International Journal of Advanced Science and Technology
Vol. 29, No. 11s, (2020), pp. 46-52

Factors of Sustainable Economic Development of Agricultural Businesses

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Abstract

This article describes the development of the agricultural economy of Uzbekistan, the ongoing agrarian reforms in the country, and their results. Currently, the economic status of farms in the course of consistent economic reforms in agriculture has been studied on the basis of analytical data. According to the study, the most important factors affecting sustainable economic development of farms: soil fertility, water efficiency, and correlation coefficients of ecosystem services were calculated based on econometric models. At the end, based on the research, the scientific and practical recommendations and recommendations on important tasks for the future development of the agricultural economy are stated.

Keywords: strategy of actions, agriculture, farming, structural changes, productivity, efficiency

INTRODUCTION

From the first years of independence in the Republic of Uzbekistan, the sustainable development of industries began, corresponding to the potential of the regions, depending on the characteristics of socio-economic development. Among them are the processing of agricultural raw materials. Agriculture is the leading sector of the economy of Uzbekistan, the main source of raw materials for many industries and creates additional value as a result of their processing. Agriculture provides 90% of domestic food products and 70% of commodity circulation. Therefore, reforms are being carried out in the development of agriculture and increasing its efficiency, which are of great importance for the country's economy.

The advantage of any form of farming is the level of economic efficiency. However, evaluating the effectiveness of the form of economic management requires a different approach to its functioning, and its implementation is relatively complex. Accordingly, in the implementation of the State program for the implementation of the Development Strategy of the Republic of Uzbekistan in five priority areas for 2017-2021 in the framework of the “Year of Active Investment and Social Development” [1], ensuring the economic sustainability of agricultural activities and their effective use of economic resources Development and improving the methodological framework for assessment is critical.

Today, the most important problem in the field of agrarian reforms is the efficient and rational use of land, which is the basis of the life of our people. Such a crucial task, of course, is set before farmers in the process of consistent implementation of economic reforms. According to preliminary data, the total volume of agricultural, forestry and fish products (services) in January-December 2018 amounted to 199 537.4 billion soums. or 100.3% of the corresponding period of the previous year, including agriculture and livestock, hunting and services rendered in these areas - 193,703.3 billion soums. (100.2%), in forestry - 4 757.5 billion soums. (103.1%), fisheries - 1,076.6 billion rubles. soums (113.8%).

The analysis of farms shows that 70.0% of the total agricultural output belongs to dekhkan farms, 27.3% to farms and 2.7% to agricultural organizations [2].

The country has a number of priorities for the development of agriculture and raising farmers to a new level, including:

- deepening structural changes and the constant development of agricultural production, further strengthening the country's food security, expanding the production of environmentally friendly products, significantly increasing the export potential of the agricultural sector;

- Creation of favorable conditions for the stimulation and development of multidisciplinary farms engaged in the production, processing, storage, sale, construction and sale of agricultural products, in particular agricultural products [3]. increasing their effectiveness and strengthening their position in the economy.

Table 1: Economic indicators of agricultural enterprises

Indicators	2014 y	2015 y	2016 y	2017 y	2018 y
Volume of gross domestic product, billion sum	145846,4	171808,3	199993,4	254043,1	407514,5
Agriculture, billion	8454,7	10266,0	12013,5	16271,0	27982,5
Livestock products, billion rubles the amount	5103,4	5771,6	6178,1	7313,5	26226,4
The total area of agricultural crops, thousand ha	3678,2	3694,2	3706,7	3474,5	3607,9

According to the table, in 2014, farms produced 8,454.7 billion soums of the crop. 5103.4 billion soums were produced in animal husbandry and animal husbandry, and 3678.2 thousand hectares of land belonged to farms. In accordance with paragraph 3.3 of the Strategy for Development of the Republic of Uzbekistan in five priority areas for 2017-2021, “Modernization and accelerated development of agriculture” [3], based on the optimization of agricultural land for the rational use of land and water resources by 2017 and 3.8% of the total unused land. As a result, the crop of products in 2018 will amount to 27,982.5 billion soums. and 26,226.4 billion soums in animal husbandry. soums), which is 3.31 million and 5.14 meters increased.

First of all, it is desirable to take into account the increase in the solvency of the population and an increase in the standard of living. In the analyzed period, the share of agriculture in GDP in 2014 amounted to 27.7 percent, by 2018 this figure decreased by 7.0 percent to 20.7 percent. At the same time, the productivity of agricultural production enterprises increased by 2014 (grain - 44.1 ha / t, potatoes - 195.2 ha / t, vegetables - 263.0 ha / t, melons and pumpkins - 210.6 / and 90 , 1 ha / c) in 2018 decreased by an average of 12.8 ha / c.

In this regard, the most important obstacles to the growth of labor productivity in farms are large-scale work to optimize land and state support to solve the problem of the shortage of land allocated to them, but the experience gained over the past period has a number of critical issues, in particular, on the sustainability of agriculture and, most importantly, their effectiveness, is determined to solve problems.

In today's globalized world, food security, population growth and land degradation, in turn, require the development of sustainable intensive agricultural work to maintain high yields and improve soil fertility and preserve water-efficient and ecosystem services [4]. The increase in land productivity, determined on the basis of questionnaires X1 and 150 households - X2 and It is advisable to determine the influence of the value determined on the X3-effective use of water.

For this, we use the dynamic analysis analysis analysis in 2006-2018 and the survey results, as well as analyze the correlation between the selected factors and the factors that were first selected (table 2).

Table 2: Correlation coefficient of selected factors

	Y	*X1*	*X2*	*X3*
Y	1			
X1	0,835816773	1		
X2	0,908425754	-0,185233054	1	
X3	0,853098446	-0,226969667	0,973946425	1

Source: author's calculations based on the results of the study.

Based on the results of the table, the selected cultures are selected based on the factor ($r_{YX_1} = 0.8358$),increase land productivity ($r_{YX_2} = 0{,}9084$)and water efficiency ($r_{YX_3} = 0{,}8531$)strong density. At the same time, the level of connection between fertility and efficient use of water $r_{X_2X_3} = 0{,}9739$ equally, $r_{X_2X_3} \leq 0{,}8$ multicolor multitasking because the condition is not met. Therefore, the process will be continued by abandoning the effective use of water in the regression equation.

According to him, we get the following equation:

$$Y = 26545{,}7 - 3{,}2 * X1 + 5{,}4 * X2 \qquad (1)$$

The criterion for determining the detection equation (1) requires a criterion, and the results of this study can be found in table 3 below.

Table 3: (1) -criterion for the regression equation

Regression statistics				
Multiple R	0,940735			
R-squared	0,884982			
Normalized R-squared	0,861978			
Standard error	2620,426			
Observations	13			
Analysis of variance				
	df	*SS*	*MS*	*F*
Regression	2	5,28E+08	2,64E+08	38,471
The remainder	10	68666333	6866633	
Total	12	5,97E+08		
	coefficient	*Standard error*	*t- statistics*	*Relevance F*
Y- intersection	26545,68	12120,21	2,190171	0,005461
X1	-3,22332	1,226085	-2,62895	
X2	5,382078	1,088482	4,944568	

Based on the data found in the table $t_{X_2 рас.} = 4{,}945$ и $F_{рас.} = 38{,}471$ equally, $\alpha = 0{,}05$ what $df = 10$ at $t_{табл.} = 2{,}18$; $k_1 = 3$ and $k_2 = 11$ в $F_{табл.} = 0{,}114$ and equality $DW = 1{,}97 \le 2$ (1) - the arbitrariness equation is reliable and adequate. But, $t_{X_1 рас.} = -2{,}629$. The importance of this parameter MAPE=9,3659 and TIC=0,00521 (1) All parameters of the equation are significant.

If we give an economic explanation of the equation of justice (1), then increasing land productivity by 1% will increase farm productivity by an additional 5.4%, and if we increase land by 1%, farm production will increase by 3, 2%. Studies show that currently using existing land productivity, rather than cultivating new land, will increase agricultural production and increase the share of gross agricultural output.

To determine the role of farms in the agricultural economy of the Republic of Uzbekistan, it is expedient to calculate the impact of investments in fixed assets for employment and development of the sector in the last 2005-2019 and their efficiency. To do this, the econometric model of the gross agricultural output produced by farms - YQM, the number of employees in the network - TBS and fixed capital investments - can be determined in the program Eviews. The degree of correlation of the initially selected factors is determined (Table 4).

Table.4: Correlation of factors influencing the volume of products produced by farms

	YQM	TBS	AKI
YQM	1		
TBS	0,943019	1	
AKI	0,966347	0,727946	1

According to the table, the volume of gross agricultural output produced by farms - both factors selected for YQM (r_{YT}=0,943019 and r_{YA}=0,966347) The effects are very closely linked and between them $r_{TA} \le 0{,}8$ the absence of conditional multicollinearity (r_{TA}=0,727946) detected.

Determining the regression equation between the resultant and influencing factors and checking the significance of the parameters based on the t-Student criterion and the regression equation based on Fisher criteria, whether there is autocorrelation based on Darbin-Watson values, and the adequacy and reliability of the model determined by Akaike Schwarz and Hannan-Quinn criteria. appropriate (Table 5).

Table 5: The regression equation of the volume of products produced by farms and its evaluation table

Dependent Variable: YQM				
Method: Least Squares				
Date: 06/17/19 Time: 20:48				
Sample: 2005 2018				
Included observations: 14				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
TBS	6.35312	2.701357	2.3518254	0.0022
AKI	4.770005	0.819069	5.8236913	0.0001
C	-14490.2	8112.040	-1.7862585	0.0037
R-squared	0.972885	Mean dependent var		10800.25
Adjusted R-squared	0.967955	S.D. dependent var		7792.711
S.E. of regression	1394.972	Akaike info criterion		14.50655
Sum squared resid	21405425	Schwarz criterion		14.64349
Log likelihood	-119.5458	Hannan-Quinn criter.		14.49387
F-statistic	197.3427	Durbin-Watson stat		1.900229
Prob(F-statistic)	0.000000			

Based on the data defined in the table and equal to, α=0,05 when df=13 $t_{жад}$=2,160369 since each parameter is important. α=0,05 on k_1=3 and k_2=11 $F_{жад}$=3,587434 and DW=1,9≤2 because

YQM=6,4 TBS +4,8 AKI -29735,6 (2.1)

The equation is reliable and adequate. If we interpret equation (1) economically, it was found that by increasing the number of jobs in the industry and investments in fixed assets by one percent, it is possible to increase the volume of products produced by farms by 6.4 and 4.8 percent, respectively.

In the current context of globalization, food security, population growth and declining arable land, in turn, are due to the need to increase soil fertility and water efficiency and maintain sustainable intensive farm activities to maintain ecosystem services in order to maintain high yields. The volume of gross agricultural output developed by - TEM, sho We believe that it is expedient to determine the effect of the values determined on the basis of the identified land area - SHEM 150 farm reports, land productivity - Land and water consumption - Ss.

To do this, we use the analysis process of dynamic changes in 2005-2019 and examine the correlation between the initially selected factors and the resulting factor and the factors (Table 6).

Table 6: The correlation coefficient of the selected factors

	YQM	***TEM***	***ShEM***	***YerU***	***Ss***
YQM	1				
TEM	0,80256	1			
ShEM	-0,79153	-0,76326	1		
YerU	0,925706	0,774603	-0,67444	1	
Ss	-0,92846	-0,72946	0,701715	-0,6889	1

According to the results of the table, the net crop area of the selected farms relative to the outcome factor (r_{YT}=0,80256), increase soil fertility (r_{YU}=0,925706) to a straight and saline ground area of strong density (r_{YS}=-0,79153), water consumption (r_{YS}=-0,92846) inversely bound in a strong density. Also, there is no multicollinearity in the relationship between the selected meleorative condition good (clean) land area - TEM, saline land area - SHEM land productivity - YerU and water use consumption - Ss. According to him, we have the following regression equation:

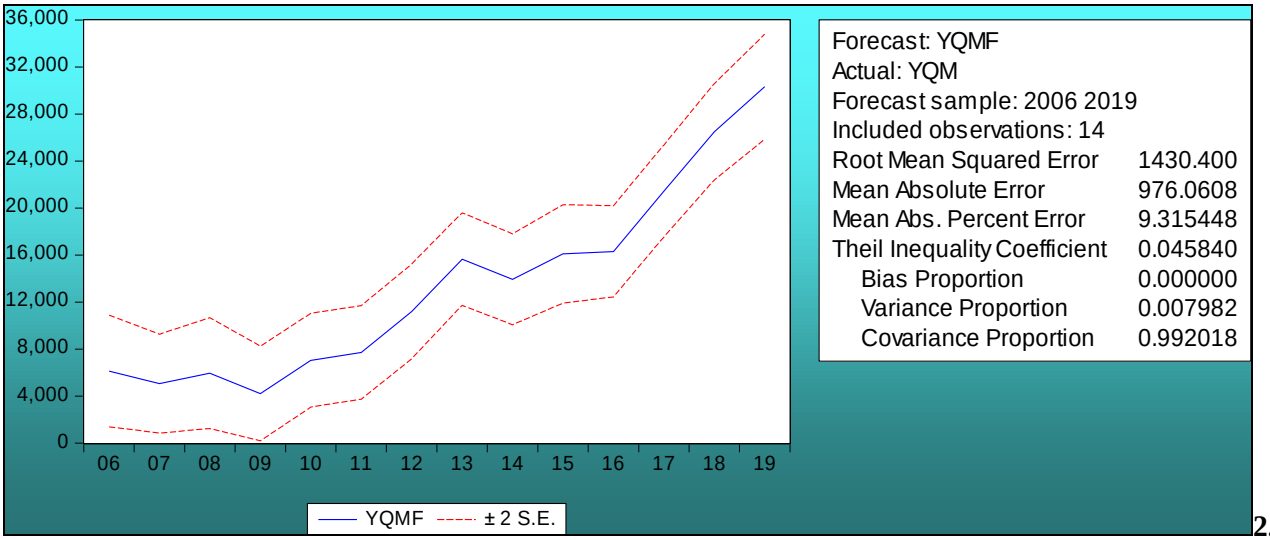
$$YQM = 0{,}17 \cdot TEM - 0{,}36 \cdot ShEM + 3{,}5 \cdot YerU - 1{,}2 \cdot Ss \qquad (2.2)$$

Criteria-based verification of the identified (2.2) -regression equation is required, and the results of this investigation can be seen in Table 7 below.

Table 7: Examination of the regression equation (2.2) on the basis of criteria

Method: Least Squares				
Date: 04/13/20 Time: 11:03				
Sample: 2006 2019				
Included observations: 14				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
			$t_{жад}$=2.160369	
TEM	0.169367	0.054138	3.128431	0.0015
SHEM	-0.35616	1.234748	-0.28845	0.0052
YERU	3.48771	1,375374	2.535827	0.0031
SS	-1.1922	0.287331	-4.14922	0.0005
C	14727.5	11252.6	1.308809	0.0098
R-squared	0.968577	Mean dependent var		13391.68
Adjusted R-squared	0.954611	S.D. dependent var		8373.826
S.E. of regression	1784.022	Akaike info criterion		11.08358
Sum squared resid	2864.462	Schwarz criterion		11.31182
Log likelihood	-121.5851	Hannan-Quinn criter.		12.06245
F-statistic	69.35291	Durbin-Watson stat		1.895814
Prob(F-statistic)	0.000001	$F_{жад}$=3.971523		

Based on the data defined in the table and equal to, α=0,05 when k=5 and k=7 $F_{жад}$=3,971523 and DW=1,89581≤2 Since (2.2) the regression equation is reliable and adequate. However, α=0,05 when df=13 $t_{жад}$=2,160369 it is expedient to check the significance of all parameters of equation (2.2) according to the criteria MAPE <10 and TIC <1 (Figure 8).



2.

Figure 8. Check the importance of the parameters

Based on the data in Figure 2.5, MAPE = 9.3 <10 was found to be very reliable and the parameters based on the TIC = 0.04 <1 criteria were found to be significant. If we give an economic interpretation to the equation (2.2) -regression, according to this defined model, improving the reclamation of 1 hectare of farmland and increasing its productivity will result in an increase in the gross yield of farms by 17% and 35%, respectively. However, it should be noted that currently it is found that water consumption in farms of Namangan region leads to waste, and an increase of one thousand cubic meters will increase the gross yield of farms by 3 times, saline land by 1 hectare by 34%. From this (in conjunction with the econometric model (2.1) above), the general conclusion of the study is that due to the increase in the number of jobs in the network, investment in fixed assets, improving land reclamation and productivity, saving water consumption and reducing salinity it is possible to increase the volume of products produced by farms.

Of course, in addition to the tasks and guidelines for the sustainable development of these identified farms, it is also important to deliver the products to their consumers. In this regard, on the basis of the order of the Agency for Restructuring of Agricultural Enterprises under the Ministry of Agriculture and Water Resources of the Republic of Uzbekistan and financial support of the International Fund for Agricultural Development (IFAD) under the Agricultural Development Program for 2017-2023 39.4 mln. U.S. dollars have been allocated, which is mainly aimed at improving the living standards of the rural population by increasing the productivity and competitiveness of small dairy farms, connecting them with commercial farmers and facilitating access to markets. This, in turn, requires farms to improve economic cooperation and strengthen ties with related farms.

Based on the study, the tasks that should be implemented in the future for the development of the agricultural economy include:

- Increasing agricultural knowledge of farmers;
- Introduction of a cotton textile cluster in all agricultural areas by the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan of September 19, 2018 “On additional measures for the further development of cotton textile products”;
- The implementation of measures to increase the net profitability of agricultural land and the accurate calculation and productivity of scarcity and salinity of land in each of the rural areas;
- Establishing cooperation between farmers, dekhkan farmer and farmer councils and agricultural producers;
- Specialization of areas for the production of suitable products and the creation of their processing enterprises;
- Diversification of agricultural production reform;
- Introduction of modern high-tech technologies, development and implementation of measures to strengthen the material and technical base of farms.

In general, coordination of the management system has a direct impact on the development of competition between farmers and service providers, i.e. the transfer of many management tasks to farmers will ensure the economic efficiency of the agricultural sector.

Summing up, it should be noted that the state should take measures to protect domestic producers of agricultural products, as well as to develop their leading farms and develop various types of enterprises that ensure the development of these farms.

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