ECONOMIC EFFECTS OF PUBLIC SUPPORT IN PROMOTION OF COOPERATIVES IN SERBIA[2]

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Abstract
Agricultural cooperatives are excellent tool for strengthening the competitiveness of overall agriculture and individual farms. In previous period there are significant state support allocated to affirmation and development of reasonable entrepreneurial initiatives related to agricultural cooperatives. Even more are valued the sustainable business ideas that have initiated organization of processing at the cooperative level. The main goal of paper is to present the part of mechanism for assessing the economic effectiveness of planed investment in medicinal plants production and processing at selected agricultural cooperative that will be granted from public fund. Investment project suppose the modernization and purchase of missing production elements that will boost the production results of observed cooperative active in sector of medicinal plants. To perceive if or how much the investment is internally/externally economically welcomed, it will be conducted the investment analysis based on use of common static methods. Besides the strengthening of cooperative economic sustainability, both sides, i.e. policy maker and agricultural cooperative, are expecting that realization of investment will surely has certain ecological and social impact to cooperative and local community. Gained results of investment analysis show that supporting the investment in medicinal plant production and processing could be a win-win combination for observed cooperative and local community it belongs.

Key words: *strengthening of agriculture, public support, agricultural cooperative, investment, medicinal herbs, Serbia.*
DOI: 10.24818/CAFEE/2021/10/12

Introduction

Agriculture is significant sector for Serbian economy. Together with food industry it is usually marked with prefix "strategic" as it secures food security at national level, makes certain impact on creation of GDP and foreign trade exchange surplus, or it alleviates unemployment issue, serves as initiator of tech-tech progress, accelerate development of other economy sectors, attracts foreign direct investments, slowdown the migration processes, etc. (Jeločnik et al., 2012). In the period of conspicuous growth of food prices at the global market its role becomes even more valuable for overall national wellbeing.

In line to national Census of agriculture in 2012 there were 631.122 agricultural holdings in Serbia (SORS, 2013). According to realized Farms structure survey for Serbia in 2018, there were 564,541 agricultural holdings, where 99.7% belong to the group of family owned farms (SORS, 2019). It could be seen that for less than one decade, there come to decrease in number of farms for almost 12%. Decline in total number of farms could be ascribed to generally positive trend of farms' estates

[2] Paper is a part of research financed by the MESTD RS and agreed in decision no. 451-03-9/2021-14.

enlargement. Unfortunately, currently there are just 459,591 officially registered family farms, while more than 93% of them have active status (UAP, 2021).

1. Literature review

Basic characteristics of farms in Serbia are disposing the small estates and low economic power. In average, Serbian farm is possesses around 5.4 ha of arable land, what is for almost three times lower than in EU-28 (average is around 14.2 ha). Similar is in the livestock sector, where farms in Serbia in average grow 3.2 livestock units, while this number is for almost 3.5 times higher in EU (Maletić, Popović, 2016).

Mentioned is not enough for proper harvesting of economy of scale benefits, or it is far away from strict market orientation and full farm competitiveness outside the national borders. Besides, there are several limitations that hinder the farms development and competitiveness. Among internal limitations the strongest impact has unfavorable age and education structure of farm managers and members, lack of entrepreneurial spirit and skills, avoiding the innovations and cooperation, production based on strict reliance on tradition, missing or technologically obsolete facilities, mechanization and equipment, lack of irrigation or organic production, etc. As external limitations on which single farms has generally minimal impact could be seen unfavorable business ambient for majority of farms that inhibits their productivity and profitability, insufficiently developed input, assets and capital market that do not follow the common needs of farms, presence but not sufficient public support related to investments, employment, taxes or legislation linked to farms, lack of suitable and reliable physical and social infrastructure in rural areas, etc. (Ristić et al., 2018; Jelocnik et al., 2021).

Strengthening the farm competitiveness and keeping up its sustainability could be done through the any form of inter-farm cooperation, as are forming of agricultural associations, cooperative, or clusters (Paraušić et al., 2007). In last few years there comes to growing interest in cooperatives in Serbia. As a form of entrepreneurial development in agriculture cooperatives could be basically defined as autonomous association of persons (farms) joined on voluntary basis in order to satisfy their joint needs and ambitions throughout the mutually own and democratically controlled legal entity Jeločnik et al., 2017). As a business form, cooperatives have a long tradition in Serbia. Through the last century they evolve from the traditionally joined family farms to a modern private corporates (Krasavac, Petković, 2015).

Similar like in EU, in previous few decades, public support to development, enlargement and strengthening of cooperative moment in Serbian agriculture has been just declarative. Initiation of real measures for agricultural cooperative development has been initiated by newly established governmental organization National team for Serbian villages' revival during the 2017. At that moment starts the realization of the program "500 Cooperatives in 500 Villages", that simultaneously accelerate the establishment and first steps of new cooperatives, as well as support the sustainability of formerly established old cooperatives. Positive effects of the mentioned program could be seen through the annual rise in number of newly formed cooperatives. For example, in previous two years (2015/16) there were established 65 cooperatives, while in next two years 2017/18 there was formed around 300 new cooperatives. Of course, there is still question related to lack of specific knowledge about the cooperative principles and management within the rural population (Nikolić et al., 2021). Meanwhile, by establishment of the Ministry of Rural Welfare at the end of 2020, there come to program continuation with granting of 57 cooperatives for improvement of their business (Poljoprivrednik, 2021). Rapid growth in public support of cooperatives simultaneously pooled certain state control mechanisms in order to prevent eventual frauds as are establishment of fake farmers association just for the purpose of gaining the state financial assets (Zakić, Nikolić, 2018). In Serbia are currently registered 1.957 agricultural cooperatives, while more than 80% of them are active, or some of them achieve extraordinary

business results. As was mentioned, their number is rising, while the positive trend is that cooperative spirt is more and more accepted by the young farmers, who are aware that only joined could stand at the national and regional market (Rajevic, 2019).

Certain facts linked to Serbian rural space have to be mentioned, while some of them are really alarming. Rural areas are settled by more than 40% of overall population. Some assessments show that predominance of rural areas at national level leads to conclusion that Serbia could be seen as rural country (e.g. in line to OECD methodology rural areas involves almost the 85% of overall state territory), (Gajić et al., 2021). Unfortunately, whole country is pressed by negative natural increase, where annually disappear almost 40 thousand citizens. There is some estimation that in last few years in rural areas was born much less kids than before. Besides there are significant migratory processes to urban areas and abroad by young population, roughly around 35 thousand persons annually. Serbia disposes with more than 4.7 thousands villages, while 1.2 thousand is vanishing, or around 200 of them are without or up to 10 inhabitants. The same number of villages is without population younger than 20 years. More than half of total number of villages is without the kindergarten, or almost 10% of them do not have the primary school, or school is attended just by one kid. More than 10% of villages do not have paved roads or grocery shop, while more than 70% miss the facilities of culture (Gulan, 2019).

So, program of cooperative affirmation is not turned only to farm benefits, before all its part of the plan for Serbian villages and rural areas revival, in order to minimize migratory processes, or even in certain regions demographic evacuation from rural space, as well as to improve wellbeing of local rural population (primarily in sense of availability of contents of physical and social infrastructure, presence of non-agricultural activities, increase in employment, before all young population, etc.).

Government program for agricultural cooperative affirmation has competitive character. It assumes annual distribution of around 4.2 million EUR. To each newly established cooperative is re-allocating around 65 thousand EUR, or to old cooperative around 130 thousand EUR to improve its business performances. Besides, there are available some other programs focused to revival of national rural areas as are granting the purchase of rural households for young families, purchase of minibuses for the transportation of rural population, granting the organization of some rural cultural and traditional events, etc. (MRW, 2021).

All submitted draft proposals for further entrepreneurial steps of granted cooperatives are evaluated by commission related to their economic, social (effects on rural community) and partly environmental impact. Importance of evaluation of planed investment from the point of its realization is required by grantor in order to minimize the risk of failure and to secure the best possible impact of offered financial support. According to mentioned, this paper try to present basic mechanism for economic evaluation of submitted cooperatives' investment proposals. So in presented case, as the main goal was set the assessment if the investment in production of medicinal herbs represents desirable entrepreneurial activity for selected cooperative and grantor, or even for local community where the cooperative operates.

2. Methodology

Applied methodology relies to commonly used static methods for assessment of investment economic justification (Total output - total input ratio (Ee), Net profit margin (NPM), Accounting rate of return (ARR), and Simple payback period (SPP)), (Jeločnik, Subić, 2020). In observed case, required data are collected from the representative of selected agricultural cooperative that operates in the field of medicinal herbs production and processing. Selected cooperative is located in Eastern Serbia. In-depth interview was conducted in second part of 2021.

Scientific and practical support of made research and gained results are ensured by the consultation with available scientific and professional literature that targets observed topic. Besides, there is a need for certain technical clarifications. Static methods are applied in line to their simplicity to follow

both by the state and cooperative representatives, while they give quite reliable values for proper conclusions. It was assumed that investment life cycle lasts for five years, as this is usual life cycle for gained credit used in same purposes. Economic assessment of the investment is based on the value of used static indicator gained for fifth year of the investment exploitation, what represents the representative year, as it is assumed that in this year investment is used in its full capacity. Although the investment is mainly financed from the public grant, for the value of discount rate is used currently valid credit rate at the national capital market. All values are given in national currency (RSD), while they are presented by the adequate tables in order to facilitate tracing, transparency and potential data comparing (1 EUR = 117.5 RSD).

3. Results and Discussion

As example of efficient use of state support for affirmation of agricultural cooperatives and strengthening of agricultural competitiveness at farm and national level, it will be presented and adequately analyze one entrepreneurial initiative in agriculture. In paper focus will be request for investment of the one just established agricultural cooperative located in the municipality of Boljevac that is active in the production of medicinal and aromatic plants. Cooperative joins five farms primarily focused to medicinal plants production and processing (growing of Valerian and Angelica). Additionally, cooperative employs one administrative worker. Functioning of cooperative is based on common use of to each farm available production facilities, mechanization and equipment, while currently the medicinal plants are grown at area of 5 ha.

As separate farms were economically and organizationally too weak to individually run the market oriented production and processing, they have been joined around the commonly used mechanization, equipment and production surfaces. Available fixed assets, previously used in crop production, are incomplete, worn out or technologically not suitable for medicinal plants production and processing. Not so rare, they were forced to pay external services of mechanization. So the co-operators main investment idea was to modernize and complete required production base.

Cooperative was applied for non-refundable public grant that will be used for purchase of missing or obsolete mechanization and equipment, what would lead to increase in economic efficiency of the production process, as well as to elimination of the costs of used external services. Besides, it will be initiated the enlargement of currently cultivated areas under medicinal plants.

There is a plan for purchasing of ArmaTrac tractor, three-furrow plow, disc harrow, four-row disc planters, Rolmet two-row harvester for potato and root herbs, as well as dryer commonly used in fruit and vegetable drying. All mechanization and equipment will be bought as a new.

As was mentioned, cooperators are involved in production of valerian and angelica, currently on roughly 5 ha, with the use of old and technically unreliable mechanization that is mostly used in crop production for more than 30 years. In line to requirements of the grown medicinal plants, production process involves the timely application of all suggested agro-technic, specific in organized production lines. Compared to other small producers of valerian and angelica in Serbia, specificity of the production cycle organized by the cooperative is implying the irrigation (new hose reel irrigator with adequate irrigation pump). Both, angelica and valerian are produced for their roots. After harvesting the valerian roots are naturally drying and fully dried are selling to known buyer. Current process of roots drying, raw material is spreading out the tarpaulin in farm yard, could increase the risk of its spoiling. With purchasing a professional dryer, cooperative will be able to minimize the risk of losing the quality of final products. On the other hand, roots of angelica are passing through the distillation up to the level of essential oil.

After the renewal and completion of mechanization and equipment, it is planned the enlargement of production surfaces, with increase over the next five years by 5 ha annually to optimal 30 ha under medicinal plants. Together with increase in production areas and produced quantities of medicinal plants cooperative will accept new members, as well as it will engage certain number of seasonal

workers, what will certainly have positive implications on local rural community. Therefore, it is expected that the investment will strengthen the cooperatives' competitiveness along the advancement of used mechanization and further growth in produced volume of medicinal plants' roots while secondary it will affect the external employment (after full operationalization of investment will be additionally engaged 1 permanent and 20-25 seasonal workers).
In order to assess the economic justification of planned investment, both sides cooperative and representatives of public fund are interested in results of investment analysis. In Table 1. are presented the overall value of investment.

Table 1. Total investment

No.	Element	Total investment (in RSD)	Share in total investment (in %)
I	**Fixed assets**	**7.319.162,00**	**90,91**
1.	Facilities	0,00	0,00
2.	Equipment and mechanization	7.319.162,00	90,91
II	**Permanent working capital**	**731.916,20**	**9,09**
Total		**8.051.078,20**	**8.051.078,20**

Source: IAE, 2021

Within the overall investment, dominates the value of new fixed assets (required mechanization and equipment), while in line to accounting practice in crop production, almost 10% is reserved for the permanent working capital. As was previously mentioned, cooperative will apply for the public grant (Table 2.), where the complete value of fixed assets will be financed from public fund, while the permanent working capital will be covered by cooperatives' own financial assets.

Table 2. Source of financing

No.	Element	Total investment (in RSD)	Share in total investment (in %)
I	**Own capital**	**731.916,20**	**9,09**
1.	Fixed assets	0,00	0,00
2.	Current assets	731.916,20	9,09
II	**External resources**	**7.319.162,00**	**90,91**
1.	Fixed assets	7.319.162,00	90,91
Total (I+II)		**8.051.078,20**	**8.051.078,20**

Source: IAE, 2021

Among few essential elements required for investment analysis are total incomes that will arise during the investment exploitation (Table 3.). Sales incomes are linked to the value of realized dry valerian root and extracted oil from angelica. The constant prices of final products over the whole observed period are assumed, while the volume of gained products is gradually increasing with the annual enlargement of used production areas.
The same situation is visible at the cost side (Table 4.). It is assumed that over the observed years all costs of production are constant per unit of production capacity (one hectare), while their overall value is rising along the growth of production areas. Over the 75% of overall costs are material costs, i.e. direct material (seeds and seedlings and agro-chemicals) and energy (fuel for running the mechanization, equipment and irrigation). Rest covers the non-material cost, within which almost 63% are the costs of labor.

Table 3. Sales incomes forming (in RSD)

No.	Element	UM	Year														
			I			II			III			IV			V		
			Price / UM	Quantity	Total	Price / UM	Quantity	Total	Price / UM	Quantity	Total	Price / UM	Quantity	Total	Price / UM	Quantity	Total
1.	Sales incomes	-	-	-	5.989.683	-	-	84.524	-	-	1.979.366	-	-	9.974.208	-	-	7.969.049
1.1.	Dry valerian root	kg	470	10.000	4.702.848	470	15.000	7.054.272	70	20.000	9.405.696	470	25.000	1.757.120	470	30.000	4.108.544
1.2.	Angelica oil	l	70.542	160	1.286.835	70.542	240	6.930.252	70.542	320	2.573.670	70.542	400	8.217.088	70.542	480	3.860.505
Total		-	-	-	**5.989.683**	-	-	**3.984.524**	-	-	**1.979.366**	-	-	**9.974.208**	-	-	**7.969.049**

Source: IAE, 2021

Table 4. Total costs forming (in RSD)

No.	Costs	Year				
		I	II	III	IV	V
I	**Material costs**	**12.109.833,60**	**17.900.215,20**	**23.514.240,00**	**28.951.908,00**	**34.213.219,20**
1.	Direct material	5.055.561,60	7.318.807,20	9.405.696,00	11.316.228,00	13.050.403,20
2.	Energy	7.054.272,00	10.581.408,00	14.108.544,00	17.635.680,00	21.162.816,00
II	**Non-material costs**	**3.537.719,55**	**4.757.642,17**	**5.977.564,80**	**7.197.487,42**	**8.417.410,04**
1.	Depreciation	1.097.874,30	1.097.874,30	1.097.874,30	1.097.874,30	1.097.874,30
2.	Labor	2.200.000,00	3.300.000,00	4.400.000,00	5.500.000,00	6.600.000,00
3.	Interest	0,00	0,00	0,00	0,00	0,00
4.	Costs of services	79.948,42	119.922,62	159.896,83	199.871,04	239.845,25
5.	Other costs	159.896,83	239.845,25	319.793,66	399.742,08	479.690,50
Total (I+II)		**15.647.553,15**	**22.657.857,37**	**29.491.804,80**	**36.149.395,42**	**42.630.629,24**

Source: IAE, 2021

After determining the elements at the income and cost sides, investment analysis assumes developing of profit and loss statement (Table 5.). It is obvious that investment exploitation over the observed period generates net profit in each year, showing the certain level of business liquidity. Calculation of net income assumes application of 15% income tax, what is suitable to this kind of legal entity. As there are no financing of investment from the credit (it is mainly covered by the public grant), there are no accounted interests.

Table 5. Profit and loss statement

No.	Element	Year				
		I	II	III	IV	V
I	**Incomes**	**15.989.683,20**	**23.984.524,80**	**31.979.366,40**	**39.974.208,00**	**47.969.049,60**
1.	Sales incomes	15.989.683,20	23.984.524,80	31.979.366,40	39.974.208,00	47.969.049,60
II	**Expenditures (1+2+3)**	**15.647.553,15**	**22.657.857,37**	**29.491.804,80**	**36.149.395,42**	**42.630.629,24**
1.	Business expenditures	15.647.553,15	22.657.857,37	29.491.804,80	36.149.395,42	42.630.629,24
1.1.	Material costs	12.109.833,60	17.900.215,20	23.514.240,00	28.951.908,00	34.213.219,20
1.2.	Nonmaterial costs without depreciation and interest	2.439.845,25	3.659.767,87	4.879.690,50	6.099.613,12	7.319.535,74
1.3.	Depreciation	1.097.874,30	1.097.874,30	1.097.874,30	1.097.874,30	1.097.874,30
2.	Financial expenditures	0,00	0,00	0,00	0,00	0,00
2.1.	Interest	0,00	0,00	0,00	0,00	0,00
III	**Gross profit (I-II)**	**342.130,05**	**1.326.667,43**	**2.487.561,60**	**3.824.812,58**	**5.338.420,36**
IV	**Tax**	51.319,51	199.000,11	373.134,24	573.721,89	800.763,05
V	**Net profit (III-IV)**	**290.810,54**	**1.127.667,31**	**2.114.427,36**	**3.251.090,69**	**4.537.657,30**

Source: IAE, 2021

Next step required for the further conduction of investment analysis and evaluation of investment effects is determination of all elements linked to economic flow derived from investment exploitation (Table 6.). After introspection into the gained results, net income is achieved only in zero moment, i.e. moment of purchasing the all fixed assets and permanent working capital. In all observed years net income is positive and it is gradually increasing, while in last year is the much higher as it implies salvage value of previously purchased assets.

Table 6. Economic flow

No.	Element	Zero moment	Year				
			1	2	3	4	5
I	**Total incomes (1+2)**	**0,00**	**15.989.683,20**	**23.984.524,80**	**31.979.366,40**	**39.974.208,00**	**50.530.756,30**
1.	Sales incomes	0,00	15.989.683,20	23.984.524,80	31.979.366,40	39.974.208,00	47.969.049,60
2.	The rest of the project value	0,00	0,00	0,00	0,00	0,00	2.561.706,70
	2.1. Fixed assets	0,00	-	-	-	-	1.829.790,50
	2.2. Permanent working capital	0,00	-	-	-	-	731.916,20
II	**Total expenditures (3+4)**	**8.051.078,20**	**14.549.678,85**	**21.559.983,07**	**28.393.930,50**	**35.051.521,12**	**41.532.754,94**
3.	Investment value	8.051.078,20					
	3.1. In fixed assets	7.319.162,00					
	3.2. In permanent working capital	731.916,20					
4.	Costs without depreciation and interest	0,00	14.549.678,85	21.559.983,07	28.393.930,50	35.051.521,12	41.532.754,94
5.	Tax	0,00	51.319,51	199.000,11	373.134,24	573.721,89	800.763,05
III	**Net incomes (I-II)**	**-8.051.078,20**	**1.440.004,35**	**2.424.541,73**	**3.585.435,90**	**4.922.686,88**	**8.998.001,36**

Source: IAE, 2021

After all required elements for investment analysis are known, it could be done assessment of economic effects derived from investment exploitation. So by next tables (Tables 7-10.) are presented values of indicator linked to selected static methods (Total output-total input ratio, Net profit margin, Accounting rate of return, and Simple payback period).

Table 7. Total output/total input ratio derived from investment use

Year	Incomes (Ot)	Expenditures (It)	Ee = Ot / It
0	**1**	**2**	**3 = 1/2**
I	15.989.683,20	15.647.553,15	1,02
II	23.984.524,80	22.657.857,37	1,06
III	31.979.366,40	29.491.804,80	1,08
IV	39.974.208,00	36.149.395,42	1,11
V*	47.969.049,60	42.630.629,24	1,13

Source: IAE, 2021

Note: Value of the indicator in representative year.

In all years of investment life cycle, especially in representative year of investment use, total output/total input ratio is larger the one, indicating that total incomes are over the overall costs in medicinal herbs production, or showing that investment projects is economical and economically justified for realization.

Table 8. Net profit margin derived from investment use

Year	Net profit (P)	Incomes (Ot)	NPMR = (P / Ot) * 100
0	**1**	**2**	**3 = 1/2*100**
I	290.810,54	15.989.683,20	1,82
II	1.127.667,31	23.984.524,80	4,70
III	2.114.427,36	31.979.366,40	6,61
IV	3.251.090,69	39.974.208,00	8,13
V*	4.537.657,30	47.969.049,60	9,46

Source: IAE, 2021

Note: Value of the indicator in representative year.

Gained value of the Net profit margin in representative year of the investment use is higher than defined discount rate of 7%, i.e. assumed price of the externally used capital. So, the investment is accumulative and economically justified for realization.

Table 9. Accounting rate of return derived from investment use

Year	Net profit (P)	Total investment (Vi)	ARR = (P / Vi) * 100
0	**1**	**2**	**3 = 1/2*100**
I	290.810,54	8.051.078,20	3,61
II	1.127.667,31	8.051.078,20	14,01
III	2.114.427,36	8.051.078,20	26,26
IV	3.251.090,69	8.051.078,20	40,38
V*	4.537.657,30	8.051.078,20	56,36

Source: IAE, 2021

Note: Value of the indicator in representative year.

Similar like previous indicator, value of Accounting rate of return in representative year is also high above the defined discount rate of 7%, showing that investment realization is profitable for the

cooperative. So, the use of investment allows covering the price of external capital and additional earning of certain profit.

Table 10. Simple payback period derived from investment use

Year	Net incomes from economic flow	Cumulative net income
0	-8.051.078,20	-8.051.078,20
I	1.440.004,35	-6.611.073,85
II	2.424.541,73	-4.186.532,12
III	3.585.435,90	-601.096,22
IV	4.922.686,88	4.321.590,66
V	8.998.001,36	13.319.592,02

Source: IAE, 2021

After applying the static payback period, it could be seen that invested financial assets will be paid out for 3,12 years, i.e. 3 years and 1,47 months, what is much before the ending of its lifecycle. So according to this indicator investment could be also assumed economically justified both for the public fund or cooperative.

Conclusion

Joining into the cooperatives could be a very good business alternative for any single farm, as by this activity they could strengthen their market competitiveness and overall sustainability. Fore last several years there is substantial state support for cooperatives establishing and development linked to realization of certain entrepreneurial initiative. As granted financial assets are not symbolic, there is a need for adequate assessment of by cooperative proposed investment. Depending of investment complexity, economic assessment usually implies the use of static methods for determining the level of investment justification, while sometimes the dynamic methods are used too.

In observed case, entrepreneurial initiative to invest in medicinal plants (valerian and angelica) production and processing could be considered as good solution. Primarily, throughout the economic evaluation, all gained values for applied static indicators are showing the high level of economic justification of investment into the proposed business activity. Secondly, by the planed additional engagement of 1 permanent and over the 20 seasonal workers, it could be considered that investment will have significant impact to local rural community, i.e. realized investment will boost the social sustainability of the cooperative. At the end, as production and processing of medicinal plants by the definition require specific business treatment, generating the products that do not affect the human health, it could be said that proposed investment possess certain level of environmental sustainability. Summarizing the impact of overall entrepreneurial idea, it could be considered as win-win business opportunity for both, the grantor and cooperative.

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