INFLUENCE OF SUBSIDIES ON THE EFFICIENCY OF PRODUCTION IN SHEEP BREEDING (ON THE EXAMPLE OF SHEEP FARMS FROM SOUTH-WEST BULGARIA)

H. Momchilov[1*], D. Pamukova[2]

[1]Faculty of Economics, Trakia University, Stara Zagora, Bulagria
[2]Faculty of Agriculture, Trakia University, Stara Zagora, Bulagria

ABSTRACT

The purpose of this study is to clarify the influence of subsidies on the efficiency of production in sheep breeding by analyzing the mechanism of functioning based on different types of farms in the southwest region of Bulgaria. Options have been identified that could lead to a positive economic result. Most attention is paid to the profitability of production when farms do not receive or receive subsidies from the state. Small farms (with up to 50 ewes) were strongly dependent on the subsidies for pastures. With subsidy, the profitability of costs and revenues was higher. In farms with 50 to 99 ewes subsidies also played an important role for increasing the profitability of operations. In farms with more than 100 ewes, which also received the highest subsidies could not survive only from sales of produce, as in most of these farms, the profit was negative, e.g. they were at a loss, hence the negative profitability results.

Key words: subsidies, sheep products, economic efficiency

INTRODUCTION

Various economic mechanisms are used for implementation of agricultural policies in practice. They are very diverse, hence the emerging need for their generalisation and classification. At the production unit level these instruments include the system of production subsidies and subsidies for agricultural resources (1). The main result of the current agrarian policy consequently to the pressure from the part of producers on governments, is the degree of support for agriculture. Historically, this is the branch with the longest subsidization history and at the same time, the branch whose development is characterised with the greatest intervention from the part of the state (2). The effect of the subsidy consists mainly in increased producers' income, increased quantity of the subsidized product and increased production. However, this may also increase the cost of resources, which reduces the effect of the

subsidy. The quantity of produced and marketed agricultural products is also higher (1). The purpose of this study is to determine the impact of state subsidies on the efficiency of sheep farming in southwestern Bulgaria.

MATERIAL AND METHODS

The survey was performed in 2018 with 14 sheep farms from southwestern Bulgaria. Farms have a natural person status, single-member enterprise - non-commercial. Enterprises housed from 10 to 210 ewes as main flock, reared for production of milk, meat and wool. The people employed in sheep production are primarily the family members, though some farms also hire one to three additional workers.

Sheep farms were divided into three groups:
Group I – up to 49 ewes – included the first five farms: Farm № 1 – 10 sheep; Farm № 2 – 20 sheep;
Farm № 3 – 30 sheep; Farm № 4 – 40 sheep; Farm № 5 – 49 sheep.
Group II – from 50 to 99 ewes – from the sixth to the ninth farm: Farm № 6 – 50 sheep; Farm № 7 – 50 sheep; Farm № 8 – 60 sheep; Farm № 9 – 70 sheep.

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*Correspondence to: *Hristo Momchilov, Faculty of Economics, Trakia University, Stara Zagora, Bulagria, Stara Zagora, Studentski grad, 6000 Stara Zagora, Bulagria,E-mail: hrmomchilov1971@abv.bg;+359898226620*

Group III – more than 100 ewes – comprised the last five farms: Farm № 10 – 100 sheep; Farm № 11 – 200 sheep; Farm № 12 – 200 sheep; Farm № 13 – 205 sheep; Farm № 14 – 210 sheep.

The revenues in the different sheep farms were formed as followed **(Table 1):**

Table 1. The revenues in the different sheep farms

Sheep farming	Revenues		
	milk, leva	wool, leva	lambs, leva
Farm up to 49 ewes			
Farm 1	-	-	+
Farm 2	-	-	+
Farm 3	+	-	+
Farm 4	-	-	+
Farm 5	-	+	+
Farm from 50 to 99 ewes			
Farm 6	-	-	+
Farm 7	+	+	+
Farm 8	-	-	+
Farm 9	-	-	+
Farm c more than 100 ewes			
Farm 10	+	+	+
Farm 11	+	+	+
Farm 12	+	+	+
Farm 13	+	+	+
Farm 14	+	+	+

The following parameters were calculated: gross revenue (with and without subsidy), total costs, profit, profitability of revenues (with and without subsidy), profitability of costs.

Calculated parameters:
Revenues – they are calculated as a sum of realised produce multiplied by the cost of on unit (milk, wool, lambs, culled animals, manure) and subsidies (coupled support and „de minimis" aid).
Costs – Total costs are calculated as sum of permanent and variable costs.
Profit – The difference between revenues and total costs.

RESULTS AND DISCUSSION
Table 2 shows the revenues and costs of farms from Group I with up to 49 ewes. It demonstrates that only two sheep farms (Farm 3 – subsidy 11,235 BGN and Farm 4 - subsidy 2,000 BGN) from all five received state subsidies for rearing sheep, that is why the revenues of the other three farms in this group were substantially lower. Only Farm 1 showed higher costs than revenues without subsidy. Farms 2 and 5 had higher revenues than production costs without subsidy.

The revenues and costs of sheep farms from Group II (with 50 to 99 ewes)/ Only Farm 8 did not receive state subsidy for rearing of ewes and its revenues slightly exceeded the

production costs. Farm 6 received a subsidy of 3,000 BGN, Farm 7 – 18,630 BGN, Farm 9 – 3,000 BGN. Farm 7 had the highest subsidy compared to other sheep farms from Group II.

Table 2. Revenues and costs of the sheep farms

Sheep farming	Revenues, leva		Total costs, leva
	Without subsidies	With subsidies	
Group I – up to 49 ewes			
Farm 1	925	-	1 255
Farm 2	3 000	-	2 282
Farm 3	5 488	16 723	5 372
Farm 4	9 000	11 000	3 580
Farm 5	5 300	-	5 248
Group II – from 50 to 99 ewes			
Farm 6	9 000	12 000	5 502
Farm 7	8 424	27 054	21 675
Farm 8	6 000	-	5 951
Farm 9	9 500	12 500	10 868
Group III – more than 100 ewes			
Farm 10	20 080	58 040	21 200
Farm 11	34 300	97 800	53 282
Farm 12	21 373	41 313	18 297
Farm 13	30 400	50 375	31 542
Farm 14	23 892	121 137	77 186

Listing the revenues and costs of sheep farms from Group III – with more than 100 ewes showed that all farms from this group received

state subsidies for their operations as followed: Farm 10 received a subsidy of 37,960 BGN, Farm 11 – 63,500 BGN, Farm 12 – 19,940 BGN, Farm 13 – 19,975 BGN, Farm 14 – 97,245 BGN. The highest subsidy was that of Farm 14, and the lowest – of Farm 12. The lowest revenues without subsidy were obtained by Farm 10, and the highest – by Farm 11. The highest production costs were made by Farm 14, while the lowest – by Farm 10.

Profit/loss
On the basis of revenues and costs (profit = revenues – costs) was calculated the absolute profit of sheep farms from Groups I, II and III without and with subsidy.

Table 3. Economic result of sheep farms in Group I

Sheep farming	Revenues, leva		Total costs, leva	Profit, leva	
	Without subsidies	With subsidies		Without subsidies	With subsidies
Farm 1	925	-	1 255	-330	-
Farm 2	3 000	-	2 282	718	-
Farm 3	5 488	16 723	5 372	116	11 351
Farm 4	9 000	11 000	3 580	5 420	7 420
Farm 5	5 300	-	5 248	52	-

Table 3 shows the economical results for farms from Group I. It could be seen than only Farm 1 has realised a negative profit e.g. loss of -330 BGN, meaning that costs exceeded the revenues. The highest profit without subsidy was realized by Farm 4 – 5,420 BGN, after being subsidized by the state: 7,420 BGN which was by 2,000 BGN more than the profit without subsidy. Farm 3 exhibited a marked difference of profit without subsidy vs that with subsidy – 11,235 BGN.

Table 4. Economic result of sheep farms in Group II

Sheep farming	Revenues, leva		Total costs, leva	Profit, leva	
	Without subsidies	With subsidies		Without subsidies	With subsidies
Farm 6	9 000	12 000	5 502	3 498	6 498
Farm 7	8 424	27 054	21 675	-13 251	5 379
Farm 8	6 000	-	5 951	49	-
Farm 9	9 500	12 500	10 868	-1 368	1 632

Table 4 presenting the economical result of sheep farms from Group II shows that two out of four farms were at a loss without state subsidy, namely Farm 7 with -13,251 BGN and Farm 9 with -1,368 BGN loss due to high costs and low revenues without subsidy. Only Farm 8 did not receive any subsidy and its profit was very low: 49 BGN. Negative profits in subsidized sheep farms 6, 7 and 9 wee not observed, all of them have realised a profit as followed: Farm 6 – 6,498 BGN; Farm 7 – 5,379 BGN and Farm 9 – 1,632 BGN. The lowest profit with subsidy was observed in Farm 9 and the highest – at Farm 6.

Table 5. Economic result of sheep farms in Group III

Sheep farming	Revenues, leva		Total costs, leva	Profit, leva	
	Without subsidies	With subsidies		Without subsidies	With subsidies
Farm 10	20 080	58 040	21 200	-1 120	36 840
Farm 11	34 300	97 800	53 282	- 18 982	44 518
Farm 12	21 373	41 313	18 297	3 076	23 016
Farm 13	30 400	50 375	31 542	-1 142	18 833
Farm 14	23 892	121 137	77 186	-53 294	43 951

Table 5 containing the economical results of Group III sheep farms shows that only Farm 12 has realised a profit of 3,076 BGN without subsidy, but this profit was far lower than the profit with subsidy: 23,016 BGN, e .g. a difference of 19,940 BGN. All other sheep farms from this group were at a loss if not subsidized by the state. The highest loss was realised at Farm 14:
-53,294 BGN and the lowest – at Farm 10: -1,120 BGN. The five farms were subsidized, so all of them had a profit from operations: highest for Farm 11 – 44,518 BGN and lowest for Farm 13 – 18,833 BGN.

Operation profitability
***Table 6.** Profitability of farm production in Group I – up to 49 ewes*

Farms / Indicators	Profitability without subsidies						Profitability with subsidies					
	Profitability of revenues, %			Profitability of costs, %			Profitability of revenues, %			Profitability of costs, %		
	milk	meat	wool	milk	meat	wool	milk	meat	wool	milk	meat	wool
Farm 1	-	-35,7	-	-	-26,29	-	-	-	-	-	-	-
Farm 2	-	24	-	-	31,5	-	-	-	-	-	-	-
Farm 3	3	1,5	-	3	1,5	-	67,7	68	-	211	211	-
Farm 4	-	60,22	-	-	151,4	-	-	67,45	-	-	207,26	-
Farm 5	-	1,03	-4	-	1,04	-3,8	-	-	-	-	-	-

***Table 7.** Profitability of farm production in Group II – from 50 to 99 ewes*

Farms / Indicators	Profitability without subsidies						Profitability with subsidies					
	Profitability of revenues, %			Profitability of costs, %			Profitability of revenues, %			Profitability of costs, %		
	milk	meat	wool	milk	meat	wool	milk	meat	wool	milk	meat	wool
Farm 6	-	38,87	-	-	63,58	-	-	54,15	-	-	118	-
Farm 7	-157,8	-156,5	-210	-61,2	-61	-67,7	19,8	19,9	15,6	24,7	24,9	18,4
Farm 8	-	0,82	-	-	0,82	-	-	-	-	-	-	-
Farm 9	-	-0,14	-	-	-12,59	-	-	13	-	-	15	-

***Table 8.** Profitability of farm production in Group III - more than 100 ewes*

Farms / Indicators	Profitability without subsidies						Profitability with subsidies					
	Profitability of revenues, %			Profitability of costs, %			Profitability of revenues, %			Profitability of costs, %		
	milk	meat	wool	milk	meat	wool	milk	meat	wool	milk	meat	wool
Farm 10	-6,46	-6	15,2	-6,7	-5,66	17,9	63,37	63,4	66,32	173	173	197
Farm 11	-53,4	-55,9	-52,1	-34,8	-35,9	-34,3	45,8	45,5	45,9	84,4	83,3	84,9
Farm 12	16,4	13,8	8,5	19,7	16	9,3	71	70,7	70,1	245	242	235
Farm 13	-5,1	-2,7	-215	-4,9	-1	-68,3	36,9	37,8	-5	58,3	60,8	-4,8
Farm 14	-217	-224	-243	-68	-69	-71	36	36	35	57	57	55

Table 6 shows that profitability results on the basis of revenues and costs without subsidy were negative, meaning that operations were non-efficient resulting from the higher production costs and lower revenues from sales of produc3e. The same results were observed in farms from Groups II and III **(Tables 7 and 8).**

CONCLUSIONS
Small farms (with up to 50 ewes) were strongly dependent on the subsidies for pastures. With subsidy, the profitability of costs and revenues was higher.

In farms with 50 to 99 ewes subsidies also played an important role for increasing the profitability of operations.

In farms with more than 100 ewes, which also received the highest subsidies could not survive only from sales of produce, as in most of these farms, the profit was negative, e.g. they were at a loss, hence the negative profitability results.

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