

ECONOMETARY ANALYSIS OF FACTORS AFFECTING THE PRACTICE OF PROVIDING MICRO-FINANCIAL SERVICES TO AGRICULTURAL PRODUCERS

¹Murodova Dilnoza Choriyevna, ²Murodova Mohigul Chori qizi, ³Abdiyeva Nargiza
Shuxratovna

Abstract: *The article provides an analysis of the factors affecting the provision of microfinance services to agricultural producers, as well as the results of the analysis of Agrobank operating in Uzbekistan.*

Keywords: *agricultural producers, microfinance services, tactical statistics, correlation matrix, regression, panel unit root test, empirical model*

I INTRODUCTION

The development of a system of financing the activities of agricultural producers in the world economy is a prerequisite for ensuring the sustainability of their activities. In this system of financing, the microfinance system is important in terms of meeting the needs of agricultural producers in microcredit, microleasing services. Therefore, in the Action Strategy for the five priority areas of further development of the Republic of Uzbekistan for 2017-2021, adopted at the initiative of the President of the Republic of Uzbekistan, "deepening structural changes and consistent development of agricultural production ... Significantly increase the export potential of the agricultural sector "[1]. To achieve these goals, agricultural producers need material and financial resources. These needs are currently being met mainly through bank loans. In addition, to prevent the discrepancy between the growth of material and technical resources and the cost of services in the supply of agricultural products, to increase the level of creditworthiness of agricultural enterprises, agriculture microfinance of producers, including the need for financial support from the state and the need to improve the existing legislation in this regard.

II LITERATURE REVIEW

Foreign economists on improving the methodology of microfinance for agricultural producers – O.Yactpebova, A.Cubbotin, [2] N.Figupovckaya, [3] D. Mcnoton, [4] I.Petpenko, P.Chujinov, [5] K.Piplz and studied in the scientific work of others. ,[6]

¹PhD, Tashkent institute of finance

² Tashkent institute of finance

³ PhD, Tashkent institute of finance

Some issues in this regard are discussed by economists of the republic A.Boymuratov, [7] D.Tadjibaeva, [8] J.Isakov, [9] I.Rakhmanov, [10] L.Zoyipov, [11] C.Ismaylova, [12] Q The scientific works of Toshmatov and others analyze the theoretical and practical aspects of microcrediting of agricultural producers. [13]

In developed countries, the bonification of loans to agricultural producers from the state budget, the provision of tax benefits to agricultural producers by the state is one of the most widely used forms of financial support for their activities.

III ANALYSIS AND RESULTS

Since April 2009, JSCB "Agrobank" is responsible for providing financial services to agriculture. The fact that JSCB "Agrobank" is responsible for financing the entire agricultural sector, makes it necessary to pay special attention to the costs associated with strengthening the material and technical base of agricultural producers and enterprises.

We will make an econometric analysis of the relevant factors affecting microcredits issued by JSCB "Agrobank" to agriculture. Data for econometric analysis are provided by JSCB "Agrobank". The analysis period covers the period from 2008 to 2017, and the statistics are presented by region, ie panel data. [14] As you can see from the image statistics below, the statistics are an unbalanced panel.

Table 1: Descriptive statistics

Variable	Description	Tracking	Average	Стд.Дев.	Min	Max.
$dkre_{i,t}$	Growth of microcredits	121	0.11	0.37	-1.53	2.25
$muammoli_{i,t}$	Volume of problematic credits according to microcredits	140	200.50	475.70	0.00	2677.88
$foiz_{i,t}$	Average interest rate according to microcredits	140	0.12	0.02	0.00	0.16

Table 1 shows that during the analysis period, the average growth of microcredits allocated to agriculture by JSCB "Agrobank" was 11.5%. From the minimum and maximum values of growth during the analysis period, it can be seen that the fluctuations of these loans were not uniform and there were significant differences in growth rates over the years and across regions. Proof of this can be seen in the fact that the standard deviation of this indicator is 37.6%. The analysis of problem loans from microcredits issued by JSCB "Agrobank" to agriculture shows that the difference between the average and maximum is more than 13 times, and the minimum value is zero. The main reason for the minimum value of zero is the fact that in some years the city of Tashkent has not been allocated microcredits. As a result, the standard deviation of this indicator is much larger than the average.

According to the analysis of interest rates on microcredits issued by JSCB "Agrobank" to agriculture, it can be seen that during the analysis period, the average interest rate was 12% and the maximum value was 16.6%. Also, since the difference between the interest rates is not large, it can be seen that its standard deviation is 2.8%. The correlation matrix of the variables is presented in Table 2, and its analysis shows that there is a weak but inverse relationship between problem loans and microcredit growth rates arising from microcredits allocated by

the bank. It can also be seen that there is an inverse relationship between interest rates on microcredit and the growth rate of microcredit. In addition, the analysis of the correlation matrix shows that there is no problem of multicollinearity in regression.

Table 2: Correlation matrix

	$dkre_{i,t}$	$muammoli_{i,t}$	$foiz_{i,t}$
$dkre_{i,t}$	1.000		
$muammoli_{i,t}$	-0.114	1.000	
$foiz_{i,t}$	-0.306	-0.124	1.000

The length of the number of cycles in panel observations requires a unit root test. [15] Table 3 shows the results of the panel unit root test.

Table 3: Variable panel unit root test results

Variables	Test statistic results	Π – value
$dkre_{i,t}$	49.88	0.0067
$muammoli_{i,t}$	-7.68	0.0025
$foiz_{i,t}$	-8.02	0.0000

In this test, the variables have a single root according to the main hypothesis, and the variables do not have a single root test according to the alternative hypothesis. The test results show that all variables are stationary, which increases the reliability of our regression results.

The empirical model is written as follows: $kre_{i,t} - kre_{i,t-1} = \alpha * kre_{i,t-1} + \beta^j * X^j_{i,t} + \mu_i + \varepsilon_{i,t}$
(1)

$i = \{1, 2, \dots, 14\}$; $j = \{1, 2, 3, 4, 5\}$; $t = \{2008, 2009, \dots, 2016\}$

where,

$kre_{i,t}$ – logarithm of the volume of microcredits allocated for agriculture by JSCB "Agrobank" in the i region in t period;

$X_{i,t}$ – vector of variables affecting the volume of microcredits;

μ_i – an unobservable effect on the region,

$\varepsilon_{i,t}$ – an error.

The results of regression

The coefficients of the variables in the above equation (2) are econometrically evaluated using the methods of random and fixed effects. [16] In addition, the model is econometrically evaluated using the least squares method. Although the results of the summation squares method produce incorrect coefficient values when evaluating our panel data, they can be used to test the consistency of the results.

A Hausman test is performed to select which beep from the fixed and random effects methods. In this case, the differences between the coefficients fixed in the main hypothesis and evaluated by the method of random effects are considered to be non-systematic, while in the alternative hypothesis the differences are considered to be systematic.

As we have seen in the above diagrams and pictorial statistics, there are several marginal observations in the statistical observations, which in turn necessitate the existence of a heteroskedasticity problem in the standard deviation of the residuals and the use of a robust standard error in the regression.

In the case of nonlinear regression, the regression model is also the basis for building the smallest squares method. However, in this case, when searching for the value of the parameters (relative to the parameters), a system of nonlinear equations is constructed, and various integration methods are used to solve it.

To check the strength of the correlation and regression analysis, the Fischeper criterion - z, the Student criterion - t (t-test) and the Criterion F (F-test) are used.

Table 4: Results of regression

	POLS	RE	FE
$kre_{i,t-1}$	0.07 [0.06]	0.07*** [0.02]	0.27* [0.13]
$muammoli_{i,t}$	-0.15*** [0.04]	-0.15*** [0.03]	-0.16*** [0.04]
$foiz_{i,t}$	-6.53*** [1.58]	-6.53*** [1.32]	-8.64*** [1.53]
The number of observation	121	121	121
The number of regions	14	14	14
R – squared	0.15	0.21	0.26

All standard errors are calculated robustly to getethoscedastics.

*** 1% statistically significant

** 5% statistical significance

* 10% statistical significance

From the regression results in Table 4, it can be seen that the regression results calculated by the method of summation squares (POLS) and random effects (RE) are almost the same. In all model specifications, standard errors are calculated robustly for heteroskedasticity, which in turn increases the statistical reliability of the results. As a result of the regression, the direction of influence of the variables is the same in all model specifications, and almost all of them are statistically significant.

IV CONCLUSION AND SUGGESTIONS

The following conclusions have been drawn on improving the microfinance of agricultural producers:

1. The results of the study of the scientific and theoretical views of economists on microcrediting of agricultural producers showed that, firstly, the instability of the financial condition of agricultural enterprises and the low level of solvency are reflected in the financial services of their credit institutions. In particular, it prevents the increase in the use of microfinance services; second, microfinance of agricultural producers should be financially supported by the Japanese government; third, the growing disparity between the growth of prices for agricultural products and material and technical resources supplied to the sector, the profitability of production in the agricultural sector due to lower public procurement prices, and the income of producers compared to other sectors of the economy significantly lagging behind; and fourth, in most transition economies, including the CIS, there is a low level of creditworthiness of agricultural enterprises.
2. The results of the econometric analysis of the factors affecting microcredits issued by JSCB "Agrobank" to agriculture showed that, first, the average growth of microcredits allocated to agriculture by JSCB "Agrobank" was 11.5%. It can be seen from the minimum and maximum values of growth during the analysis period that the fluctuations of these loans were not uniform and there were large differences in growth rates between years and regions; secondly, the difference between the average and maximum on problem loans arising from microcredits issued by JSCB "Agrobank" to agriculture is more than 13 times, and the minimum value is zero. The main reason for the minimum value being zero is the fact that in some years the city of Tashkent did not receive microcredits; third, test results showed that all variables were stationary; fourthly, the increase in problem loans on agricultural microcredits in JSCB "Agrobank" by 1000 soums will lead to a decrease in the growth of microcredits allocated by the bank in this area by 0.16 units; an increase in the average interest rate on microcredits by one unit will lead to a decrease in the growth rate of microcredit by 8.64 units.

We have developed the following scientific proposals and practical recommendations to improve the practice of microfinance of agricultural producers:

1. It is necessary to ensure the stability of interest rates on microcredits issued to commercial entities by directing a portion of the reserve capital and retained earnings of commercial banks to provide microcredits to agricultural producers.
2. In order to increase the volume of low-interest microcredits issued by commercial banks to agricultural producers, the share of the state in the authorized capital of banks should be increased, provided that these resources are directed to preferential microcrediting of these entities.
3. In order to increase the volume of micro-loans and micro-leasing provided by Agrobank to agricultural producers at low and stable interest rates, 500 million soums will be allocated from the Fund for Reconstruction and Development of the Republic of Uzbekistan. It is necessary to convert US dollars into soums and put them in the charter capital of JSCB "Agrobank" on the condition of microfinance of agricultural producers.

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