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STATISTICS OF REGRESSION COEFFICIENT AND CORRELATION COEFFICIENT PRACTICAL ASSESSMENT OF SIGNIFICANCE

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Abstract: This article examines the social composition and structure of the labor resources of the population of the Republic of Uzbekistan. At the same time, we will provide scientifically sound proposals and considerations through practical, economic and econometric study and analysis of data such as the level of economic activity of the population, the share of permanent population of working age in relation to the total population, the level of employment and the unemployment rate.

Keywords: Economics, labor resources, econometric model, unemployment, employment, regression, correlation.

INTRODUCTION

The study of interconnections between socio-economic processes is one of the important tasks of econometrics. Within many forms of event correlation, causal coupling, which defines all other forms, plays an important role. The essence of causality lies in the fact that one phenomenon causes (causes it) another phenomenon. In any particular connection, one character is involved as a factor influencing the other and determining their change, while the other characters are involved as a result of the influence of these factors. In other words, one character manifests the cause and another the consequence. The characters describing the outcome are known as resultant (free) characters (y annotating variables), while the characters describing the cause are known as factor (independent) characters (x annotating variables).

Main part. There are two types of correlation between phenomena and their signs: functional, or strictly determinative correlation (e.g., the dependence of the volume of production per worker on the volume of output on the number of workers) and statistical, or stochastic determinative correlation (e.g., the ratio of labor productivity to the cost of the unit of output). A functional relation is a connection in which a well-defined value of a free variable corresponds to each value of an independent variable X.

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A statistical relation is a connection in which many values of the free variable correspond to each value of an independent variable x, in which it is not known in advance exactly what value it takes.

A correlation relation is a connection in which an independent variable x has a certain mathematical expectation (mean value) of the free variable to each result. The correlation bond is a" incomplete " bond that is manifested in much more cases only at mean magnitudes, rather than in each individual case.

In very many cases, X and Y have to study the connections between random quantities. The connection between random quantities may be functional or statistical, or there may be no connection at all.

We set out to study the link between the statistical data of the Republic of Uzbekistan, taking as an example this link. In doing so, we received the following information:

Y-the level of economic activity of the population;

X_1- share of the number of permanent residents of working age in relation to the total population;

X_2- employment level;

X_3- unemployment rate;

We studied on the basis of this data the level of economic activity of the population in 2022 and the dependence of the proportion of the number of permanent residents of working age on the total population, the level of employment and the level of unemployment on it. In this we will have Table 1 through the data of 2022.

Table 1.

№	Regions	Y	X1	X2	X3
1	Qoraqolpog`iston Respubliksasi	69,20	59,80	62,00	10,50
2	Andijon	74,70	58,44	66,50	10,90
3	Buxoro	76,40	59,60	68,30	10,60
4	Jizzax	74,30	57,80	66,20	11,00
5	Qashqadaryo	68,50	58,10	60,90	11,10
6	Navoiy	73,80	59,40	66,80	9,40
7	Namangan	72,70	59,00	65,00	10,60
8	Samarqand	70,90	57,40	63,20	11,00
9	Surxondaryo	71,90	58,10	63,90	11,10
10	Sirdaryo	72,80	60,10	64,80	11,00
11	Toshkent	76,20	58,70	68,20	10,50
12	Farg`ona	73,00	58,80	65,10	10,90
13	Xorazm	71,50	59,80	63,70	10,90
14	Toshkent shahar	88,80	57,40	81,70	8,00

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Source: compiled on the basis of data from the Institute of Forecasting and macroeconomic research under the Cabinet of Ministers of the Republic of Uzbekistan.

As a result of correlation-regression analysis of this data, we have the linear link equation in Qui among the characters:

$$Y=-11,566417+0,049215*X_1+1,109670*X_2+0,869596*X_3$$

To check this linear connection, we carried out verification work through this data of 2023 and have this result in this:

Table 2.

№	Regions	Y	X1	X2	X3
1	Qoraqolpog`iston Respubliksasi	67,70	59,60	60,90	10,10
2	Andijon	75,70	57,50	68,20	9,90
3	Buxoro	74,60	58,90	67,30	9,80
4	Jizzax	75,10	57,20	67,50	10,10
5	Qashqadaryo	69,30	57,30	62,20	10,20
6	Navoiy	74,90	58,70	68,30	8,80
7	Namangan	72,60	58,20	65,50	9,70
8	Samarqand	70,70	56,70	63,70	9,90
9	Surxondaryo	71,80	57,30	64,50	10,20
10	Sirdaryo	71,90	59,50	64,60	10,20
11	Toshkent	77,60	59,60	70,30	9,40
12	Farg`ona	73,60	58,10	66,20	10,00
13	Xorazm	71,10	59,40	64,00	9,90
14	Toshkent shahar	89,50	56,10	83,30	7,00

Source: compiled on the basis of data from the Institute of Forecasting and macroeconomic research under the Cabinet of Ministers of the Republic of Uzbekistan.

We use these statistics to verify our model:

Table 3.

Result for Y through model for 2023

№	Regions	Y	X1	X2	X3	Y	Difference
1	Qoraqolpog`iston Respubliksasi	94,13	59,60	60,90	10,10	67,70	-26,43
2	Andijon	101,02	57,50	68,20	9,90	75,70	-25,32
3	Buxoro	100,62	58,90	67,30	9,80	74,60	-26,02
4	Jizzax	100,27	57,20	67,50	10,10	75,10	-25,17
5	Qashqadaryo	94,53	57,30	62,20	10,20	69,30	-25,23
6	Navoiy	100,77	58,70	68,30	8,80	74,90	-25,87
7	Namangan	98,20	58,20	65,50	9,70	72,60	-25,60

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8	Samarqand	95,63	56,70	63,70	9,90	70,70	-24,93
9	Surxondaryo	97,08	57,30	64,50	10,20	71,80	-25,28
10	Sirdaryo	98,27	59,50	64,60	10,20	71,90	-26,37
11	Toshkent	103,95	59,60	70,30	9,40	77,60	-26,35
12	Farg`ona	99,18	58,10	66,20	10,00	73,60	-25,58
13	Xorazm	97,30	59,40	64,00	9,90	71,10	-26,20
14	Toshkent shahar	114,57	56,10	83,30	7,00	89,50	-25,07

Source: author's development based on data from the Institute of Forecasting and macroeconomic research under the Cabinet of Ministers of the Republic of Uzbekistan.

Table 4.

Result for X_1 through model for 2023

№	Regions	Y	X1	X2	X3	X1	Difference
1	Qoraqolpog`iston Respubliksasi	67,70	59,02	60,90	10,10	59,60	0,58
2	Andijon	75,70	60,51	68,20	9,90	57,50	-3,01
3	Buxoro	74,60	60,22	67,30	9,80	58,90	-1,32
4	Jizzax	75,10	60,57	67,50	10,10	57,20	-3,37
5	Qashqadaryo	69,30	60,45	62,20	10,20	57,30	-3,15
6	Navoiy	74,90	61,43	68,30	8,80	58,70	-2,73
7	Namangan	72,60	61,93	65,50	9,70	58,20	-3,73
8	Samarqand	70,70	60,38	63,70	9,90	56,70	-3,68
9	Surxondaryo	71,80	59,39	64,50	10,20	57,30	-2,09
10	Sirdaryo	71,90	59,17	64,60	10,20	59,50	0,33
11	Toshkent	77,60	60,60	70,30	9,40	59,60	-1,00
12	Farg`ona	73,60	61,17	66,20	10,00	58,10	-3,07
13	Xorazm	71,10	61,74	64,00	9,90	59,40	-2,34
14	Toshkent shahar	89,50	51,69	83,30	7,00	56,10	4,41

Source: author's development based on data from the Institute of Forecasting and macroeconomic research under the Cabinet of Ministers of the Republic of Uzbekistan.

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Table 5.

Result for X_2 through model for 2023

№	Regions	Y	X1	X2	X3	X2	Difference
1	Qoraqolpog`iston Respubliksasi	67,70	59,60	60,87	10,10	60,90	0,03
2	Andijon	75,70	57,50	68,33	9,90	68,20	-0,13
3	Buxoro	74,60	58,90	67,36	9,80	67,30	-0,06
4	Jizzax	75,10	57,20	67,65	10,10	67,50	-0,15
5	Qashqadaryo	69,30	57,30	62,34	10,20	62,20	-0,14
6	Navoiy	74,90	58,70	68,42	8,80	68,30	-0,12
7	Namangan	72,60	58,20	65,67	9,70	65,50	-0,17
8	Samarqand	70,70	56,70	63,86	9,90	63,70	-0,16
9	Surxondaryo	71,80	57,30	64,59	10,20	64,50	-0,09
10	Sirdaryo	71,90	59,50	64,59	10,20	64,60	0,01
11	Toshkent	77,60	59,60	70,34	9,40	70,30	-0,04
12	Farg`ona	73,60	58,10	66,34	10,00	66,20	-0,14
13	Xorazm	71,10	59,40	64,10	9,90	64,00	-0,10
14	Toshkent shahar	89,50	56,10	83,10	7,00	83,30	0,20

Source: author's development based on data from the Institute of Forecasting and macroeconomic research under the Cabinet of Ministers of the Republic of Uzbekistan.

Table 6.

Result for X_3 through model for 2023

№	Regions	Y	X1	X2	X3	X3	Difference
1	Qoraqolpog`iston Respubliksasi	67,70	59,60	60,90	10,07	10,10	0,03
2	Andijon	75,70	57,50	68,20	10,07	9,90	-0,17
3	Buxoro	74,60	58,90	67,30	9,87	9,80	-0,07
4	Jizzax	75,10	57,20	67,50	10,29	10,10	-0,19
5	Qashqadaryo	69,30	57,30	62,20	10,38	10,20	-0,18
6	Navoiy	74,90	58,70	68,30	8,95	8,80	-0,15
7	Namangan	72,60	58,20	65,50	9,91	9,70	-0,21
8	Samarqand	70,70	56,70	63,70	10,11	9,90	-0,21
9	Surxondaryo	71,80	57,30	64,50	10,32	10,20	-0,12
10	Sirdaryo	71,90	59,50	64,60	10,18	10,20	0,02
11	Toshkent	77,60	59,60	70,30	9,46	9,40	-0,06
12	Farg`ona	73,60	58,10	66,20	10,17	10,00	-0,17
13	Xorazm	71,10	59,40	64,00	10,03	9,90	-0,13
14	Toshkent shahar	89,50	56,10	83,30	6,75	7,00	0,25

Source: author's development based on data from the Institute of Forecasting and macroeconomic research under the Cabinet of Ministers of the Republic of Uzbekistan.

Conclusion. Based on these diagrams, we can say that our linear binding model, which we built using data for 2022, was able to demonstrate its significance from an economic point of view. After all, in this case, the result of our arbitrary variables X_1, X_2 and X_3 was very close.in which the difference between the values was in the middle range [-0.5; 0.5]. Our arbitrary variable y differed from the one expected in 2023 in the range [-26.5; -25.0].

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