

ECONOMIC AND STATISTICAL ANALYSIS OF REGIONAL TRENDS IN THE DEVELOPMENT OF AGRICULTURE IN THE CONTEXT OF THE TERRITORY OF THE REGION

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Abstract

The article describes the trends in the development of regional agriculture in the Andijan region in 2010-2019 based on economic and statistical analysis of the main indicators. On the basis of the identified trends of the changes of the territory, determined the directions of agricultural development of regional branch.

Keywords: economic and statistical analysis, gross regional product, gross regional agricultural output, absolute growth, relative growth, regional and territorial analysis, dehqan farms, farms, trends.

Introduction

In the field of studying socio-economic processes, the study of individual sectoral characteristics of regions and specific aspects of their development increases the accuracy of the structural analysis of the entire region. Although the share of the agricultural sector in the structure of the country's economy today makes up a significant share among the main sectors and industries, the share of agricultural products created as a result of structural changes is decreasing. The main reason for such changes is the rapid development of industry, services and other sectors in the national and regional sectors of the economy [1].

Within the framework of agrarian reforms in our country, important legal, organizational and economic measures are being taken to develop forms of entrepreneurial activity. In particular, in the Strategy for the Development of Agriculture of the Republic of Uzbekistan for 2020-2030, the implementation of pilot investment programs to support the development and diversification of entrepreneurship in agriculture, improving the activities of the State Fund for the Support of Entrepreneurship under the Agency, Particular attention was paid to the development of small business and entrepreneurship [2].

Given the fact that the agricultural sector is one of the main sectors of the economy amid a pandemic that put the world in a difficult economic situation at the end of 2019, it is important to determine the strategic directions for its development based on trends in the agricultural sector.

Analysis of relevant literature

Statistical analysis of agricultural production at the macro and meso levels is being studied by many scientists and researchers in individual countries and regions. In particular, Yu. Abdullaev and N. Soatov studied the theoretical aspects of economic and statistical analysis [3,4], T.



Shodiev theoretically and practically studied econometric models of the development of the agricultural sector [5], D. Parmakli studied the features and patterns of the agricultural economy [6], V. Somova separately analyzed the economic development from an economic and statistical point of view [7].

Although in the advanced field of theoretical research studied the macroeconomic analysis of the development of the agricultural sector, today the territorial units of the country have a sufficient amount of research to determine the basic direction of the development of the region. Deep analysis of the level of the agricultural sector has not been conducted.

Analysis and results

Andijan region is the second largest producer of agricultural products in the agricultural sector of the country after Samarkand and Tashkent regions, and over the years, the volume of gross agricultural production of the region has a stable upward trend (Table 1).

Table 1 Changes in the main macroeconomic indicators of the national economy and Andijan region [8], billion soums.

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Gross domestic product, bln. sum	78936,6	103232,6	127590,2	153311,3	186829,5	221350,9	255421,9	317476,4	424728,7	529391,4
Gross regional product (billion soums)	4497,3	6183,4	7623,8	9918,6	11872,3	13914,0	16115,6	19753,0	27144,4	33802,1
Share in the country (%)	5,7	6,0	6,0	6,5	6,4	6,3	6,3	6,2	6,4	6,4
The volume of investments in the national economy, bln. sum	16463,6	19500,0	24455,3	30490,1	37646,2	44810,4	51232,0	72155,2	124231,3	195927,3
The volume of investments in the regional economy, bln. sum	726,2	1037,2	1379,9	1462,3	1645,0	1956,5	2188,5	2986,0	4711,9	7452,1
Share in the country (%)	4,4	5,3	5,6	4,8	4,4	4,4	4,3	4,1	3,8	3,8
Gross agricultural output, bln. sum	30856,7	45285,9	55750,0	66435,3	81794,3	99604,6	115599,2	148199,3	187425,6	215672,6
Gross regional agricultural output, bln. sum	2841,1	4264,9	5283,6	6575,4	7992,4	9796,6	11873,4	15290,9	19606,3	24439,4
Share in the country (%)	9,2	9,4	9,5	9,9	9,8	9,8	10,3	10,3	10,5	11,3

The analysis of the main macroeconomic indicators and regional indicators of Andijan region, presented in the table data, allows to more clearly see the importance of the regional economy in the national economy.

Although Andijan region occupies a much smaller area than other regions, it occupies one of the leading positions in terms of population and, in this regard, ranks first in the country in terms of population density. Under the influence of natural-climatic and demographic factors, in 2010 the regional GDP amounted to 5.7% of GDP, and by 2019 this figure increased by 0.3% to 6.0%.

While the country's GDP has grown by 74.4% over the past 10 years, the average annual growth rate was 6.5%, the gross regional product of Andijan region for 2010-2019 increased by 76.4% and the average annual growth rate Was 6.8%. A comparison of the indicators shows that the



overall growth rate of the region's gross regional product and the average growth rate is higher than the national average.

The change in the volume of gross domestic product and regional product depends in many respects on the volume of investments attracted and mastered in the national or regional economy. The volume of investments in fixed assets in the national economy in 2010-2019 increased by 3.4 times and amounted to 16463.6 billion soums in 2010. soums, in 2019 - 195927.3 bln. soums. The average annual growth rate of this indicator in the country was 15.0%, and the growth rate of this indicator compared to the previous year was around 19-38% in 2017-2019.

At the regional level, the volume of investments in the regional economy was slightly lower than at the national level. In particular, over the past 10 years, the total volume of investments in the regional economy increased by 2.5 times and in 2010 amounted to 726.2 billion soums. The volume of investment in 2019 amounted to 7452.1 billion soums. The average growth rate of investments in the regional economy for 10 years was 11.1%, the growth rate decreased in 2010 and 2013 and sharply increased in 2011-2012 and 2017-2019. In particular, in 2017-2019, the growth rate of investments in the regional economy was around 14-29%.

In Andijan region, there is a tendency to change the share of investments in the regional economy at the macro level. While this figure increased during 2011-2012 (5.3 and 5.6%, respectively), it can be seen that it decreased steadily between 2013-2019 (3.8% in 2019). This, of course, can be explained by the more active investment movement of economic sectors in other regions than in Andijan region.

Andijan region is the second largest producer of agricultural products in the country's agricultural sector after Samarkand and Tashkent regions, and over the years the volume of regional gross agricultural output has been growing steadily.

According to the table, the volume of regional agricultural production in the region for 10 years from 2010 to 2019 amounted to 2841.1 billion soums. 24439.4 billion soums soums and increased by 8.6 times. When comparing this figure to the growth rate of the indicator created in the agricultural sector of the country, the regional indicator appears to be 1.6 times higher than the national level.

During the period under review, the regional agricultural output created in Andijan region amounted to 9-11% of the national level, achieved a stable growth rate over the years, and its share in 2019 increased by 2.1% compared to 2010.

The analysis of time series values showed that compared to previous years, the regional index in 2013, 2016 and 2019 grew rapidly by 0.4, 0.5 and 0.8%, respectively. This growth reflects the impact of certain natural and economic factors on the agricultural sector of the region.

The development of the regional agricultural sector in the period under review is also to some extent affected by changes in the area under crops, which is the main production resource of the industry (Table 2).

Although the area used by the Andijan regional agricultural sector for agricultural production has remained virtually unchanged over the past 10 years, the area under crops has declined somewhat between 2012 and 2015, and by 2019 has increased to its previous level. Taking into account the fact that the area under crops used by the agricultural sector of the country decreased by 10.8% during the period under review, it is possible to positively assess the level of change



in the area under crops used in the regional agriculture. The share of agricultural land in the region in the national average over the past period increased from 6.2% to 6.9%, the growth rate was 0.7%.

Another key indicator in the table is the level of change in the number of labor resources employed in the sector, which reflects the qualitative aspects of agricultural development in the region and allows to determine the characteristics of changes in the level of labor productivity directly in the agricultural sector.

The number of labor resources employed in the agricultural sector of Andijan region in 2010 amounted to 692.2 thousand people, which in 2019 increased by 12.5% and reached 778.9 thousand people. The volume of labor resources employed in this area of the region amounted to 22-22.7% of employment in agriculture of the country, and this figure decreased by 0.2% between 2010 and 2019. The share of the population employed in agriculture in the total employed population was 24.9-28.1%, and the analysis of changes in this indicator over the years shows an upward trend until 2015 and a decrease in subsequent years, in 2019 it decreased (24,9 %) by 1.0% compared to 2010.

Table 2 Analysis of some socio-economic indicators of agriculture in Andijan region in 2010-2019 [8]

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	In 2019 compared to 2010 ўaғarim (+, -)
Area of agricultural crops of the region, thousand ha	230,1	230,2	229,6	229,9	229,9	230,0	230,0	230,1	230,2	230,2	100,1
Share in the country (%)	6,2	6,4	6,3	6,3	6,2	6,2	6,2	6,6	6,8	6,9	+0,7
Number of employees in the regional agricultural sector, thousand people	692,2	723,4	725,1	762,1	797,5	817,6	820,5	822,4	781,7	778,9	112,5
Share in the country (%)	22,2	22,4	22,3	22,4	22,6	22,7	22,5	22,4	22,1	22,0	-0,2
The share of the total number of employees in the region (%)	25,9	26,7	26,3	27,2	27,9	28,1	27,7	27,3	25,5	24,9	-1,0

The analytical data show that although the number of labor resources employed in the agricultural sector has increased in volume as a result of structural changes in the regional economy, the share has decreased due to the rapid development of industry and services. This situation, on the one hand, provides a certain intensity of development of the regional network, on the other hand, exacerbates the problem of employment of labor resources released from the agricultural sector in the most densely populated region at the national level.



Although the above analysis reflects the state of changes in the generalized indicators of the agricultural sector in Andijan region, the analysis of these indicators does not accurately describe the characteristics of the changes in the region, the agricultural sector and enterprises. With this in mind, the study analyzed the state of regional agricultural development in the cities and districts of the region, the agricultural and livestock sectors of the industry and the main forms of enterprise.

The change in the volume of agricultural production in the regions was due to the favorable conditions for the industry of the territorial units (cities and districts), which are considered favorable for agriculture (Table 3).

Table 3 Changes in the volume of agricultural production in the Andijan region in 2010-2019 [8], in percent

Regions	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	In 2019 compared to 2010 Yarapuu (+,-)
In the region, bln. sum	2841,1	4264,9	5283,6	6575,4	7992,4	9796,6	11873,4	15290,9	19606,3	24439,4	8,6 m.
Percent	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	x
Cities											
Andijon c.	2,8	2,4	2,3	2,3	2,3	2,2	2,0	2,0	3,1	3,1	0,3
Asaka c.	1,2	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	-1,2
Khanabad c.	0,8	0,7	0,7	0,7	0,6	0,6	0,6	0,5	0,7	0,7	-0,1
Districts											
Andijon	8,8	8,8	9,0	9,2	9,3	9,4	9,5	8,2	6,3	6,3	-2,5
Asaka	7,4	8,5	9,3	10,2	10,5	10,9	11,3	11,3	9,6	9,6	2,2
Baliqchi	7,8	7,7	7,5	7,4	7,3	7,2	7,1	7,2	6,8	6,8	-1,0
Boz	4,9	5,0	4,7	4,8	4,6	4,5	4,5	4,8	5,7	5,7	0,8
Buloqbooshi	4,9	5,0	5,0	4,8	4,7	4,7	4,7	4,8	5,3	5,3	0,4
Jalaquduq	9,2	9,0	9,0	9,1	9,2	9,2	9,2	9,8	10,0	10,0	0,8
Izboskan	7,0	6,9	6,8	6,6	6,6	6,5	6,3	6,3	5,9	5,9	-1,1
Ulugnor	3,7	3,9	3,8	3,5	3,4	3,2	3,4	3,5	4,8	4,8	1,1
Marhamat	7,0	7,0	6,8	6,6	6,6	6,6	6,5	6,6	7,0	7,0	0
Oltinkul	6,2	6,1	6,0	5,9	5,8	5,7	5,7	6,1	6,7	6,7	0,5
Paxtaobod	8,0	8,0	8,0	8,0	8,0	8,1	8,0	7,4	7,4	7,4	-0,6
Xodjaobod	4,5	4,9	5,0	5,0	5,1	5,2	5,3	5,0	4,8	4,8	0,3
Shakrixon	8,2	8,2	8,2	8,3	8,2	8,2	8,1	8,6	8,9	8,9	0,7
Kurgantepa	7,7	7,9	7,9	7,9	7,8	7,8	7,9	7,9	6,9	6,9	-0,8

Although the volume of agricultural production in Andijan and Khanabad out of 3 cities of the region has a tendency to increase in terms of total volume, the share of Khanabad in the gross regional product of the region has decreased by 0.1% over the past 10 years, while the share of



Andijan Increased by 0.3%. Asaka has not had agricultural production since 2011 due to the fact that agricultural production has been excluded from the statistics since 2010.

Analysis of the volume of agricultural production in the regions Asaka (2,2 %), Ulugnor (1,1 %), Boz (0,8 %), Jalkuduk (0,8 %) and Shahrihan districts have a rapid growth trend due to the existing natural and climatic resources for the development of the sector and the factors of intensive development of production by enterprises of the sector. In Andijan (-2,5 %), Izbaskan (-1,1 %), Balikchi (-1,0 %) and Qurghonteppa (-0,8 %) districts there was a downward trend. In terms of share in the gross regional agricultural output by 2019, Asaka (9,6 %), Jalakuduk (10,0 %) and Shahrihan (8,9 %) districts have a higher share than other cities and districts, which in recent years have produced more than 28% of regional agricultural output.

The analysis of changes in the volume of production in the agricultural and livestock sectors of the regional agricultural sector in 2010-2019 also shows that there are significant changes in the sector (Table 4).

During the period under review, the volume of agricultural production in the region in 2010 amounted to 2841.1 billion soums. 24439.4 billion soums in 2019 soums and the gross output of the industry has increased 8.6 times over the past 10 years.

Table 4 Changes in the volume of regional gross agricultural output in Andijan region by industry [8]

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Regional gross agricultural output, bln. sum	2841,1	4264,9	5283,6	6575,4	7992,4	9796,6	11873,4	15290,9	19606,3	24439,4
Percent	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0
Agricultural production, bln. sum	2071,2	3109,1	3851,7	4793,5	5826,5	7141,7	8655,7	11147,1	14293,0	17816,3
Share,%	72,9	73,0	72,8	72,9	73,2	73,8	74,0	70,6	66,8	67,8
Livestock production, bln. sum	769,9	1155,8	1431,9	1781,9	2165,9	2654,9	3217,7	4143,8	5313,3	6623,1
Share,%	27,1	27,0	27,2	27,1	26,8	26,2	26,0	29,4	33,2	32,2

There is a tendency to increase the share of agriculture and livestock in the gross regional product of the region. In particular, in 2010 the share of agriculture in the gross regional product was 72.9%, the share of livestock - 27.1%, by 2019 this ratio will change to 67.8% and 32.2%, respectively. . It can be seen that the share of the agricultural sector in the regional agricultural output decreased (-5.1%) in proportion to the increase in livestock production (5.1%).

The analysis of the volume of regional gross agricultural output of Andijan region by forms of management allowed to determine that there are certain trends in changes in the share of products produced by 3 types of agricultural enterprises in regional agricultural production (Table 5).

Table 5 Changes in the gross agricultural output of Andijan region by forms of management

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Regional gross agricultural output, bln. sum	2841,1	4264,9	5283,6	6575,4	7992,4	9796,6	11873,4	15290,9	19606,3	24439,4
Percent	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0
Dehkan farms, bln. sum	1889,3	2763,7	3423,7	4298,7	5251,1	6397,2	7670,2	9847,3	13587,2	17254,2
Share,%	66,5	64,8	64,8	65,3	65,7	65,3	64,6	64,4	69,3	70,6
Farms, bln. sum	929,1	1467,1	1812,3	2224,1	2685,4	3321,0	4120,1	5229,5	5627,0	6891,9
Share,%	32,7	34,4	34,3	33,8	33,6	33,9	34,7	34,2	28,7	28,2
Other agricultural enterprises, bln. sum	22,7	34,1	47,6	52,6	55,9	78,4	83,1	214,1	392,1	293,3
Share,%	0,8	0,8	0,9	0,8	0,7	0,8	0,7	1,4	2,0	1,2

In 2010, 1889.3 billion soums were spent by agricultural producers in the region. By 2019, this figure will increase by 9.1 times to 17,254.2 billion soums. soums. The share of output generated by farmers in the regional gross agricultural output shows a certain fluctuation over the past 10 years. In general, this indicator of farms increased from 66.5% in 2010 to 70.6% in 2019 (4.1%).

During the period under review by farms, the volume of production has been growing steadily from 2010 to 2019, but the share of farms in regional agricultural production has been declining over the past 10 years. In 2010, the share of farms in regional agriculture was 32.7%, but by 2019 this figure has dropped to 28.2%. This decline can be explained by the fact that the majority of farms in the region specialize in cotton and grain, and the volume of products produced by farmers due to the development of horticulture and greenhouses is growing rapidly. Although other types of agricultural enterprises produce very little of the region's regional agricultural output, it can be seen that in recent years the share of these types of agricultural enterprises in the total volume has started to grow.

Analysis of changes in the regional economy of Andijan region and its main components in the regional agricultural sector on the basis of statistical data allowed to distinguish trends in the agricultural sector of the region:

1. Although Andijan region occupies a much smaller area than other regions, it occupies one of the leading positions in terms of population and, in this regard, ranks first in the country in terms of population density. The country's GDP has grown 74.4 % over the past 10 years, with an average annual growth rate of 6.5%, while Andijan region's GDP has grown 76.4 % over the period 2010-2019, with an average annual growth rate of 6,8%. A comparison of the indicators shows that the overall growth rate of the region's gross regional product and the average growth rate is higher than the national average.

2. In Andijan region, there is a tendency to change the share of investments in the regional economy at the macro level. While this figure increased during 2011-2012, it can be seen that it decreased steadily during 2013-2019.



3. Andijan region is the second largest producer of agricultural products in the country after Samarkand and Tashkent regions in terms of the volume and volume of agricultural production, and over the years the volume of regional gross agricultural output has been growing steadily.

4. From 2010 to 2019, the volume of regional agricultural production in the region increased by 8.6 times. When comparing this figure to the growth rate of the indicator created in the agricultural sector of the country, the regional indicator appears to be 1.6 times higher than the national level.

5. Although the area used by the Andijan regional agricultural network for agricultural production has remained virtually unchanged over the past 10 years, the area under crops has declined somewhat between 2012 and 2015 and increased to the previous level by 2019. Taking into account the fact that the area under crops used by the agricultural sector of the country decreased by 10.8% during the period under review, it is possible to positively assess the level of change in the area under crops used in the regional agriculture. The share of agricultural land in the region in the national average over the past period increased from 6.2% to 6.9%, the growth rate was 0.7%.

6. The analytical data show that although the number of labor resources employed in the agricultural sector has increased as a result of structural changes in the regional economy, the share has decreased due to the rapid development of industry and services. This situation, on the one hand, provides a certain intensity of development of the regional network, on the other hand, to some extent exacerbates the problem of employment of labor resources released from the agricultural sector in the most densely populated region of the country.

7. The change in the volume of agricultural production in the regions was due to the favorable conditions for the network of territorial units (cities and districts), which are considered favorable for agriculture. The analysis of the volume of agricultural production by districts shows that the share of gross regional agricultural output in Asaka, Ulugnor, Boz, Jalkuduk and Shahrihan districts tends to grow rapidly due to natural and climatic resources available for the development of the sector and factors of intensive development of production by industry enterprises. Izboskan, Balikchi and Qurghonteppa districts show a downward trend. In terms of share in the gross regional agricultural output by 2019, Asaka, Jalal-Abad and Shahrihan districts have a higher share than other cities and districts, which in recent years have produced more than 28% of regional agricultural output.

8. There is a tendency to increase the share of agriculture and livestock in the gross regional product of the region. In 2010, the share of the agricultural sector in the gross regional product was 72.9%, the share of the livestock sector was 27.1%, and by 2019 this ratio changed by 67.8% and 32.2%, respectively. It can be seen that the share of the agricultural sector in the regional agricultural output decreased (-5.1%) in proportion to the increase in livestock production (5.1%).

9. The analysis of the volume of regional gross agricultural output by forms of management allowed to determine that there are certain trends in the change in the share of products produced by 3 types of agricultural enterprises in the regional agricultural output. The share of farms in the gross agricultural output of the region shows a certain fluctuation over the past 10 years, ie this figure of farmers increased from 66.5% in 2010 to 70.6% in 2019 (4.1%). During the period under review by farms, the volume of production has been growing steadily from 2010 to 2019,



but the share of farms in regional agricultural production has been declining over the past 10 years. In 2010, the share of farms in regional agriculture was 32.7%, but by 2019 this figure has dropped to 28.2%. Although other types of agricultural enterprises produce a very small share of the regional agricultural output, it can be seen that in recent years the share of these types of agricultural enterprises in the total volume has started to grow.

Taking into account the trends of change identified on the basis of the above analysis in the development of medium and long-term strategies for the future development of the agricultural sector of Andijan region is important in the development of the sector on a scientific basis.

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