ANALYSIS OF ECONOMETRIC MODELS OF REGIONAL GRP AND SOME FACTORS AFFECTING IT

Rahimov Odil Berdievich
Senior teacher of the Karshi branch of the
Tashkent University of Information Technologies
named after Muhammad al-Khorazmi
odilrahimov2374@gmail.com

Abstract: In the article as a result of the clustering policy in the following years, the development of economic entities in the region, the correlational analysis of the Gross regional product and some factors affecting it, and growth forecasts of macroeconomic indicators are presented.

Key words: Cluster, potential, correlation coefficient, determination coefficient, correlation analysis, regression equations.

Introduction. Clustering These complexes, which combine the process from raw materials to finished products into a single technological chain, are an important step in the transition to an innovative economy in the field. The integration of science, education and production will be deepened, and favorable conditions will be created for the rapid implementation of new innovative technologies.

In the context of globalization and increased international competition, clusters are a powerful tool for the development of small and medium-sized companies. The main directions of cluster development of clusters of economic entities are to create conditions for innovative development in terms of eliminating resource shortages, as well as to develop advanced technologies for the production of products with a high share.

Probability-statistical method is used to determine production potential. In this case, the construction of the kinetic production function is the main task, and its adequate determination provides a structural complete expression of the production potential calculation function.

One of the main problems in determining the production potential of the region is the large number of production facilities that make up the production complex. In this case, it is possible to solve the problem by summarizing the objects that differ little by certain indicators and creating a group of objects. Then the clustering method can be used. For this, cluster analysis is conducted. In recent years, economic indicators have increased as a result of clustering of industries in our country.

Our task is to assess the presence of strong and weak ties that affect the development of economic entities through empirical modeling. To perform this task, we use the method of correlation analysis. Because our goal is to assess the importance and reliability of the relationships that affect the development of each sector, which affects the growth of regional GNP. Through correlation analysis, we measure the degree of dependence affecting the standard of living of the population, but we cannot determine the cause of the relationship.

Even so, we believe that it is appropriate to analyze the selected regression equations according to their optimality, taking into account the current economic reforms.

In our analysis, statistical data related to the 2003-2022 reporting years of the region were selected, this information was expressed on the basis of certain indicators of GNI and the factors affecting them (Table 1).

Table 1

Gross regional product and some factors affecting it

Years	GNP (million soums) Y	The number of people employed in the economy (thousands of people) X1	Number of economic subjects X2	Total services (million soums) X3
2003	749579.4	770.5	31947	2465.8
2004	841302.2	796.4	47430	2511.7
2005	1178897.7	821.7	60944	2615.8
2006	1642638.2	850	72632	2735.9
2007	168354.1	900	70102	2897.6
2008	2831565	908.7	78251	2901.7
2009	3731935.4	940.2	82197	2948.3
2010	5160570.5	971.6	78651	2912.1
2011	5879473.4	1003.7	82242	2974.5
2012	8704900	1036.6	69283	3001.2
2013	8828100	1072.3	69014	3025.1
2014	10209200	1108.5	60092	3066.4
2015	13418000	1143.9	75061	3645.6
2016	14897000	1180.9	74578	4556.2
2017	22633400	1218	72587	5841.0
2018	28412200	1235	72698	6975.9
2019	31153200	1222.1	72921	8736.9
2020	34618100	1186.7	72921	10349.5
2021	43833300	1202.5	72921	13262.4
2022	49520800	1211.2	72921	15945.8

First of all, a multi-factor empirical model of correlation and regression equations was created to determine the interrelationships with GNI in Kashkadarya region.

Several variants of multifactorial empirical models of processes were calculated in Eviews 9 software and corresponding results were obtained. The Eviews 9 program was also used in the construction of the model, the least squares method - ARMA was used to develop and analyze the econometric model between the factors affecting it (Table 2).

Table 2

Correlation model of the share of economic entities in relation to the regional gross regional product

Dependent Variable: Y
Method: Least Squares

Date: 10/10/23 Time: 17:53				
Sample: 2003 2022				
Included observations: 20				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1	34075.99	2856.733	11.92831	0.0000
X2	85.03762	29.01356	-2.930962	0.0098
X3	2889.043	104.3723	27.68017	0.0000
C	30009576	2431290.	-12.34307	0.0000
R-squared	0.993942	There is a mean dependent		14420626
Adjusted R-squared	0.992806	SD dependent		15306466
SE of regression	1298279.	Akaike info criterion		31.16783
Sum squared resid	2.70E+13	Schwarz criterion		31.36698
Log likelihood	-307.6783	Hannan-Quinn criterion.		31.20671
F-statistic	874.9978	Durbin-Watson stat		2.039874
Prob (F-statistic)	0.000000			

As a result of research, the following empirical model was created:

$$Y = -30009576 + 34076 \cdot x_1 - 85{,}04 \cdot x_2 + 2889{,}04 \cdot x_3$$

-12.34 11.93 -2.93 27.68t_{his}

The resulting model was evaluated according to evaluation criteria. The coefficient of determination equal to 0.99 means that there is a strong correlation between these economic factors in the model. Fisher's test was used to determine the statistical significance of the constructed multifactorial model and its suitability for the studied process, this value $F_{his} = 874.9$ is equal to If the calculated value of the F-criterion is greater than the value in the table, the adequacy of the model means that the model is significant,there is no autocorrelation in the residuals of the resulting factor, since the value of the DW criterion was around 2,so the regression equations are correctly chosen.

xoIt was shown that the forecast of the five-year development process of the business entities can achieve the following results (Table 3).

Table 3
Forecast of the growth process of macroeconomic indicators

Years	GDP (billion soums)Y	INDUSTRY (billion soums) Y1	VILLAGE ECONOMY (billion soums) Y2	CONSTRUCTION (billion soums) Y3	TRANSPORT AND COMMUNICATION (billion soums) Y4	TRADE (billion soums) Y5	NET TAX (billion soums) Y6	KBXT (billion soums) Y7
2023	10015820.7	-1488.9	3650.9925	2332.2321	493.589033	1363.459	3554.083	7036.894
2024	10442542.8	-582,607	3797.7816	1709.4984	508.671921	1615.776	4653.4132	7482.716
2025	10877686.3	1994.913	5195.5843	2711.6139	524.215706	1901.951	6104.3114	7943.466
2026	11321251.2	7143.259	8907.6936	6911.2536	540.234472	2221.984	8001.9148	8419.144
2027	11773237.5	16029.93	16402.463	16510.9125	556.742733	2575.875	10461.595	8909.75
2028	12233645.2	30134.84	29631.724	34469.2776	573.755446	2963.624	13621.922	9415.284

productivity of land use in agriculture, reduce the cost of products and increase the export potential through the introduction of digital technologies – it is considered one of the activities carried out with the aim of creating a favorable environment for the national market of digital technologies and the development of promising "digital" startups, it is necessary to

References:

1.Odil Rahimov. Econometric modeling of agricultural production clustering// OAK Business Expert scientific and practical journal, Tashkent, 11-12, 2022 (179-180), page 63-66, (08.00.00; #3).

2.Odil Rahimov. SWOT analysis of agricultural development of Kashkadarya region. // "Agro ilm" scientific and practical magazine of OAK, issue 1 [88], 2023, ISSN 2091-5616, page 100-102, (08.00.00; #15).

3.Porter M. Location, competition, and economic development: local clusters in a global economy // Economic development quarterly. - 2000. - Vol. 14, no. 1.- P. 15-34.

4.Rodionov D.G., Afanasov A.Yu., Gorovoy A.A. Foreign practice formation and implementation of regional cluster policy // Mir ekonomiki i prava. - 2014. - No. 6. - S. 4-16.

5.Qodirov, F. "OPTIMIZATION BUN OF TELECOMMUNICATIONS POWER SUPPLY SYSTEMS BASED ON RELIABILITY CRITERIA." Science and innovation 2.A12 (2023): 15-20.

6.F Qodirov. Aholiga tibbiy xizmatlar ko'rsatishning rivojlanishini iqtisodiy-matematik modellashtirish. Scienceweb academic papers collection . 2023/1/1.

7.F Qodirov. Zamonaviy to'lov tizimlari tahlili va elektron pul birliklari. Scienceweb academic papers collection. 2023/1/1.

8.Farrux Qodirov. Zamonaviy trenajyor va simulyatsiya qiluvchi dasturlarning hozirgi kundagi ahamiyati. Scienceweb academic papers collection. 2023/1/1

9.Farrux Qodirov. BUSINESS INNOVATION MODEL OF INCOME AND COSTS FROM THE PROVISION OF MEDICAL SERVICES TO THE POPULATION. Scienceweb academic papers collection. 2023/1/1

10.Farrux Qodirov. ECONOMIC-MATHEMATICAL MODELING OF THE DEVELOPMENT OF THE PROVISION OF MEDICAL SERVICES TO THE POPULATION. Scienceweb academic papers collection. 2023/1/1

11.Farrux Qodirov. THE PLACE OF ECONOMETRICAL MODELING OF HEALTHCARE QUALITY IMPROVEMENT IN THE DIGITAL ECONOMY. Scienceweb academic papers collection. 2023/1/1

12.Farrux Qodirov. DEVELOPMENT OF SCIENTIFIC AND TECHNOLOGICAL SYSTEM OF MANAGEMENT OF INDUSTRIAL ENTERPRISES. Scienceweb academic papers collection. 2023/1/1

13.Ergash o'g'li, Qodirov Farrux. "CREATION OF ELECTRONIC MEDICAL BASE WITH THE HELP OF SOFTWARE PACKAGES FOR MEDICAL SERVICES IN THE REGIONS." Conferencea (2022): 128-130.

14.Ergash o'g'li, Qodirov Farrux. "IMPORTANCE OF KASH-HEALTH WEB PORTAL IN THE DEVELOPMENT OF MEDICAL SERVICES IN THE REGIONS." Conferencea (2022): 80-83.

15.Qodirov, Farrux. "THE ROLE OF ICT IN THE DEVELOPMENT OF HEALTH SERVICES." RAQAMLI TRANSFORMATSIYA JARAYONIGA AXBOROT TEXNOLOGIYALARINI JORIY ETISHDA MA'LUMOTLARNI HIMOYALASH MUAMMOLARI VA YECHIMLARI RESPUBLIKA ILMIY-AMALIY ANJUMANI MA'RUZALAR TO'PLAMI (2022).

16.Фаррух Қодиров. Аҳолига хизмат кўрсатиш соҳасининг моделлаштиришни тизимли имитация қилиш. Biznes-Эксперт. Том 173. Номер №5. Страницы 102-106. Дата публикации 2022.

17.Farrux, Qodirov. "Foreign experience in the development of medical services to the population." Хоразм Маъмун академияси (2022).

18.ҚОДИРОВ, Фаррух. "АҲОЛИГА СОҒЛИҚНИ САҚЛАШ ХИЗМАТЛАРИ КЎРСАТИШНИНГ ИЖТИМОИЙ-ИҚТИСОДИЙ РИВОЖЛАНИШИ ТАҲЛИЛИ." AGRO ILM (2022).

19.Qodirov, Farrux. "VEKTOR VA SKALYAR MAYDONLAR. GRADIYENT VA YO'NALISH BO'YICHA HOSILA. DIVERGENSIYA VA ROTOR. SATH CHIZIQLARI. GRADIYENT MAYDONLAR. OQIMLAR." Analytical Journal of Education and Development (2022).

20.Qodirov, Farrux. "FURYE QATORI FUNKSIYALARNI FURYE QATORIGA YOYISH." МАТЕМАТИК ФИЗИКА ВА МАТЕМАТИК МОДЕЛЛАШТИРИШНИНГ ЗАМОНАВИЙ МУАММОЛАРИ Халқаро илмий-амалий анжуман материаллари тўплами (2021).