



INFLUENCE OF STATE GRANTS UPON EFFECTIVENESS OF THE ENTERPRISES IN THE AGRICULTURAL SECTOR

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ABSTRACT

This report aims to analyze the impact of state grants upon the effectiveness efficiency of the enterprises in the Agricultural sector. The presence/absence of the correlation between the “received state grants - financial results from the activity of the agricultural enterprises” was studied. The efficiency of agricultural enterprises is expressed through the indicators of profitability and productivity. The empirical data for a period of 10 years 2008 – 2017 were shown in the study. The main activities of the surveyed enterprises are crop, livestock and combined - crop-livestock. Based on the results obtained, it is expected that the receipt of grants will have a positive influence on the performance of enterprises in the agricultural sector, measured by indicators of effectiveness and productivity. The following research hypotheses have been proved: the positive effect of the grant is more obvious in larger agricultural enterprises, which have higher productivity and profitability compared to small and medium-sized farms; agricultural enterprises which receive grants and are characterized by higher investment activity and are also characterized by higher innovation activity; based on the predominant number of crop enterprises, it is assumed that this type of activity leads to the achievement of higher financial results as a result of the activity of the agricultural enterprises; the age of the enterprises, expressed through the years of their activity, contributes significantly to higher profitability and productivity of the carried out activity.

Key words: state support, efficiency, profitability, productivity, agricultural enterprises.

INTRODUCTION

In the Agricultural sector, farmers (AP) traditionally receive state support through the provision of state grants. Through the provided financial support, the agricultural holdings are expected to improve their financial stability, respectively to achieve higher productivity and profitability. The scientific literature mainly supports the thesis that the implementation of such state policy for the provision of grants leads to an increase in the financial results of enterprises, therefore it is effective (1). Although the supporters (2-4) of the state grants have many arguments in support of their thesis, there are also researchers (5-7), who do not believe that it affects the

productivity of enterprises. In their study, Lim, Wang and Zeng (2) reported an improvement in financial efficiency, examining it through the return on assets (ROA) and pre-tax profit (PTP). Bojnec and Latruffe (3) find a positive relationship between state grants and the allocative efficiency and profitability of enterprises, but its impact on technical and economic effectiveness is negative. Both Bergstrom (8-9) and Vozarova and Kotulic (4) prove that there is a connection between the grants to the Slovak farmers and the achieved productivity. Based on the presented theoretical considerations and the expected results of the empirical study, the following hypothesis is imposed:

Hypothesis 1: The state grants have positive influence upon the activity of agricultural enterprises, measured by effectiveness and productivity.

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A number of studies have been conducted in the scientific literature on the existence of correlation between the size of enterprises and the financial results of their activities. (10-12) Kopeva and Noev (13) prove that the size of grain farms in Bulgaria has positive impact on productivity; larger enterprises achieve higher production effectiveness. According to Bojnec and Latruffe (3), large farms are more technically and economically efficient, while for small and medium-sized farms, grants lead to higher income. Gorton and Davidova (14) prove that the productivity and effectiveness of enterprises in Central and Eastern Europe are higher on farms with higher capital opportunities, respectively larger in size. The large financially insured farmers are more prone to risky actions and the effect of state grants is more obvious within them than in small and medium-sized farmers, which find it difficult to take new ventures. Based on the allegations, the following hypothesis is imposed:

Hypothesis 2: The positive effect of state grants is more obvious in larger farms, which have higher productivity and profitability compared to small and medium-sized farms.

Agricultural enterprises receive grants by targeted financial programs with the purpose to purchase new machinery and equipment in order to modernize and improve the farm activity. With the new equipment, APs have the opportunity to increase their profitability and productivity. (15-16) In this way, they will be more inclined to take risky actions, such as investing in innovation, which in turn will further increase their financial income (17). In the economic literature, innovation is often identified as a major driver of AS growth and development (18). On the basis of the foregoing considerations, the following hypothesis is imposed:

Hypothesis 3: Farmers who receive state grants and are characterized by higher investment activity are also characterized by higher innovation activity.

Based on the prevailed number of crop enterprises in the empirical data used for the current study, it is assumed that this type of activity leads to the achievement of higher financial results from the activity of the AP. It also tracks the influence of age upon the activity of the enterprises, by the index of the years of activity from the date of their establishment. It is expected that as the age of

APs increases, their effectiveness and productivity will increase.

MATERIALS AND METHODS

The effectiveness of enterprises in the agricultural sector is shown with indicators of profitability and productivity. The return on assets (ROA) is chosen as the most comprehensive measure for presenting the profitability of the AP. The indicator is appropriate for the present study, as the aim is, in accordance with other authors (19), to examine the general increase in the financial effectiveness of enterprises and in particular the ability of agricultural enterprises to accumulate income from their assets, respectively to track the return on the total assets invested in the activity of the AP. Productivity is studied as a result of net sales revenue (NSR). For the purposes of the analysis, productivity is defined as the NSR per employee. The profitability and productivity of enterprises in the agricultural sector are defined as a function of grants, investment in real assets, size and age.

The influence of state grants is measured by revenues after funding by the balance sheet data. According to point 3.5. of SS 20 reporting state grants and disclosure of government assistance This revenue contains summary information on existing state grants, de minimis grant and new state grant programs (since 2007) which are used by the company.

The investments in real assets are used to track the influence of the invested sums by farmers in real assets upon the financial results of their activities. The variation is shown by using the data on Fixed Tangible Asset (FTA) of enterprises, derived from their annual financial reports.

The indicator for the innovation activity of the enterprises is the amount of funding which the AP has invested in fixed intangible assets (FITA) for the current year (including development products, concessions, patents, licenses, trademarks, software).

The size of the enterprises is determined according to the number of their employees, definition in the SME Act – Small (SE) 10-49 employees, Medium (ME) 50-249 employees and Large Enterprises (LE) over 250 employees. We used data from small, medium and large enterprises were used in this study. Micro-enterprises are excluded from the analysis due to the inherent capital constraints

of this group. In most cases, agricultural micro-enterprises operate mainly with their own funds and carry out their activities to provide family income. There are three age categories which are defined as follows: 0-9 years, 10-19 years and 20-29 years.

The present research used company data of 976 enterprises from all over the country, which are representatives of the Agricultural Sector (AS) /defined according to CEA.BG 2008, sector A Agriculture, forestry and fisheries/. In the sample 756 are the enterprises that operate in the subsector Crop production (Subsector Crop production I define according to CEA.BG-2008, the economic activities with position 01.11 - 01.30, 01.61, 01.63, 01.64), 88 in the subsector Livestock (Subsector Livestock I define according to CEA.BG 2008, the economic activities with position 01.41 - 01.49, 01.62.), 75 have a combined activity - crop and livestock farms (Combined crop and livestock farm I define according to CEA.BG 2008, the economic activities with item 01.50), and the rest are representatives of forestry and fisheries, respectively 57 and 6. In order to ensure representative participation of each group of enterprises, in the formation of the sample the method of the stratified sample is used. Data about enterprises include financial information on the revenues, expenditures, financing and results of operations of enterprises on the basis of their financial reports, as well as data describing the demographic characteristics of the AP. The scope of the research is for a period of ten years from 2008 to 2017.

RESULTS

In 2008, the first year from the research period, the present research covered 966 enterprises, of which 811 received grants and the remaining 155 did not. In 2017, the total number of surveyed enterprises decreased by

4. (962), but there is a positive growth of APs receiving state grants (**Figures 1 and 2**).

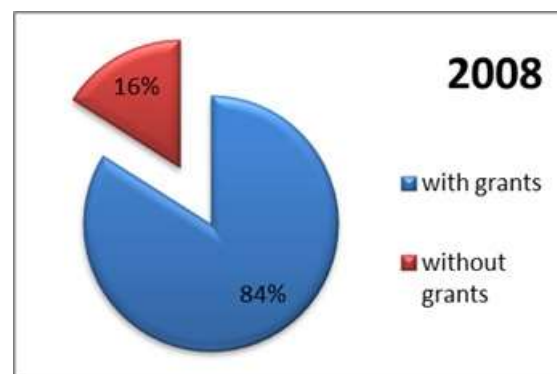


Figure 1. APs in 2008 year

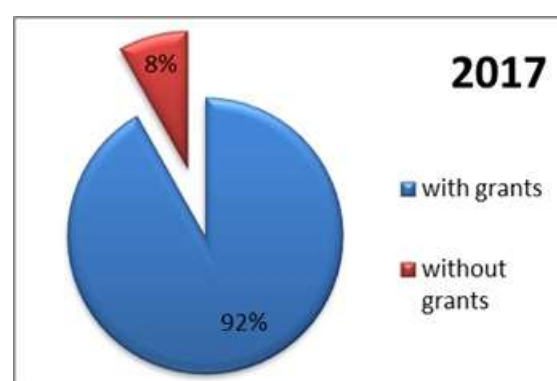


Figure 2. APs in 2017 year

During the empirical research it was observed that the financial results of the enterprises which receive grants is higher than the APs which do not receive. The average productivity of agricultural enterprises subsidized by the state was 62.70 in 2008, while that of non-subsidized agricultural enterprises was 4.86 lower. The effectiveness of the enterprises granted by the state is also higher than that of the others - 0.19, and 0.13, respectively. In 2017, it was observed that this correlation continued and is even more obvious in terms of productivity. The effectiveness of both groups of companies is the same. (**Table 1**)

Table 1. Average values of the financial results from the activity of the enterprises

Year	Indicator	with state grants	without state grants
2008	productivity	62,70	57,83
	profitability	0,19	0,13
2017	productivity	89,55	52,35
	profitability	0,07	0,07

Through analysis of variance, is proved that the availability of state grants is a statistically significant indicator and has a positive impact on the financial results of enterprises in the

agricultural sector. Based on the results of the empirical study, Hypothesis 1 is accepted.

Next, the research examines the size of APs and whether it affects their effectiveness. During the first and last year of the study period, both groups of enterprises (SMEs) that receive state grants achieve higher financial

results compared to APs that do not receive. (Table 2) An exception is observed in the LE, where in 2008 only one enterprise was granted by the state, and in 2017 there was no representative in this group at all.

Table 2. Average values of the financial results from the activity of the AP by their size

Year	Indicator	SE		ME		LE	
		with grants	without grants	with grants	without grants	with grants	without grants
2008	productivity	65,21	59,40	48,15	41,06	35,85	128,91
	profitability	0,19	0,14	0,14	0,07	0,07	0,06
2017	productivity	88,72	46,42	92,62	91,10	82,23	-
	profitability	0,07	0,07	0,07	0,10	0,14	-

In 2008, the productivity of SEs which received grants was higher than that of medium and large-sized APs. Its values are almost twice as high as the LE results - 1.82 times. The same correlation is observed in the effectiveness. In the last year of the research, the results from the activities of agricultural enterprises are similar in the three groups of representatives. The highest results are observed in medium-sized APs, followed by small ones and lastly - large ones. The productivity of SE granted by the state is 1.91 times higher than enterprises which do not receive state grants. In the medium-sized AP this variation is minimal - 1.52. In 2017, the results of the empirical study on the efficiency of agricultural enterprises are not according to the expectations. In the case of the Small Enterprises, it is equal for those which received and those which did not receive state grants, and in the case of Medium enterprises it is even inversely related.

Based on the conducted variation analysis, the existence of a correlation between the provided grants to enterprises in the agricultural sector and their size is proven, but not in the expected direction. In the case of small APs, the financial results are higher than in the case of larger ones, and the positive effect of the provided state grants is more obvious.

Hypothesis 3 in this report states that farmers who receive state grants and are characterized by higher investment activity are also characterized by higher innovation activity. The average indicators for productivity and effectiveness of the enterprises were studied by variation analysis from 2007 to 2017. The results prove that the provided state grants are a statistically significant indicator and has a

positive influence on the performance of the farmers (Figure 3).



Figure 3. Dynamics of investments and innovation activity of APs, who received state grants

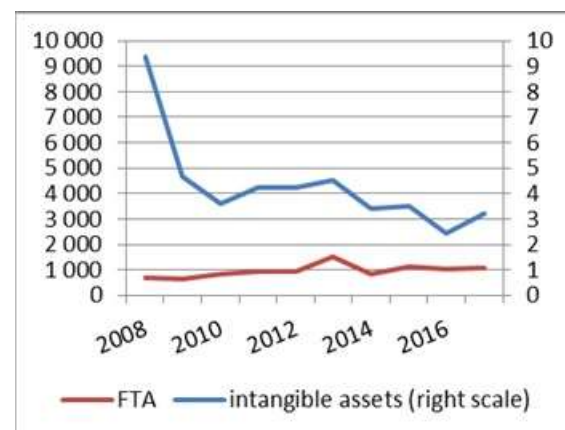


Figure 4. Dynamics of investments and innovation activity of APs, who didn't receive state grants

At the enterprises which receive state grants, there is a tendency to increase the investment activity. In 2008 the expenses for the AP for fixed assets were BGN 1445.43 and in the last year, they reached BGN 3261.44, i.e. 2.3 times more. The costs for the Intangible Fixed Assets

of the enterprises are cyclical in the obtained results, but in general there is a gradual increase in innovation activity. While for APs which do not receive grants from 2008 to the end of the period, the desire of farmers has decreased by 2.9 times (**Figure 4**). There is growth in the investment activity, but at lower rate than the enterprises receiving state grants. Based on the results of the empirical study, Hypothesis 3 is confirmed. The enterprises in the agricultural sector which receive grants are characterized by higher investment activity and are more likely to take risky actions such as investing in innovations in order to increase their production capabilities and achievement of higher financial results from their activity.

The panel data used in the current study is dominated by farmers with crop production. They are over 740, with livestock farms being 8.5 times less and enterprises with combined activity by 10 times less. (**Table 3**)

Table 3. Enterprises with crop production (CP), livestock production (LP) and combined crop-livestock production (CLP) in 2008 and 2017, number

Year	CP	LP	CLP
2008	747	88	75
2017	745	86	75

During the studied period, the productivity of all three groups of agricultural producers increased, as the enterprises with livestock production are characterized by higher results and a relatively constant growth rate. While the productivity in AP with crop and combined production is increasing, but with decreasing speed (**Figure 5**).

From the point of view of the other financial results of the activity, which is studied in the report, the effectiveness, the results do not correspond to the expected. In the case of agricultural producers in all three groups, there is a cyclical value, which in enterprises with Crop production and Combined production leads to a gradual decrease. From 2016, the data from the sample show increase in the effectiveness of all APs (**Figure 6**).

Based on the accomplished empirical research, the preliminary assumptions, which on the basis of the predominant number of crop production enterprises, they will achieve better financial results from the activity, were rejected. Throughout the whole period of the

research, the livestock APs have higher productivity, and since 2013 they have higher efficiency compared to the other two groups of enterprises.

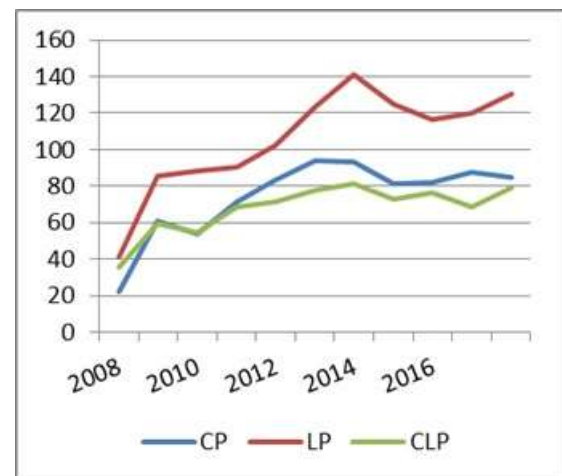


Figure 5. Dynamics of the productivity of APs 2008-2017

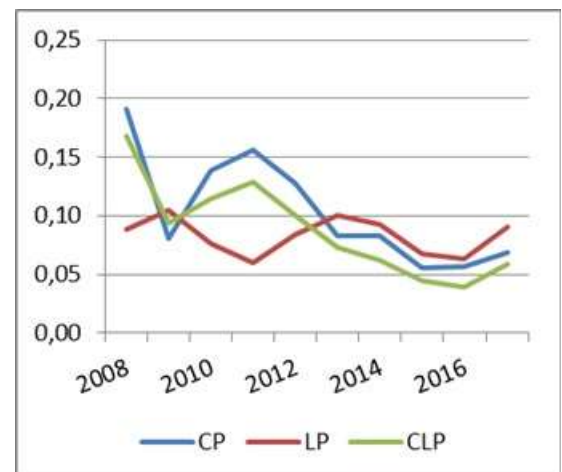


Figure 6. Dynamics of the profitability of APs 2008-2017

The analysis of the age structure of agricultural producers proves that in 2008 the operating enterprises from the age group of 10 - 19 years prevail (**Figure 7**). This age is observed in 654 of the enterprises during the research and the operating enterprises aged from 0 to 9 years have a relative share of 28% of all APs. This year there are no representatives of the oldest category. In 2017, the data shows the development in age of the enterprises - the prevailing APs are aged 20 - 29 years, followed by the group of 10 - 19- aged farmers. In 2017, there is only one company in the age range 0 - 9 years, which has started its activity from 1 year (**Figure 8**).

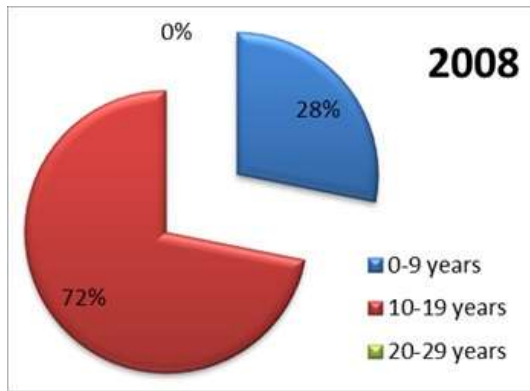


Figure 7. Distribution of APs by age in 2008

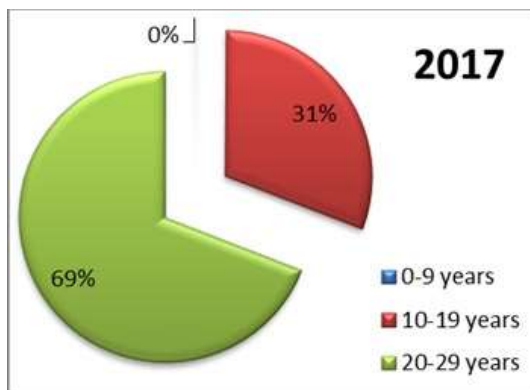


Figure 8. Distribution of APs by age in 2017

The enterprises which receive state grants in both studied years exceed the number of APs which do not receive. In 2008 they were 88%, and in 2017 they increased to 96%. In addition to their predominant number, the financial results of the activity achieved by them are higher. During the first year of the research, APs aged 0 - 9 years, which received state grants have the highest productivity - 80.73, while their effectiveness is 0.05 lower than the group aged 10 - 19 years - 0,15. In 2017, the highest results are observed among middle-aged farmers (10 - 19 years) - 111.12 is their productivity, and effectiveness is 0.08. (Table 4)

The conclusion of the research is that in 2017 the productivity of AP increased, but the effectiveness decreased. In 2008 the best results of the activity are at the youngest enterprises, and in the last year the highest results of the activity have been by the AP from the middle-aged category (10 - 19 years).

Table 4. Financial results from the activity of the AP by age structure

		productivity		profitability	
		with grants	without grants	with grants	without grants
2008	0-9 years	80,73	58,76	0,15	0,11
	10-19 years	56,07	56,82	0,20	0,15
	20-29 years	-	-	-	-
2017	0-9 years	54,4	-	0,17	-
	10-19 years	111,12	51,74	0,08	0,07
	20-29 years	79,94	53,59	0,07	0,08

CONCLUSION

Based on the conducted empirical research and the performed analysis of variance, the report proves that the availability of state grants is a statistically significant indicator and has a positive influence on the financial results of the enterprises in the agricultural sector.

Secondly, the existence of a correlation between the provided state grants to the enterprises in the Agricultural Sector and their size is proved, but not in the expected direction. In the case of small APs, the financial results are higher than in the case of larger ones and the positive effect of the provided state grant is more obvious.

Based on the results of the empirical study, Hypothesis 3 is confirmed. Enterprises in the agricultural sector, which receive grants are characterized by higher investment activity and are more likely to take risky actions such as investing in innovations in order to increase their production capabilities and achieve higher financial results from the activity.

Based on the conducted empirical research, the preliminary assumptions, that on the basis of the prevailing number of crop production enterprises, they will achieve better financial results from the activity, were rejected. Throughout the whole research period, livestock APs have higher productivity, and since 2013 they have maintained higher

effectiveness compared to the other two groups of enterprises.

Regarding the age of the enterprises in the Agricultural Sector as a factor influencing the financial results, it is stated that in 2008 the best results of the activity have been achieved by the youngest enterprises, and during the last year the highest results of the activity have been achieved by the AP aged 10 - 19 years.

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