ECONOMETRIC ASSESSMENT AND FORECASTING OF UNEMPLOYMENT LEVEL IN TASHKENT REGION

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Article history:		Abstract:
Received:	3rd October 2023	Today in our Republic, the development of the labor market and its regulation, taking into account the needs of the modern labor market, requires the development of the most effective system for training highly qualified personnel and training everyone. round competitive specialists. In addition, determining the place of young specialists in production and increasing their competitiveness with specialists from foreign countries is one of the most important issues today. Based on the above objectives, as a result of creating new jobs and supporting the orientation of young people towards entrepreneurship, consistent systematic work is being carried out to achieve the well-being of the population, especially those in need of social protection.
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INTRODUCTION

All changes and processes occurring in the labor market are directly or indirectly related to the state of the regional economy. In turn, the assessment of the region's current need for personnel allows to get an idea of the state of the labor market as a result of various processes taking place in the region. This assessment allows to assess the consequences of the activities carried out by economic entities that directly or indirectly affect the labor market and the general state of the economy.
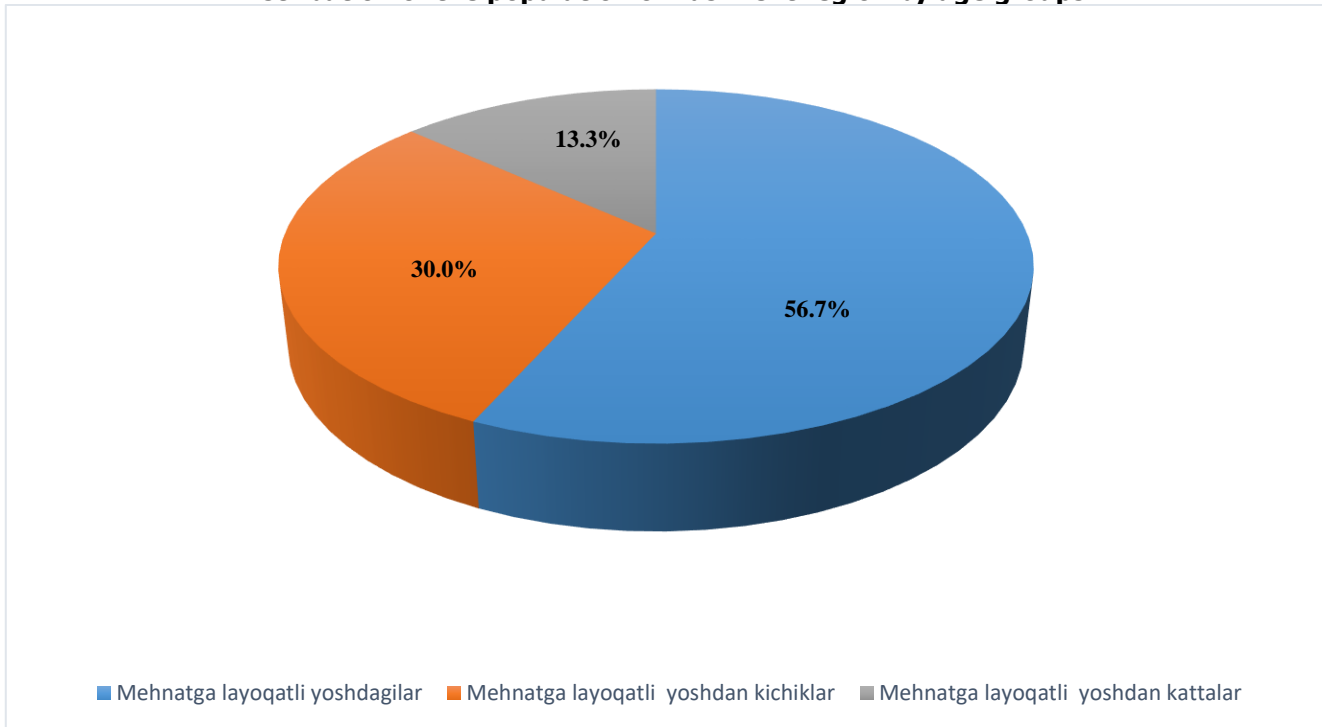
of the President of the Republic of Uzbekistan dated January 28, 2022 on the development strategy of the new Uzbekistan for 2022-2026 PF-60, also with an in-depth analysis of the complex processes at the world level and the results of the development of our country In the following years, based on the principle of "For Human Value", we will further increase the well-being of our people, transform economic sectors and rapidly develop entrepreneurship, ensure human rights and interests, and create an active civil society based on the reforms aimed at improving [1]the well-being of the population, the standard of living, and the effective employment of the population. a number of tasks are being carried out in terms of providing , introducing a system of legal benefits to self-employed persons, gradually transitioning the economy to a green economy, reforming the activities of digital technology centers, and developing small business and private entrepreneurship.

We can emphasize that important work is being done in Tashkent region in this regard. As of April 1, 2023, the number of permanent residents of Tashkent region has increased by 0.5% or 13.5 thousand people compared to the beginning of the year, reaching 3007.0 thousand people. Among them, the number of urban residents is 1504.6 thousand people, 50.04% of the total population, the number of rural residents is 1502.4 thousand people, 49.96% of the total population. 13.3% or 399.9 thousand people of the permanent population of the region are older than working age, 902.3 thousand people or 30.0% are younger than working age, 56.7% or 1704 are working age. .8 thousand people (Fig. 1).

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[1] Decree No. PF-60 of the President of the Republic of Uzbekistan dated January 28, 2022 " On the development strategy of the new Uzbekistan for 2022-2026 " .

Figure 1.
Distribution of the population of Tashkent region by age groups[2]

The above indicators will definitely have an impact on the labor market of Tashkent region . As a result of our research on the number of jobs and the unemployment rate in the economy, which are the main indicators of the labor market and its efficiency, we can emphasize that the issue of the unemployment rate and its control is an important factor for the development of the labor market.

LITERATURE REVIEW

Local researchers Sh.R. Kholmuminov and NU Arabov [3]analyzed the interdependence of the infrastructure of the labor market and its components from a scientific and theoretical point of view, and determined the methodology of comprehensive assessment and perspective of its development, as well as the main directions of the formation and development of state and non-state employment services. Also, a strategic concept of improving the organizational and economic mechanism of labor market regulation and increasing the efficiency of labor market infrastructure development was developed.

AEKotlyar had a rather narrow approach to coordinating the economic interests of labor market subjects [4]. Such an approach restricts the labor market

to unemployed persons who are able to work, who are temporarily absent from school or work, unemployed, looking for another job or entering the labor market for the first time. Proponents of this theory limit the labor market to the process of agreement on the exchange of the ability of a person to work, and they argue that the use of this ability occurs outside the labor market, in the labor process.

In the work of OA Varfolomeeva, the scientific basis of the formation of the labor market infrastructure is highlighted, in which the labor market infrastructure as a system of institutions, the activity of state and non-state employment support structures, the legal, financial and economic regulatory mechanisms for the formation and development of the labor market are researched. done [5]_ Also, in the work, the components and elements of the labor market infrastructure at different levels in the field of economy and management, as well as the performance indicators of the state employment service are classified.

O. _ In her article, Kolesnikova explained the essence of the concept of labor market infrastructure, its functional elements, classification and

[2] It was compiled based on the data of the Statistical Agency under the President of the Republic of Uzbekistan .

[3] Kholmuminov Sh.R., Arabov NUMExnat market infrastructure. Study guide.-T.: "Science and technology", 2016. 150-155 b

[4] Kotlyar AE O ponyatii rynka truda // J. Voprosy ekonomiki. - Moscow, 2008. - No. 1. - S 34-35.

[5]Varfolomeeva O.A. Stanovlenie infrastruktury rynka truda vy perekhodnoy ekonomie. – SPb., Izdatelstvo SPvUEF. 2001.

interrelationship of its components, [6]and scientifically researched the levels and functions of labor market infrastructure. Also, the article partially justified the need to use optimal methods to evaluate the effectiveness of the employment service.

Russian economist VAPavlenkov [7]and one of our country's economists QXAbdurakhmanov consider it acceptable to interpret the economic interests of labor market subjects in an extended manner [8].

RESEARCH METHODOLOGY

The article used research methods such as scientific observation, systematic approach, and induction and deduction. Based on the analysis of existing methods and approaches in the world, a

proposal was developed on the level of unemployment, which represents the efficiency of the labor market of Tashkent region, and the problems and solutions to reduce it.

ANALYSIS AND RESULTS

For the econometric assessment of changes and development of the labor market of Tashkent region The unemployment rate in the region - the number of enterprises affecting Y - X_3 , real income per capita - X_4 , the average nominal monthly salary - X_5 and the gross regional product per capita of the employed population in the economy - X_6 factors was selected. First, we determine the degree of correlation between these factors (Table 1).

Table 1

Correlation coefficient between factors influencing the change of labor market efficiency in Tashkent region[9]

	Y	X_3	X_4	X_5	X_6
Y	1				
X_3	0.928982	1			
X_4	0.891295	0.687302	1		
X_5	0.908534	0.584386	0.773596	1	
X_6	0.878841	0.660722	0.743851	0.679389	1

If we pay attention to the values of the table, the number of enterprises in relation to the unemployment rate in the region is -X_3 ($p_{Y, X3}$ = 0.928982), real income per capita is -X_4 ($r_{Y, X4}$ = 0.891295) average nominal monthly salary- X_5 ($p_{Y, X5}$ = 0.908534) and gross regional product per capita of employed population in the economy -X_6 ($r_{Y, X6}$ = 0.878841) factors are correctly connected in strong density, between factors $r_{x1, x2}$ <0.8 we can continue

the process since there is no multicollinearity according to the condition.

For this, first of all, since the selected factors have different units of measurement, the factor indicators are logarithmized. without a line while generating the equation, it is checked based on quality criteria. Accordingly, the determination of the regression equation between the observed relationship can be continued through the e views program (Table 2)

Table 2

The results of the regression equation between the factors influencing the change of labor market efficiency in Tashkent region[10]

Dependent Variable: LNY
Method: Least Squares
Date: 11/25/22 Time: 00:05
Sample: 2000 2021
Included observations: 22

Variable	Coefficient	Std. Yerror	t-Statistic	Prob.
LNX3	-1.166770	0.990427	-1.178047	0.0542
LNX4	-0.498439	0.151994	-3.279330	0.0044
LNX5	2. 067 970	0.672634	3. 0744357	0.0025

6Kolesnikova O. Ob otsenke effektivnosti raboty slujby zanyatosti // Chelovek i trud. - 2002. - No. 3. - S. 55 - 56.

7Pavlenkov AND Rynok are working. -Moscow: Obshchestva Ankil, 2012 - P.34

8 Abdurahmanov KX Labor economics. - T.: Labor, 2009. - p. 122.

9Author scientific research results.

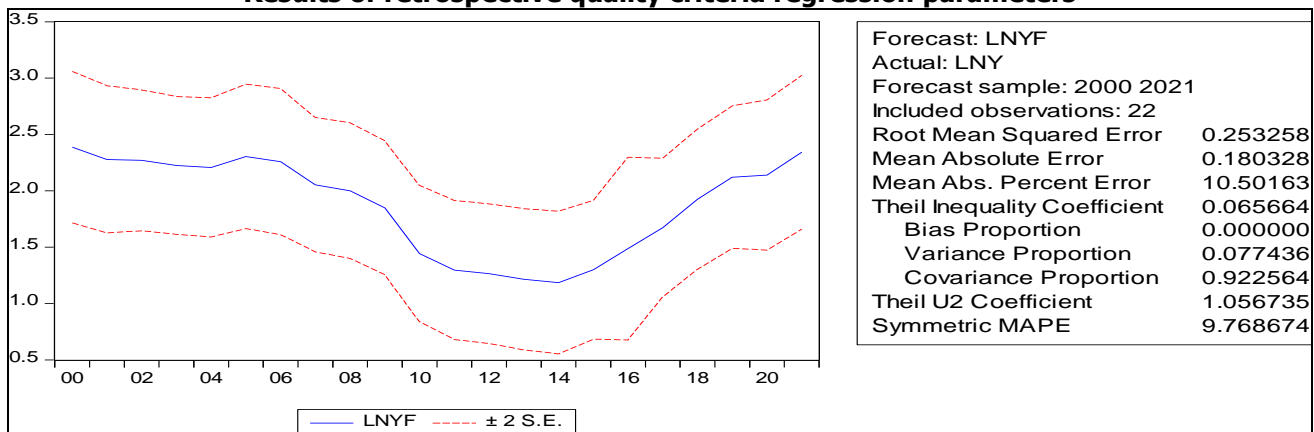10Author scientific research results.

LNX6	-0 . 43763 2	1 . 018315	-0.429761 _	0.0313
C	0 . 11 708 4	5.223590	0.243288	0.0107

$$t_{jad} = 2.109815578$$

R-squared	0.733180	There is a mean dependent	1.873683
Adjusted R-squared	0.670398	SD dependent	0.501829
SE of regression	0.288105	Akaike info criterion	0.545732
Sum squared resid	1.411076	Schwarz criterion	0.793697
Log likelihood	-1.003056	Hannan-Quinn criterion.	0.604145
F-statistic	11.67831	Durbin-Watson stat	1.878652
Prob(F-statistic)	0.000096	$F = 0.33730133$	

Based on the calculation results, the following equation is created based on the values of the coefficients presented in the table:

$$LnY = -1.17LnX3 - 0.5LnX4 + 2.068LnX5 - 0.44LnX6 + 0,12 (1)$$

If we pay attention to the significance of the parameters of the 1st regression equation according to the t-Statistic criteria, a=0.05 and df=1 7 real income per capita from equality of t_{Jad} = 2.1098 - X_4 (t_{X4} = | -3.279| >t_{Jad} = 2.1098) average nominal monthly salary - X_5 (t_{X5} = 3. 0744357 >t_{Jad} = 2.1098) parameters are significant, and retrospective quality criteria of the significance of the remaining parameters **Verification with** MAPE and TIC is required (Figure 2).

Figure 2.
Results of retrospective quality criteria regression parameters

Forecast: LNYF	
Actual: LNY	
Forecast sample: 2000 2021	
Included observations: 22	
Root Mean Squared Error	0.253258
Mean Absolute Error	0.180328
Mean Abs. Percent Error	10.50163
Theil Inequality Coefficient	0.065664
Bias Proportion	0.000000
Variance Proportion	0.077436
Covariance Proportion	0.922564
Theil U2 Coefficient	1.056735
Symmetric MAPE	9.768674

presented in Figure 2 , it can be noted that MAPE= 10 , 5 which in turn MAPE= 10 , 5 < 2 0 % forecast accuracy is high and TIC=0.0 7 < 1 coefficient is so close to zero that all parameters of the regression equation are significant. In order to simplify the rules of the logarithm and calculation processes, and to achieve the accuracy of the results, the regression equation created above is amplified and the following equation is created according to it: $Y = \frac{X5^{2.068}*e^{0.12}}{X3^{1.17}*X4^{0.5}*X6^{0.44}}(1 *) = 17$; k2= 4 taking into account that F_{Jad} = 0.33730 , the Fisher value calculated from F_{hys} = 11.68 , the significance of the regression equation under the condition $F_{Jad} < F_{hys}$ 1 *- and DW= 1.88, autocorrelation the reliability and adequacy of the equation comes from the fact that it does not exist.

If we give an economic explanation to the identified regression equation 1 *, if the number of enterprises, real income per capita and the average nominal monthly salary are increased by 1.0%, the unemployment rate in Tashkent region will increase by 0.1%, 0.0%, respectively. It was found that further reductions of 0.2 percent and 0.01 percent were possible . It can be seen that it is desirable to establish new production facilities in the region as a first matter.

The high level of unemployment has a negative impact on the effective functioning of the regional labor market. In this sense, we also conducted a multifactor econometric analysis of the unemployment rate. Using the (1*)-regression equation defined in $Y = \frac{X5^{2.068}*e^{0.12}}{X3^{1.17}*X4^{0.5}*X6^{0.44}}Yu$, the remaining factors are calculated from the following equations for time (t=2 4) :

Number of enterprises − X_3 = 2784 , 8 + 2 1 59 , 6 *t; Real income per capita X_4 =-1086.8+717.1*t; Average nominal monthly salary -X_5 =26.4+119.8*t; GDP per capita employed in the economy − X_6 =-3559.4 + 3217 , 2 *t. results of multi-factor forecast of changes in the unemployment rate of Tashkent region are determined by using (Table 4).

Table 4
Results of multi-factor forecast of change of unemployment level of Tashkent region [11]

Years	Unemployment rate, %	Number of enterprises, in units	Real income per capita, thousand soums	Average monthly nominal salary, thousand soums	GNI per capita of employed population, thousand soums
2023	8.2	54615	16123.6	2901.6	73653.4
2024	7.9	56775	16840.7	3021.4	76870.6
2025	7.6	58934	17557.8	3141.2	80087.8
2026	7.3	61094	18274.9	3261	83305
2027	7.0	63254	18992	3380.8	86522.2

If we pay attention to the results of the multi-factor forecast of the change in the unemployment rate of the Tashkent region presented in the table, first of all, scientific studies have confirmed that the unemployment rate cannot be completely eliminated, not only in the regions, but also in developed countries, but it can be reduced. . In our research, taking unemployment as an outcome factor is to determine its importance in the labor market, which in turn is expected to reduce the unemployment rate by 1.5% in the region by 2028 compared to 2023, which in turn will increase the number of enterprises in the Tashkent region. Compared to 2023, the real income per capita will increase by 15.7% and the gross regional product per capita in the region will increase by 14.9%. thousand soums and it is observed when the volume of gross regional product per capita reaches 86522.2 thousand soums.

SUMMARY AND RESULTS

In short, the labor market of the Tashkent region is characterized by a significant persistence of unemployment, hidden unemployment, which is the result of many problems and contradictions that have not been resolved during the long-term complication of the socio-economic situation. In general, the modern model of the Tashkent region labor market is characterized by the following shortcomings:

- the rigidity of the employment sector caused by excessive regulation of labor relations;
- incompatibility of employment policy and state regulation of labor remuneration with economic, social, financial, industry, territorial, investment, credit policy;
- the lack of an active approach to the regulation of the employment sector, which is often manifested in the failure to respond in time to already formed problems and existing threats, and in the absence of appropriate measures aimed at their prevention;

- the incompatibility of the labor market with the market of educational services, which leads to an increase in the quantitative and professional-qualification imbalance of demand and supply of labor force and the aggravation of the problem of youth unemployment;
- low level of use of economic mechanisms that help to create new quality jobs and attract young people and highly qualified workforce;
- the attention of the state policy to support the dependent relations of the unemployed in the absence of effective incentives to ensure effective employment;
- the imperfection of the labor legislation, which consists of the low efficiency of specialized state programs, the outdated and inconsistency of regulatory and legal documents , the insufficient adaptation of its provisions to international standards, the absence of an effective mechanism for ensuring compliance with legal documents in the field of labor relations.

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