of new jobs, the level of employment is increasing, and the number of unemployed is decreasing. As a result of the increase in wages, the benefits given to business activities, the income of the population is also increasing.

Based on the study of the labor market of our country, it is important to create multi-factor econometric models based on the factors influencing the employment indicator.

ANALYSIS AND RESULTS

The analysis of the development trends of the labor market and the factors that determine them, using the system of statistical indicators representing the labor market, involves studying the dynamics and structure of its activity indicators by statistical methods, determining the dependence of the number of employed people in the economy on a number of factors.

The following factors were selected for the multifactor econometric model: as a result factor - the number of employed people in the Republic of Uzbekistan, thousand people (Y), and influencing factors - the number of unemployed people in the Republic of Uzbekistan, thousand people (X_1), the average nominal salary in the Republic of Uzbekistan, soums (X_2) and the volume of investments in fixed capital, bln. soum (X_3).

The data involved in econometric modeling were obtained for the years 2000-2022 (since the measurement units of the data are different, we use their logarithmic values).

The results of the descriptive statistics conducted on the factors affecting the number of employed persons in the Republic of Uzbekistan are presented in Table 1 below.

Table 1. Descriptive statistics on factors affecting the number of employed persons in the Republic of Uzbekistan

	lnY	ln X ₁	ln X ₂	ln X ₃
Mean	9.341869	2.496740	13.54911	9.762960
Median	9.385897	2.332144	13.54674	9.878170
Maximum	9.545912	4.592085	14.90993	12.45435
Minimum	8.985370	0.993252	12.13605	6.612713
Std. Dev.	0.173093	0.929049	0.764659	1.817153
Skewness	-0.697262	0.708719	-0.022857	-0.067843
Kurtosis	2.212918	2.840273	2.345998	1.837696
Jarque-Bera	2.457352	1.949865	0.411899	1.312304
Probability	0.292680	0.377218	0.813874	0.518844
Sum	214.8630	57.42502	311.6296	224.5481
SumSq. Dev.	0.659145	18.98892	12.86347	72.64496
Observations	23	23	23	23

It can be seen from the data of table 1 above that the number of unemployed people in the Republic of Uzbekistan (ln X₁) the coefficient of asymmetry of the factor took positive values.

Graphs of distribution functions of all factors are presented in Figure 1 below.

Figure 1 shows that all factors included in the multifactor econometric model obey the normal distribution law. The distribution graphs calculated from the theoretical values of the normal distribution graph are asymmetrical, that is, shifted. These shifts mainly indicate changes in the dynamics of the studied factors. In some years, some factors had a sharp increase, while others did not change significantly. "Anomalous" values were observed in the dynamics of some factors.

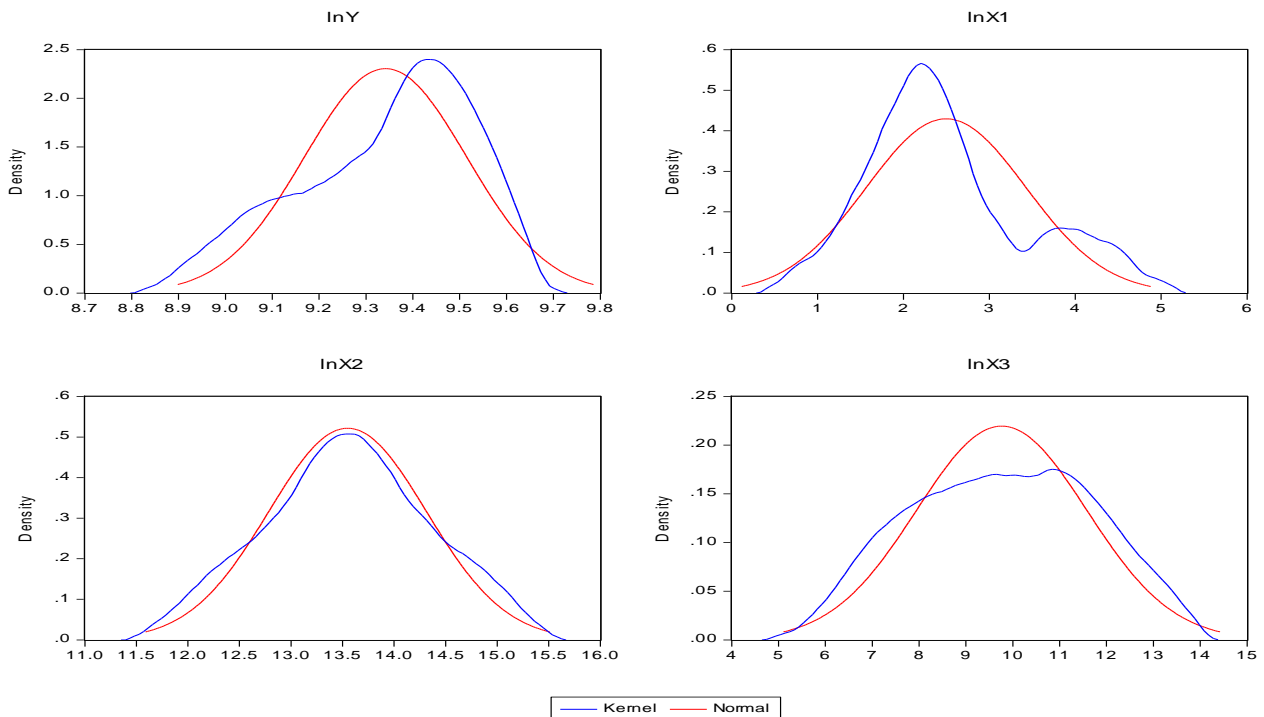


Figure 1. Graphs of distribution functions of factors

A histogram of the normal distribution of the outcome factor is presented in Figure 4 below.

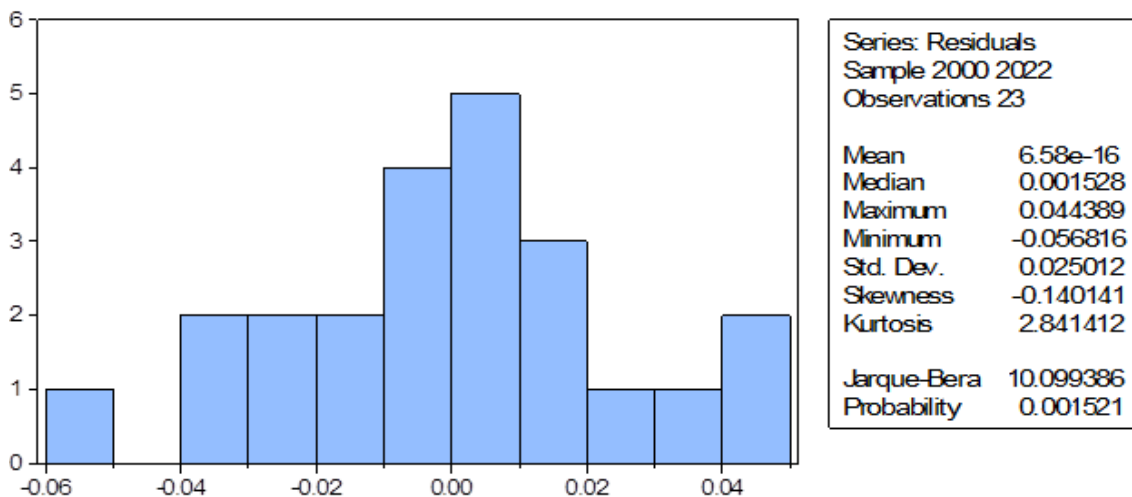


Figure 2. Checking whether the resulting factor obeys the normal distribution law

whether the resulting factor ($\ln Y$) obeys the normal distribution law. This criterion is a statistical criterion that checks the errors of the observations to the normal distribution with the moments of the third moment (asymmetry) and the fourth moment (kurtosis) and $S = 0$ and $K = 3$.

It can be clearly seen from Figure 4 that the resulting factor obeys a normal distribution. This is confirmed by the calculated parameters and criteria, that is, the calculated Jacques-Bera coefficient is equal to 10.0994 and its probability is less than 0.05 (prob=0.0015).

according to the factors affecting the number of employed persons in the Republic of Uzbekistan, it is necessary to analyze the connections between the factors. For this, a correlation analysis is conducted between factors, that is, individual and pair correlation coefficients are calculated between factors. The matrix of individual and pairwise correlation coefficients between the factors is presented in Table 2 below.

indicate the density of connections between the resulting factor ($\ln Y$) and the factors affecting it ($\ln X_i$). Thus, private correlation coefficients indicate the existence of various connections between the resulting factor - the number of employed persons in the Republic of Uzbekistan ($\ln Y$) and the influencing factors.

Table 2. Individual and pairwise correlation coefficients between factors matrix

	$\ln Y$	$\ln X_1$	$\ln X_2$	$\ln X_3$
$\ln Y$	1.000000			
$\ln X_1$	0.379643	1.000000		
	1.334737	-----		
	0.1963	-----		
$\ln X_2$	0.946901	0.531602	1.000000	
	13.49581	2.876179	-----	
	0.0000	0.0590	-----	
$\ln X_3$	0.960936	0.494837	0.485406	1.000000
	15.91058	2.609512	2.52879	-----
	0.0000	0.0664	0.0612	-----

So, the density of connection between the number of employed people in the Republic of Uzbekistan ($\ln Y$) and the number of unemployed people in the Republic of Uzbekistan ($\ln X_1$) is equal to 0.3796. This is because there is a weak connection between the number of jobs in the republic ($\ln Y$) and the number of unemployed people in the republic ($\ln X_1$). The density of connection between the number of employees in the Republic of Uzbekistan ($\ln Y$) and the average nominal salary in the Republic of Uzbekistan ($\ln X_2$) is equal to 0.9469, indicating that there is a close connection between these two factors. Employment in the Republic of Uzbekistan ($\ln Y$) and the volume of capital investments ($\ln X_3$) has a close relationship, that is, the private correlation coefficient between them is equal to 0.9609.

In addition, Table 2 shows the pairwise correlation coefficients between the influencing factors. Multicollinearity between factors is determined by these coefficients. If the calculated value of the pairwise correlation coefficient between the influencing factors is greater than 0.7, it is said that there is multicollinearity between the factors. From Table 2, which calculates the matrix of individual and pair correlation coefficients between factors, it can be seen that the calculated value of the pair correlation coefficient between the factors

affecting the number of employees in the Republic of Uzbekistan is not greater than 0.8. This, in turn, allows all selected factors to be included in the multifactor econometric model.

Also, in Table 2, coefficients for determining the reliability and probability of correlation coefficients were calculated (values in the rows below the calculated correlation coefficients). At the bottom of each correlation coefficient is its estimated Student's *t*-test value and probability. It is assumed that the calculated probability between the factors is not greater than 0.05. For example, the private correlation coefficient between $r_{\ln Y, \ln X_1} = 0,9469$ the number of jobs in the Republic of Uzbekistan ($\ln Y$) and the average nominal wage in the Republic of Uzbekistan ($\ln X_2$) is equal to, $t = 13,4958$ and $\text{prob.} = 0,0000$. This shows that there is a strong relationship between these two factors, the private correlation coefficient is reliable, and there is a high positive correlation between the two factors at 95 percent accuracy.

We consider their dot graphs to determine the relationship of each factor with the resulting indicator ($\ln Y$) (Fig. 3).

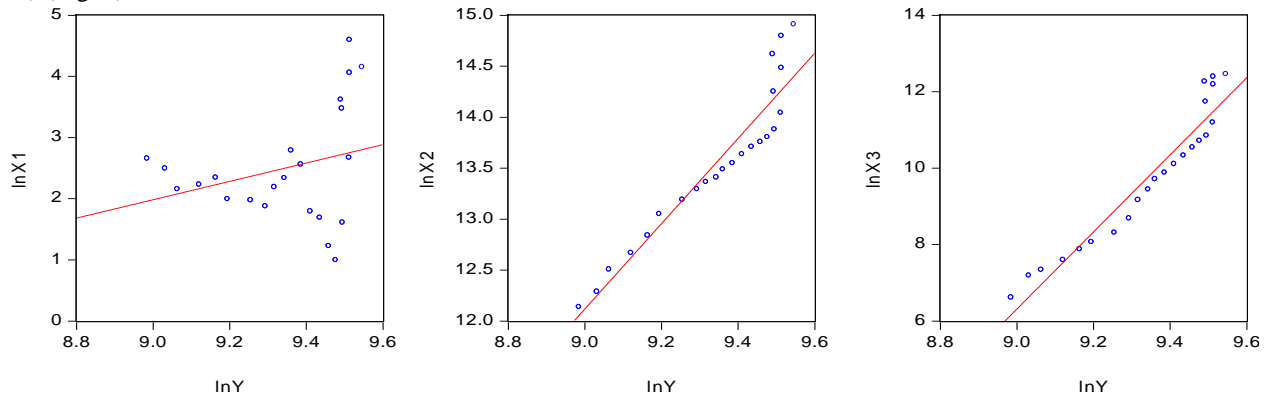


Figure 3. View of the forms of connection between the number of employed persons ($\ln Y$) and the factors affecting it ($\ln X_i$) in the Republic of Uzbekistan

According to graph that there are correct and tight connections between the resulting factor ($\ln Y$) and the influencing factors ($\ln X_i$). Therefore, the correlation coefficients between the factors included in the multifactor econometric model for the number of employed persons in the Republic ($\ln Y$) fully meet the requirements for the calculated value and probability of Student's *t*-criterion. This indicates that all factors affecting the number of employed persons ($\ln Y$) in the Republic we enter into the multifactor econometric model.

In general, a multifactor econometric model looks like this:

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_n x_n + \varepsilon, \tag{1}$$

where y is the resulting factor, x_i influencing factors, ε – random error.

The "method of least squares" was used to determine the values of the unknown parameters in the multifactor econometric model (1). $\beta_0, \beta_1, \beta_2, \dots, \beta_n$ The results are presented in Table 3 below.

Table 3. Parameters of the multifactor econometric model calculated on the number of employees in the Republic of Kazakhstan and the factors affecting it

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LN _{X1}	-0.053008	0.007444	-7.120463	0.0000
LN _{X2}	0.097680	0.046175	2.115436	0.0478
LN _{X3}	0.064440	0.018939	3.402571	0.0030
C	7.521603	0.439759	17.10392	0.0000
R-squared	0.979119	There is a mean dependent		9.341869
Adjusted R-squared	0.975822	SD dependent		0.173093
SE of regression	0.026915	Akaike info criterion		-4.235519
Sum squared residence	0.013764	Schwarz criterion		-4.038042
Log likelihood	52.70847	Hannan-Quinn criterion.		-4.185854
F-statistic	296.9729	Durbin-Watson stat		1.9 01030
Prob(F-statistic)	0.000000			

Using the data of Table 3 above, we express the analytical form of the multifactor econometric model for the number of employees in the Republic (ln Y) :

$$\ln \hat{Y} = 7,5216 - 0,0530 \ln X_1 + 0,0977 \ln X_2 + 0,0644 \ln X_3, \quad (2)$$

The multifactor econometric model calculated on the number of employed people in the Republic of Uzbekistan shows that if the number of unemployed (ln X₁) in the Republic of Uzbekistan increases by one percent on average, the number of employed people (ln Y) in the Republic of Uzbekistan decreases by an average of 0.05 percent. If the average nominal salary (ln X₂) in the Republic of Uzbekistan increases by one percent, the number of employed people (ln Y) in the Republic of Uzbekistan increases by an average of 0.09. An increase in the volume of capital investments in the Republic (ln X₃) on average by one percent leads to an average increase in the number of employed persons (ln Y) by 0.06 percent in the Republic of Uzbekistan.

To check the quality of the multifactor econometric model (2) based on the number of jobs in the Republic of Uzbekistan, we check the coefficient of determination. The coefficient of determination shows how many percent of the resulting factor is made up of the factors included in the model. The calculated coefficient of determination (R² - R-squared (Table 3)) is equal to 0.9791. This shows that 97.91 percent (2) of the number of employed people in the Republic of Uzbekistan is made up of factors included in the multifactor econometric model. The remaining 2.09 percent (100.0-97.91) show that it is the influence of factors that have not been taken into account.

F-criterion is used to check the statistical significance of the multifactor econometric model (2) based on the number of employed persons (ln Y) in the Republic of Uzbekistan or its adequacy (fit) to the studied process. Fisher's calculated *F-criterion* value is compared with its value in the table. If $F_{\text{calculation}} > F_{\text{table}}$, then the multifactor econometric model (2) is called statistically significant and it can be used to forecast the resulting indicator - the number of employed persons in the Republic of Uzbekistan (ln Y) for future periods.

Now, to check the statistical significance of the multifactor econometric model (2) based on the number of jobs in the Republic of Uzbekistan, we find the tabular value of the *F-criterion*. For this, the degrees of freedom $k_1 = m$ and $k_2 = n - m - 1$ and α we calculate the values according to the level of significance. Based on the level of significance $\alpha = 0,05$ and the degrees of freedom $k_1 = 3$ and $k_2 = 23 - 3 - 1 = 19$ the table value of $F_{\text{table}} = 3,13$ the *F-criterion* is equal to . Based on the fact that the calculated value of *F-criterion* is equal to $F_{\text{calculation}} = 296.97$ and the table value is equal to $F_{\text{table}} = 3.13$ and since the condition of $F_{\text{calculation}} > F_{\text{table}}$ is fulfilled, the multifactor econometric model (2) can be called statistically significant and it can be used in the Republic of Uzbekistan with the number of items (ln Y) can be used in forecasting for future periods.

t-test is used to check the reliability of the calculated parameters of the multifactor econometric model (2) based on the number of employed persons (ln Y) in the Republic of Uzbekistan. By comparing the calculated (t_{count}) and table (t_{table}) values of Student's *t-criterion*, we accept or reject the H_0 hypothesis. For this, we find the tabular value of α the *t-criterion* based on the conditions of the selected reliability probability () and degree of freedom (d.f. = $n - m - 1$). Here n - the number of observations, m - the number of factors.

The table value of $t_{\text{table}} = 2,0930$ the *t-criterion* is equal to the reliability probability $\alpha = 0,05$ and degrees of freedom. d.f. = $23 - 3 - 1 = 19$

It can be seen from the calculations made on the creation of a multifactor econometric model that the calculated values of $\alpha = 0,05$ the *t-criterion* for all factors included in the free term and the multifactor econometric model are higher than the table value in accuracy (Table 3). This means that all factors are reliable and allows these factors to participate in a multifactor econometric model.

(DW) criterion to check the presence of autocorrelation in the residuals of the resulting factor (ln Y) according to the multifactor econometric model (2) based on the number of employed persons in the Republic of Uzbekistan .

The calculated DW value is compared with DW_L and DW_U in the table. If $DW_{\text{count}} < DW$ is less than L , the resulting factor residuals are said to have autocorrelation. If $DW_{\text{count}} > DW$ is greater than U , the resulting coefficients are said to have no autocorrelation. The lower limit value of the Darbin-Watson criterion is $DW_L = 1.08$ and the upper limit value is $DW_U = 1.66$. $DW_{\text{count}} = 1.9010$. Therefore, since DW is $\text{calculated} > DW_U$, there is no autocorrelation in the residuals of the resulting factor (the number of employed persons in the Republic of Uzbekistan (ln Y)).

The absence of autocorrelation in residuals of the resulting factor also indicates that the multifactor econometric model given above (2) can be used in forecasting.

(2) the actual (Actual), calculated (Fitted) values of the multifactor econometric model and the differences between them (Residual) are presented in Figure 4 below.

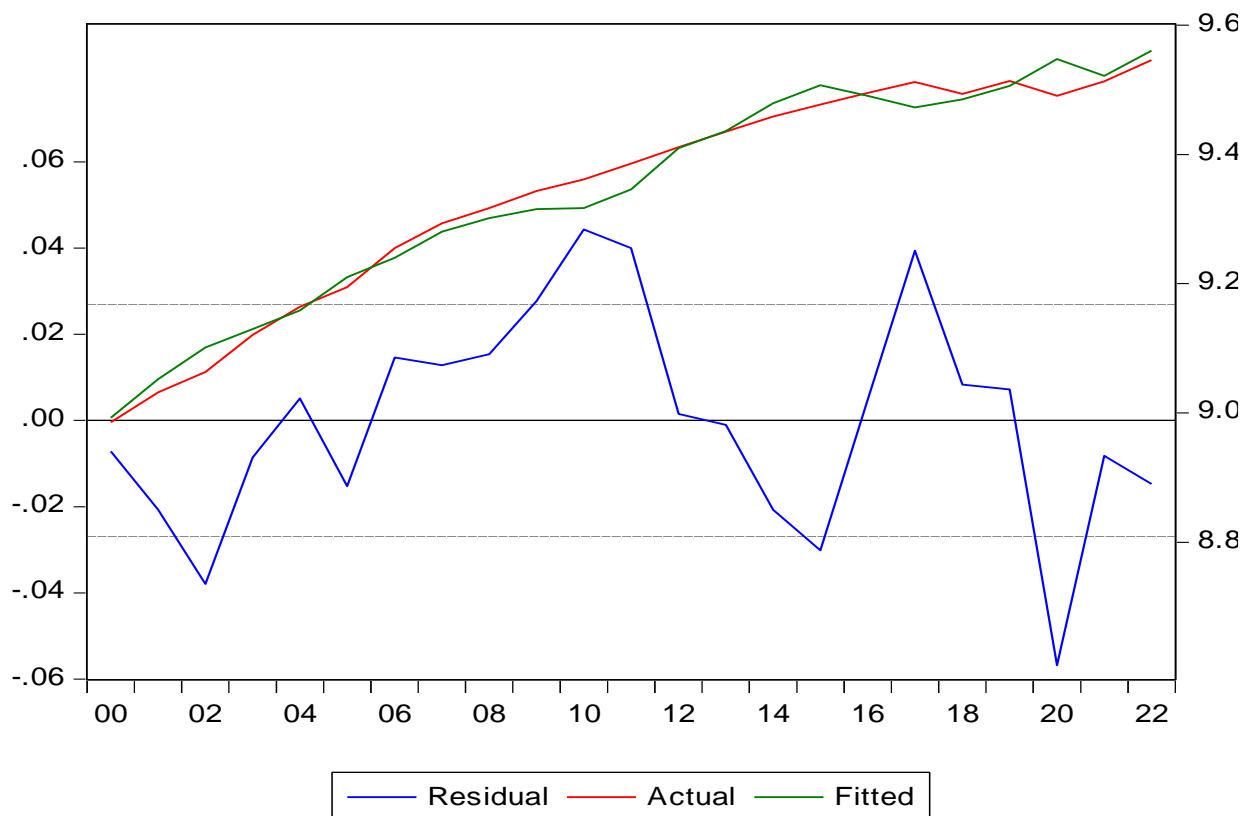


Figure 4. Graph of the actual (Actual), calculated (Fitted) values of the number of employed persons (ln Y) and the differences between them (Residual) in the Republic of Uzbekistan

The graph of the calculated values of the number of employed persons in the Republic of Uzbekistan according to the multifactor econometric model is very close to the graph of its actual values, and the differences between them are not so great. This is another proof that (2) the multi-factor econometric model can be used to forecast the volume of the bank's net profit for future periods.

Thus, the multi-factor econometric model (2) based on the number of employees in the Republic of Uzbekistan and the factors affecting it was checked using a number of criteria and it was found that it can be used in forecasting the factors in the future. Therefore, using this (2) multi-factor econometric model, we will make forecast calculations of the number of employed people in the Republic of Uzbekistan for the next period.

To do this, we first create trend models for each influencing factor. A trend model is a time-dependent function of an influencing factor, and it generally looks like this:

$$X_i = \beta_0 + \beta_1 \cdot t + \varepsilon \tag{3}$$

Initially, the trend model for the number of unemployed in the Republic of Uzbekistan, thousand people ($\ln X_1$) looks like this:

$$\ln \hat{X}_1 = 1,7054 + 0,0659 \cdot t \tag{4}$$

$$R^2 = 0,6317, F_{\text{хисоб}} = 6,3346, t_{\text{хисоб}} = 2,5168$$

the average nominal salary in the Republic of Uzbekistan in soums ($\ln X_2$) looks like this:

$$\ln \hat{X}_2 = 12,2167 + 0,1110 \cdot t \tag{5}$$

$$R^2 = 0,9699, F_{\text{count}} = 677,12, t_{\text{count}} = 26,021$$

The volume of investments in fixed capital, bln. The trend model for soum ($\ln X_3$) looks like this:

$$\ln \hat{X}_3 = 6,559 + 0,2669 \cdot t \tag{6}$$

$$R^2 = 0,9930, F_{\text{count}} = 2997,98, t_{\text{count}} = 54,547538$$



The analysis of the trend models created between the influencing factors ($\ln X_i$) and the time factor (t) shows that the statistical significance and reliability of all calculated coefficients in the trend models (4) - (6) were determined. So, we calculate the trend models (4) - (6) and put their calculated values into the multifactor econometric model (2), first calculate the forecast values of the influencing factors, and then the forecast values of the resulting factor. We exponentiate the predicted values to free them from the logarithm. As a result, the number of employed people in the Republic of Uzbekistan we will have the values of the variables included in the multifactor econometric model in the forecast period (Table 4).

Table 4. Number of employed people in the Republic of Uzbekistan and forecast values of the factors affecting it for 2023-2030

Years	Number of employees, thousand people, Y	Number of unemployed, thousand people, X1	Nominal salary, soums, X2	Investments in fixed capital, bln. sum, X3
2000	7985.4	14.2	186475.3	744.5
2001	8365.2	12.1	216547.1	1320.9
2002	8634.7	8.6	269874.4	1526.6
2003	9145.7	9.3	316524.3	1978.1
2004	9547.8	10.4	376478.4	2629.0
2005	9845.5	7.3	463578.8	3165.2
2006	10456.7	7.2	534213.7	4041.0
2007	10865.2	6.5	593642.1	5903.5
2008	11124.6	8.9	635472.6	9555.9
2009	11423.7	10.3	665247.9	12531.9
2010	11628.4	16.2	718364.6	16463.7
2011	11919.1	12.9	764321.8	19500.0
2012	12223.8	6.0	834576.2	24455.3
2013	12523.3	5.4	896412.5	30490.1
2014	12818.4	3.4	942124.3	37646.2
2015	13058.3	2.7	986514.2	44810.4
2016	13298.4	5.0	1064214.6	51232.0
2017	13520.3	14.4	1251538.0	72155.2
2018	13273.1	32.3	1542598.3	124231.3
2019	13541.1	57.9	1946778.3	195927.3
2020	13236.4	37.1	2227141.2	210195.1
2021	13538.9	98.7	2662002.8	239552.6
2022	13987.4	63.4	2987452.2	256364.2
2023 *	15314.2	26.8	2903757,1	427988.7
2024 *	15694.9	28.6	3244753.7	558965.5
2025 *	16085.0	30.6	3625794.5	730025.0
2026 *	16484.9	32.7	4051582,1	953433.5
2027 *	16894.7	34.9	4527371.1	1245211.6
2028 *	17314.7	37.3	5059033,4	1626282.0
2029 *	17745.1	39.8	5653130.4	2123971.0
2030 *	18186.3	42.5	6316993.9	2773967.0

Note - *- forecast period

In conclusion, it can be said that the forecast calculations made on the basis of the multifactor econometric model representing the number of employed persons in the Republic of Uzbekistan show that the factors affecting the number of employed persons have a tendency to increase during the forecast period. However, it is desirable to regulate and control certain influencing factors.

CONCLUSIONS AND SUGGESTIONS

In all countries of the world, especially in our republic, the problem of unemployment is a very important and urgent problem that needs to be solved. Currently, it is difficult to completely control unemployment in such a time when the scope of informal employment is expanding in Uzbekistan. The main labor resources are engaged in seasonal work. Also, the increase in youth unemployment in Uzbekistan is becoming a big problem.



Unemployment is not only a social and economic problem, but also a political problem that every country can face. This situation can have a harmful effect on the entire economic life of the society and cause huge social and economic losses.

Unemployment is one of the issues without which effective economic activity is impossible.

To sum up, in front of the statistics of the labor market, there are the tasks of improving, calculating and analyzing the methodology of determining statistical indicators based on the interpretation of labor resources, economically active and inactive population, population employment, unemployment expressions, studying the number, composition, and productivity of employees in enterprises and organizations. In addition, introducing the population to the state of the labor market and providing information to the management bodies is one of the most important tasks of the statistical bodies.

In our opinion, a comprehensive approach to the management system of ensuring employment and social protection of the population will reduce difficulties in labor relations and ensure an increase in the quality of work of the population.

REFERENCES

1. Maslova I.S. *Efficient employment and labor market* / I.S. Maslova // *Bulletin of statistics*. - 2008. - No. 12. - P.8–19.
2. Roshchin, S.Yu. *Gender equality and empowerment of women in Russia in the context of the Millennium Development Goals* / S.Yu. Roschin, N.V. Zubarevich. - M.: UN Information Center, 2005. - 73
3. Sarukhanov, E.R. *Employment management* / E.R. Sarukhanov. - St. Petersburg: SPbUEF, 1993. - 164 p.
4. Shuvaeva E.V. *Employment as the most important element of labor relations* / E.V. Shuvaeva // *Topical issues of economic sciences*. - Ufa: Summer, 2011. - P. 96-98.
5. Maslova I.S. *Efficient employment and labor market* / I.S. Maslova // *Bulletin of statistics*. - 2008. - No. 12. - P.8–19.
6. Efimova, M.R. *The main trends and features of population migration in the regions of the Russian Federation* / M.R. Efimova, S.G. Bychkova // *The role of statistics in the development of society. historical experience. Achievements. Perspectives*. - Kostroma: Kostroma State University, 2015. - P. 205-210
7. Eliseeva, I.I. *Econometric dependencies: principles and methods of construction* / I.I. Eliseeva, G.B. Kleiner, S.A. Smolyak // *Economics and Mathematical Methods*. - 2001. - T. 37. - No. 1. - S. 124-132.
8. I.I. Eseeleva. *Econometrics: textbook* - M.: Finance and statistics, 2001, pp. 41-87.
9. Soatov N.M, Ayubjonov A.X. /*Statistika nazariyasi*/. Darslik.-T.: O'qituvchi, 2020 – 647 bet.
10. Umarova M.A. *Economic and statistical analysis of factors of the international labor market* // *International Journal of Research in Management & Business Studies* ((IJRMBS 2019) ISSN: 2348-65033(Online)) Vol. 6, Issue 2 April - June 2019 (#5, GIF 0.705).