



INFLUENCE OF THE STATE SUPPORT ON THE PROFITABILITY OF THE COOPERATIVES IN THE SOUTH-EAST REGION OF THE REPUBLIC OF BULGARIA

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ABSTRACT

Agriculture is important for the sustenance of any country. But the incomes realized by agricultural producers are lower compared to those obtained in other sectors. The predominant representatives in the sector are micro and small enterprises. They do not have sufficient financial means to make the necessary investments in the enterprise's activity process, and their access to external financing is very limited. This necessitates the key role of state intervention in order to preserve the well-being and development of agriculture in the country. By providing state support to cooperatives, the sustainable development of agricultural producers is promoted. It aims to support the economic development of rural areas and to increase the competitiveness of agriculture in general. Based on the results obtained from the applied regression model with fixed effects, evidence is found for the positive influence of state support on the profitability of agricultural cooperatives in the South-East region of the Republic of Bulgaria. It is established that the innovation and investment activity, as well as the size of the agricultural cooperatives in the South-East region of Bulgaria, are statistically significant indicators that influence the receipt of state support.

Key words: state support, profitability, investment activity, innovation activity, cooperatives.

INTRODUCTION

The state has been interfering in the free market economy for centuries. Discussions about the necessity and impact of the policies implemented continue. In modern economies, financial mechanisms and instruments of intervention are developing and improving at a rapid pace. This leads to the realization of the aims of the state policy to support economic development, increase competitiveness and ensure food security. When implementing financial support, the role of the state is most strongly expressed in directing financial resources to the country's agriculture. Agriculture is one of the most financed economic sectors. This policy is also observed when forming the financial framework of the Common Agricultural Policy of the EU.

Farmers are dependent on free state and European support received in the form of various economic levers. Some of the more important arguments that prove the need for financial support from the state in agriculture are economic uncertainty, the importance of agriculture in the country's economy, the impact of agricultural activity on the environment, the predominantly low and unevenly received cash flows from agricultural producers.

The purpose of this report is to track whether the received state support has a positive impact on the profitability of the cooperatives in the South-East region of the Republic of Bulgaria. The choice to conduct a study of cooperatives is based on their different and more special nature. These are organizations that were artificially created for the purpose of the survival of small farmers in the conditions of the modern economy and increased competition. Agricultural cooperatives are the main mechanism for controlling the retention of small and weak producers in the market. (1)

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MATERIALS AND METHODS

In the current study, company data of 79 cooperatives from the agricultural sector in 2017 were used, which for the five-year research period (2017 - 2021) decreased by 5 - 74. In the sample from 2017, 71 are the cooperatives that are developing their activities in the Crop production sub-sector, 1 in the Livestock Breeding sub-sector, 7 have a combined activity - crop-livestock farms, respectively in 2021 the number of farmers is 66 - Crop production, 1 - Livestock Breeding and 7 - combined activity. (Figure 1 and 2) The sample includes micro, small, medium and large cooperatives, respectively, with a number of employees up to 9 including for micro enterprises, 10-49 for small, 50-249 for medium and over 250 for large cooperatives, according to the Law on SMEs (The report uses the definition of small and medium-sized enterprises according to the Law on Small and Medium-sized Enterprises, Art. 3, para. 1-3 (promulgated SG No. 82 of 16.10.2009, amended and supplemented).



Figure 1. Distribution of cooperatives by type of activity 2017.

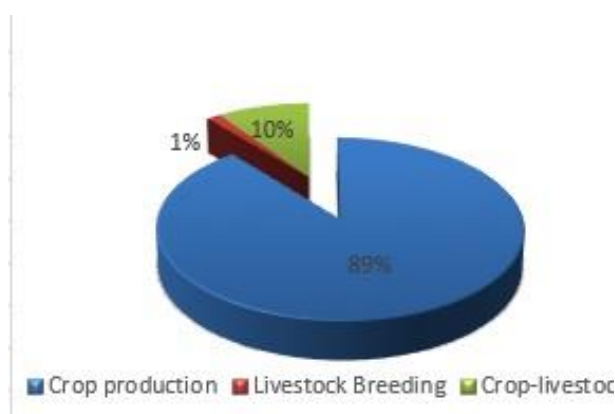


Figure 2. Distribution of cooperatives by type of activity 2021.

The formation of the sample of agricultural cooperatives is guided by two main principles - β_0 is a constant;

that it be large enough to be representative of the general population and that individual enterprises fall into the sample randomly. The method of stratified random sampling was used to collect the data. This method was chosen in order to have representatives of micro, small, medium and large cooperatives in the sample, which will ensure both representativeness and greater possibilities of the analysis.

In this report, the data used are panel data. They were chosen because of their advantages over time series and spatial data. (2-4) Due to the availability of large samples, panel data contain more information and are more efficient, and have more degrees of freedom. (5) Through them, the state of given effects can be analyzed and tracked in detail over long periods of time. Through them, regularities, interactions and predictions can be made. (6) Panel data are used to account for specific effects of observations and time periods. Multivariate regressions with dummy variables and robust standard errors are applied to control for error variance (heteroskedasticity) and serial correlation of the data. (7)

The most commonly applied regression models for tracking dependencies are those with fixed and random effects. (8) According to some authors, it is assumed that when the units are randomly selected, the random effects model is appropriate, and when the units are the majority of the entire population, the fixed effects model is more appropriate. (9) In order to be able to make the correct choice of which model is suitable for a given set of data, it is necessary to conduct a statistical test. (7, 10) In the present study, the Hausman test was chosen to be applied.

The regression equation of the fixed-effects model applied in this report is as follows:

$$Y (ROA,) = \beta_0 + \beta_1. \log_grants + \beta_2. RD_activity + \beta_3. FTA_activity + \beta_4. \log_assets + \beta_5. leverage + \gamma + \varepsilon$$

where:

Y is the dependent variable, for the purposes of the study it is assumed that these are the values of the financial results of the enterprises' activities (profitability - ROA);

log_grants – logarithm of the state grant received;

RD_activity – the ratio of the amount of funds that cooperatives have invested in long-term intangible assets for the current year (includes development products, concessions, patents, licenses, trademarks, software) on the total amount of assets of cooperatives for the same period of time;

FTA_activity – the ratio of FTA to the total amount of assets in enterprises;

log_assets – size of cooperatives expressed as logarithm of total assets;

leverage – the ratio of liabilities (short-term and long-term) of cooperatives to their equity;

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ – the model parameters;

γ – fixed effects term;

ε – random component.

Within the framework of the indicated time span of five years, for the purposes of the analysis, cooperatives are generally grouped into several categories depending on the factors being investigated. Based on the economic sub-sector in which they operate, Crop production,

Livestock Breeding and crop-livestock (combined) cooperatives are examined. The size of the cooperatives is the last grouping feature that is applied in the present empirical study and represents the cooperatives as micro, small, medium and large.

RESULTS AND DISCUSSION

Based on the regression model chosen for the study of the panel data, the present report tracks and evaluates the dependence between the provided state free support to the cooperatives in the South-East region of the Republic of Bulgaria and their profitability. When constructing the model, control variables are introduced that will help to interpret the entire regression model, as important factors that have a significant impact on profitability, since state support explains only one part of the economic results of cooperatives.

First, to confirm the choice of fixed versus random effects model, the Hausman statistical test is performed. The results are conclusive and prove that the correct choice is the fixed-effects model.

Table 1. Hausman test for the profitability model.

	Coefficients			
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
log_grants	.1790763	.3136657	-.1345894	.1320389
RD_activity	-14.92051	-31.8071	16.88659	24.24031
log_assets	-.3355034	-.2701369	-.0653665	.0835267
leverage	.0006515	-.0047174	.0053689	.003643

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 369.95
Prob>chi2 = 0.0130

Table 1 shows that the values of Chi-square are less than 0.05 (ROA – Prob>chi2=0.0130), that is, it is found that the results are statistically significant and for carrying out the study of the selected panel data it is more suitable the fixed-effects regression model. The selected regression model expresses the random variable of the financial results of the activity of the agricultural cooperatives in the South-East

region of Bulgaria (Y), the distributions of which are influenced by the free state financing and selected characteristics of the cooperatives.

The conducted regression model with fixed effects, with the dependent variable profitability (ROA), proves the existence of a dependence, both between the realized profitability of the agricultural cooperatives and the state free

support, as well as with the innovation and investment activity and the size of the studied

cooperatives in the agricultural sector (Table 2).

Table 2. Results of a Fixed-Effects Regression Model with the Dependent Variable ROA.

Fixed-effects (within) regression	Number of obs	=	373
Group variable: id	Number of groups	=	79
R-sq:	Obs per group:		
within = 0.0390	min =		1
between = 0.0811	avg =		4.7
overall = 0.0629	max =		5
corr(u_i, Xb) = -0.2413	F(4,290)	=	2.94
	Prob > F	=	0.0207

ROA	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
log_grants	.1790763	.154039	1.16	0.046	-.1240999	.4822525
RD_activity	14.92051	38.65835	0.39	0.000	-91.00702	61.16599
FTA_activity	.5291787	.0759339	6.97	0.000	-.6780568	-.3803005
log_assets	.3355034	.098751	3.40	0.001	-.5298629	-.1411438
leverage	-.0006515	.0098643	-0.07	0.947	-.0187632	.0200663
_cons	1.39742	.9358155	1.49	0.136	-.4444313	3.239272
sigma_u	.44553157					
sigma_e	.67714947					
rho	.30211473	(fraction of variance due to u_i)				

F test that all u_i=0: F(78, 290) = 1.62

Prob > F = 0.0024

In the study, the results of the regression model show that the provided free state support has a positive effect on the profitability of agricultural cooperatives in the South-Eastern region of the country, although relatively weak (0.1790763). Based on the result obtained from the conducted regression model, it is proved that the provision of free financial means has a positive effect on the financial results of the activity of agricultural cooperatives.

Innovation activity is also a statistically significant indicator and positively affects (14.92051) the profitability of agricultural cooperatives' assets. The more financial resources the cooperatives in the South-East region of Bulgaria allocate for innovation, the higher the financial results of the activity they realize for the period of time.

Bulgaria, which are larger in size, show lower profitability because they make larger investments compared to small ones.

Investment in fixed tangible assets (TFA) is also a statistically significant indicator. The investment of funds in the purchase of durable tangible assets has an impact on the final financial result of the cooperatives, albeit weakly - 0.5291787. It is assumed that this is due to the time period studied and that after a certain time interval the cooperative will realize a return on the invested financial means for FTA.

The size of the cooperative, expressed as a logarithm of total assets, is a statistically significant indicator and affects the profitability of assets. The conclusion that can be drawn from the obtained data of the conducted regression model is that as the size of the cooperatives increases, the profitability increases (0.3355034). Agricultural cooperatives in the South-East region of

In the conducted regression model with fixed effects, the capital structure of agricultural

cooperatives is not a statistically significant indicator and does not affect their profitability.

CONCLUSIONS

Based on the conducted empirical research, the report proves the following statements:

- the presence of non-reimbursed financial support from the state is a statistically significant indicator and positively affects the profitability of agricultural cooperatives in the South-East region of Bulgaria;
- existence of a positive relationship between innovation activity and the profitability of agricultural cooperatives. The more financial resources are invested in the costs of long-term intangible assets, the higher profitability the cooperative realizes;
- investment activity is also a statistically significant indicator. Investing funds in the purchase of TFA has an impact on the profitability of agricultural cooperatives in the South-East region of Bulgaria;
- the presence of a positive relationship between the size and profitability of cooperatives – as the size of agricultural cooperatives increases, profitability increases.

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