

## QUANTITATIVE ASSESSMENT OF THE DYNAMICS OF FARM ACTIVITY EFFICIENCY OF THE REPUBLIC OF UZBEKISTAN

**Mamatkulov Bakhtiyor Xalmuradovich\***

\*Associate Professor,  
Candidate of Economic Sciences,  
Department Statistics and Econometrics, Tashkent Institute of Finance,  
Tashkent, UZBEKISTAN  
Email id: bmamatkulov@gmail.com

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### ABSTRACT

*The specifics of the quantitative assessment of the dynamics of farm performance, as well as indicators of statistical analysis of the dynamics are described in the article. In particular, conclusions, suggestions and recommendations were made to increase the efficiency of farms in the regions of the state. To answer such question, or to answer the question of what the average annual change is at some stage of development, an analytical indicator is calculated. Second, to assess current trends and seasonality levels. The reform is aimed at shaping the economy of the sector, creating a healthy economic competitive environment, increasing the availability of water, material and technical base and the availability of labor resources.*

**KEYWORDS:** *Agriculture, Farms, Dynamics, Quantitative Assessment, Absolute Additional Growth (Or Decrease), Growth (Or Decrease) Rate, The Absolute Essence Of 1% Additional Growth (Or Decrease)*

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### INTRODUCTION

Today, the economy of agriculture, forestry and fisheries plays an important role in the economic development of our country. In the agrarian sector, the main part of the national wealth of the country is prepared. Economic reforms in the agricultural, forestry and fisheries sectors of the country are being carried out rapidly. The reform is aimed at shaping the economy of the sector, creating a healthy economic competitive environment, increasing the availability of water, material and technical base and the availability of labor resources. From the first years of independence of our country, great attention was paid to the establishment and development of farms. The organizational and legal framework of the farm was strengthened by the Law of the Republic of Uzbekistan "About the farms" (April301998). On the basis of these laws, a number of government decisions on the further development of the agricultural sector have been adopted and are being implemented. According to the new law of the Oliy Majlis of the Republic of Uzbekistan dated August 26, 2004 "On the basis of farm", "Farm is an independent economic unit engaged in the development of agricultural land rent" [2, p. 4] began to run.

In the Republic of Uzbekistan, comprehensive measures are being taken to radically improve the environment for quantitative assessment of the dynamics of farm performance, to improve the quality and reliability of statistical data. "Improving the methodological framework and

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management principles applied within the entire national statistical system of the country in order to produce, disseminate and coordinate official statistics” [3, p. 2] has been identified as one of the priorities for improving the national statistical system.

The Law of the Republic of Uzbekistan "About Official Statistics" RRU No.-707, adopted on August 11, 2021, states that the multi-year statistical program is developed for the national statistical system as a whole and defines the strategic directions of official statistics development.

The multi-year statistical program consists of the concept of development of the national statistical system, strategic goals and priorities, as well as mechanisms for the implementation of program measures for the development of official statistics"[1, p. 2].

Increasing the efficiency of farm activities through quantitative assessment will allow to determine the market demand for processing food products, rather than the cultivation of products, but also the processing of grown products. Therefore, the topic chosen for the article is actual.

## LITERATURE ANALYSIS AND METHODS

Today, the theory of management for the production of goods and services on farms, as well as quantitative assessment of the dynamics of farm performance have been scientifically and statistically studied by foreign and domestic economists and put into practice.

Economist O.A. Saidakhmedov in his proposal says that the main purpose of management in the industrial environment is to increase production efficiency and high profits. The profits are:

- efficiency of production staff use;
- investment efficiency;
- product quality and its competitiveness;
- quick and effective decision-making;
- depends on a number of factors, such as the level of introduction of new techniques and technologies [8, p. 32].

According to author U. Khudoiberdiev, “Socio-economic events are constantly changing, evolving and evolving from the point of view of dialectics. Therefore, statistics uses a series of dynamics, which is a specific method of statistics, to determine the changes in socio-economic events over time (over a period of time), as well as the general laws of these changes. ” [7, p. 99].

Research of the Russian economist Yu.B. Korolyov shows that in agriculture management of production development is a conscious regulation to increase the efficiency of the production process, increase productivity, improve product quality [10, p. 8].

As N.M. Soatov and G.N. Tillakhodjaeva approve, “In the analysis of the series of dynamics based on qualitative indicators, it should be borne in mind that depending on what form they –in what form they appear correctly or vice versa, the above-mentioned analytical indicators, for example, growth and additional growth rates, will have different logical meaning and will not be equal. Here, qualitative indicators are the norms of events, the quantitative value of which are calculated per unit of the object (subject). They allow to evaluate the results of socio-economic

activity, i.e the use of available material, financial, natural, labor resources in terms of quality and efficiency " [9, p. 256]

According to X. Shodiev and I. Khabibullayev, "In quantitative assessment of the dynamics of the phenomena and processes under study, the following statistical indicators are used: absolute change, rate of change, rate of additional change; the absolute value of one percent change. The calculation of the dynamics series is obtained by comparing the levels of two periods. Generally, the level of comparison is the first year of the series or the year before. " [4, p.195].

Today, there is a growing necessity of using method of quantitative assessment of the dynamics of farm performance in the Republic of Uzbekistan. This is important for studying the phenomenon.

This, of course, will help to improve the quality of research and to identify problems that hinder the development of economic processes and give suggestions and recommendations for its solution.

## RESULTS

Ensuring sustainable economic growth in the agricultural, forestry and fisheries sectors, the production of competitive products depends primarily on the quantitative assessment of the efficiency of farms in accordance with market conditions. Taking into account these requirements and factors, there are three categories of farms began to operate organizations engaged in agricultural activities in the agricultural, forestry and fisheries sector, where the activity and the right to trade are developed, namely; farms, dehqan farms. The reforms being carried out in our country are being carried out step by step. If the main focus in this area is on the study of changes in the dynamics of key indicators of farms in the Republic of Uzbekistan.

**TABLE 1 DYNAMICS CHANGES OF KEY INDICATORS OF FARMS IN THE REPUBLIC OF UZBEKISTAN**

Indicators	Years			2021 compared to 2019	
	2019	2020	2021 <sup>*</sup> )	(+;-)	%
Number of farms, units	92 554	102 992	107 622	15 068	116,28
Total land area attached to farms, thousand, hectare	6 313,6	6 102,9	6 199,0	- 114,60	98,1853
The total land area, which corresponds to an average of 1 farm, hectare	68,2	59,3	57,6	-10,60	84,4385
Average planted area per 1 farm, hectare	28,3	24,7	23,0	-5,30	81,2239
Total sown area, thousand hectare	2 623,2	2 545,6	2 477,6	-145,60	94,4495
hence:					
Cereals - total, thousand, hectare	1 334,1	1 317,6	1 273,9	-60,20	95,4876
Technical crops - total, thousand hectare	1 009,5	954,5	896,8	-112,70	88,8361
of which, cotton, thousand hectare	972,9	916,0	853,0	-119,90	87,676
Potatoes, thousand hectare	11,1	11,2	16,4	5,3	147,748

\* Preliminary information.

**Source:** Based on data from the State Statistics Committee of the Republic of Uzbekistan.

The table shows that in 2019 the number of farms will be 92,554 people, the total area of attached land is 6,313.6 thousand hectares, the total area of land per 1 farm is 68.2 hectares on average, the average area of arable land per farm is 28, In 2021, the number of farms will be 107,622 people, the total area of attached land will be 6,199.0 thousand hectares, the average total area of land per 1 farm will be 57.6 hectares, the average area of arable land per 1 farm will be 23 hectares. , 0. Due to the decrease in the total land area attached to farms in 2021 to 2019 by -114.60 thousand hectares or 1.8%, the total land area per 1 farm will increase by 10.6 hectares or 15.6%, on average 1 farm. The area under crops decreased by 5.3 hectares or 18.8%. (Table 1)

The following statistics are used to quantify the dynamics of farm performance: absolute change; rate of change; additional rate of change; the absolute value of the one percent change.

The calculation of farm statistics is based on a comparison of two levels. The level to be compared is the level of the first year in a row or the year before it.

Depending on the method of comparing changes in the dynamics of gross farm production in the Republic of Uzbekistan, these indicators are divided into variable and fixed (basic) indicators. Farms also call the dynamics of gross production basic and chain indicators. The reason it is called a base is that all the terms in a row are compared to a single limit taken as a base. In the chain method, the comparison base changes with each comparison.

In the process of statistical analysis of changes in the dynamics of gross farm production in the Republic of Uzbekistan, a number of indicators are:

1. Absolute additional increase or decrease - is determined by subtracting the level of the initial or previous period from the level of each subsequent period.

$$\Delta_{i/i-1} = Y_i - Y_{i-1} \quad \Delta_{i/i_0} = Y_i - Y_0 \quad (1)$$

2. Coefficient or rate of increase or decrease (Co.) - The rate of each subsequent period indicates how many careers are greater or less than the level of the initial or previous period, or what percentage.

$$K_{i/i-1} = Y_i / Y_{i-1}; \quad T_{i/i-1} = Y_i \cdot 100 / Y_{i-1}; \quad K_{i/i_0} = Y_i / Y_0; \quad T_{i/i_0} = Y_i \cdot 100 / Y_0 \quad (2)$$

3. The additional growth (decrease) rate (D) can also be determined in two ways. In the first method, the initial period level is subtracted from each subsequent period level, multiplied by 100, and divided by the initial period level.

$$\Delta_{i/i_0} = \frac{\sum (Y_i - Y_0) \cdot 100}{Y_0} \quad (3)$$

In the second method, the pre-period level is subtracted from each subsequent period level, multiplied by 100, and divided by the previous year level.

$$\Delta_{T_{i/i_0}} = \frac{\sum (Y_i - Y_{i-1}) \cdot 100}{Y_{i-1}} \quad (4)$$

4. The absolute value of 1% additional growth (decrease) - the absolute additional growth value is divided by the chain additional growth rate [4, p. 246].

$$\Delta_{i/i-1} : \Delta_{T_{i/i-1}} \quad (5)$$

Below are the analytical indicators of the dynamics of farm production in the Republic of Uzbekistan in 2010-2021.

**TABLE 2 CHANGES IN THE DYNAMICS OF GROSS FARM PRODUCTION IN THE REPUBLIC OF UZBEKISTAN**

Years	Gross output of farms, bln. sum, (Y)	Absolute additional growth, Billion soums		Growth (or decrease) rate,%		Additional growth (or decrease) rate,%		An additional increase of 1% The absolute essence of (or decrease), billion soums	
		Base	Chained	Base	Chained	Base	Chained	[y <sub>i</sub> - y <sub>i-1</sub> ]/ [(Y <sub>i</sub> /Y <sub>i-1</sub> ) x 100]-100	(Y <sub>i+1</sub> ) / 100
		y <sub>i</sub> - y <sub>0</sub>	y <sub>i</sub> - y <sub>i-1</sub>	(Y <sub>i</sub> /Y <sub>0</sub> ) x 100	(Y <sub>i</sub> /Y <sub>i-1</sub> ) x 100	[(Y <sub>i</sub> /Y <sub>0</sub> ) x 100]-100	[(Y <sub>i</sub> /Y <sub>i-1</sub> ) x 100]-100		
2010	54584,073								
2011	57968,285	3384,2124	3384,2125	106,2	106,2	6,2	6,2	545,840729	545,840729
2012	62142,002	7557,9289	4173,7165	113,8	107,2	13,8	7,2	579,682854	579,682854
2013	66243,374	11659,301	4101,3722	121,4	106,6	21,4	6,6	621,420019	621,420019
2014	70416,707	15832,634	4173,3325	129,0	106,3	29,0	6,3	662,433741	662,433741
2015	74712,126	20128,053	4295,4191	136,9	106,1	36,9	6,1	704,167066	704,167066
2016	79418,99	24834,917	4706,8639	145,5	106,3	45,5	6,3	747,121257	747,121257
2017	80213,18	25629,107	794,1899	147,0	101,0	47,0	1,0	794,189896	794,189896
2018	80373,606	25789,533	160,4264	147,2	100,2	47,2	0,2	802,131795	802,131795
2019	83025,935	28441,862	2652,329	152,1	103,3	52,1	3,3	803,736059	803,736059
2020	85267,635	30683,562	2241,7002	156,2	102,7	56,2	2,7	830,259349	830,259349
2021	88337,27	33753,197	3069,6349	161,8	103,6	61,8	3,6	852,676351	852,676351

Source: Based on the information of State statistics committee of the Republic of Uzbekistan

In 2021, the gross output of farms in the Republic of Uzbekistan will reach 88,337.27 billion soum or increased by 33753.197 billion soum or 61.8% compared to 2010. (Table 2)

## DISCUSSION

The provision of statistical data in the form of dynamic series on farms is an internationally recognized tradition, providing useful information in terms of forecasting real changes in data due to periodic, seasonal and irregular events, as well as other types of analysis.

“During the years of independence, great attention has been paid to increasing the volume of agricultural production, which is the mainstay of food security in our country. Therefore, extensive coverage on optimization of the composition of crop areas, introduction of new and advanced technologies in the production of products, expansion of the park of high-yield and effective techniques, improvement of crop varieties and livestock breeding, radical improvement of seed-selection works has been carried out, at the same time, thorough thought-out work has been carried out” [5, p. 2].

There are certain conditions for the formation of data in time series: methodological compatibility over time, seasonal corrections on high-frequency data, the use of the necessary methods of deflation.

In this article we will study the quantitative assessment of the dynamics of the efficiency of farms in the Republic of Uzbekistan. At the beginning we will answer a question that interests many people. Why is it necessary use quantitative assessment of the dynamics of the farms efficiency in the Republic of Uzbekistan? First, to study the dynamics of the efficiency of farms in the Republic of Uzbekistan over time. For example, in 2021, the gross output of farms in the Republic of Uzbekistan will reach 88,337.27 billion soums. soums or increased by 33753.197 billion soum or 61.8% compared to 2010. Outwardly, this is an excellent result. However, we do not know whether this will be more or less in 2021 and beyond. To answer such question, or to answer the question of what the average annual change is at some stage of development, an analytical indicator is calculated. Second, to assess current trends and seasonality levels. Third, to forecast data of activity. Fourth, failure to make timely statistical assessments of events and processes, and failure to make important and fateful decisions about the socio-economic activities of the company, region, or even the state in question, can lead to bankruptcy in a highly competitive environment. Sixth, and most importantly, it is well known that foreign investment does not invest without ensuring the sustainable development of the company, the region and the country.

## CONCLUSION

There are also factors that adversely affect the quantitative assessment of the dynamics of farm performance in the Republic of Uzbekistan, and reducing or eliminating their impact will increase their further development. It is expedient to carry out the following work on quantitative assessment of the dynamics of the efficiency of farms of the Republic of Uzbekistan;

- use of modern statistical methods and tools for the collection, processing, grouping, statistical analysis, distribution and storage of statistical data on farms and the widespread introduction of the national statistical system in them;



- in case of detection of irregularities in the provision of statistical data on certain problems in the development of the system of economic relations on farms, to instruct on their elimination and make appropriate corrections to the statistical data;

On the preparation of dynamics series of data obtained on the farm:

- creation of dynamic series of discrete indicators for the longest period of time according to the data received on farms;

- introduce a method of seasonal adjustment of annual discrete data on the basis of key indicators, based on the nature of the network, by changing the questionnaires to collect discrete data on factors affecting the efficiency of farms;

- improving existing indices and deflation methods to quantify the efficiency of farms;

- development of programs that provide a broad explanation of using indicators of the analysis of the dynamics obtained data on farms by region.

In brief, one of the main sectors of the country's GDP is agriculture, forestry and fisheries. In the agricultural, forestry and fisheries sectors, farms are the main raw material base suppliers for the industrial sector. In its structure, the agricultural and livestock sector also differs radically from other industries with its added value, its role in meeting the needs of the population and its high level of production capacity. Farms are the main and leading economic category of material production, the development of which leads to the sustainable development of the national economy.

## REFERENCES

1. Law of the Republic of Uzbekistan "On Official Statistics" No. ZRU-707. 2021. August 11. . Available at: [www.lex.uz](http://www.lex.uz)
2. The new law of the Oliy Majlis of the Republic of Uzbekistan of August 26, 2004 "On the economy of Fepmep". Available at: [www.lex.uz](http://www.lex.uz)
3. Resolution of the President of the Republic of Uzbekistan dated August 3, 2020 No PP-4796 "On measures to further improve and develop the national statistical system." Available at: [www.lex.uz](http://www.lex.uz).
4. Soatov NM, Nabiyev NG, Aybjonov AH. Amaliy statistika. Darslik. Toshkent. 2020. 593p.
5. Mamatkulov BX. Statistical analysis of factors affecting the volume of groom production of farms. South Asian Journal of marketing & Management Research (SAJMMR). 2021;11(1).
6. Hudayberdiyev U. Statistics. Study guide. Samarqand, SamISI, 2019, 245p.
7. Saidakhmedov OA. Improving the economic mechanism of agricultural management. "Dissertation". Tashkent. 2012. 12p.
8. Soatov NM, Tillaxo`jayeva GN. Statistika. Darslik. Tashkent: TDIU. 2011, 535p.
9. Korolev BYu. Management in the agro-industrial complex. Textbook. Russia. 2007. 51p.
10. The State Statistics Committee of the Republic of Uzbekistan. Available at: [www.stat.uz](http://www.stat.uz)