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ASSOCIATION OF THE AGRICULTURAL COOPERATIVES INTO PRODUCER GROUPS

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ABSTRACT
The aim of this paper is to verify, whether business entities associated in the producer groups were more successful than the non-associated ones in the period 2009 – 2012. The results have shown that there are differences between average values of economic indicators of producer groups' members and those of non-members. We can conclude that there were statistically significant differences between the average revenue per hectare, revenue without subsidies and the average costs per hectare of the agricultural cooperatives associated in the producer groups and those of non-members of sales organisations. The average values of the most economic indicators of the agricultural cooperatives – member of the producer groups, were significantly better than those achieved by the non-associated cooperatives.

KEY WORDS
agricultural cooperative, producer groups, membership, economic indicators

INTRODUCTION

Agricultural cooperatives as a business corporations have a long tradition in Slovakia. The first cooperative was established in 1845 (Martuljak, 1995). Its main role was to protect small farmers against a pressure of stronger competitors on the market. However, the idea of cooperative was very deformed during period of socialism (Lazíková – Bandlerová, 2007) and the trend was towards large-scale corporations of production (Námerová, 1997). The agricultural cooperatives in Slovakia have become the farmers oriented to the agricultural production. Nowadays, farmers (including the agricultural cooperatives) are being associated in the new form of cooperatives, so called producer group. The producer group helps farmers organize themselves in cooperatives as a tool to consolidate their market orientation and so generate a solid market income. Producer groups are widely heralded as leading contributors to poverty reduction and the achievement of food security (FAO, 2010). Therefore it is necessary to make differences between cooperative as a farmer and cooperative as a producer group in case of Slovakia. In this paper, the term of "agricultural cooperative" is meaning a farmer and the term of "cooperative" is meaning a producer group. The producer groups are not limited by the business form of cooperative. According to Bijman and Wollni (2009) a producer group is an association, a society, a cooperative, a union, a federation, or even a firm that has been established to promote the interests of farmers. However, the form of cooperative is usually the favourite form for producer groups in most of countries. So, the

term of cooperative, producer group, producer organisation, or producer association are often considered as synonyms.

1 Producer groups and their role in the agriculture

Individuals in rural communities can achieve economic and social objectives as a group that they could not achieve as sole producers, workers, or consumers (Merrett, Walzer, 2004). These groups of rural communities have various definitions. Penrose-Buckley (2007) gives a definition of a producer group as a rural business, owned and controlled by producers, and engaged in collective marketing activities. According to Vorley (2001) producer groups are the means by which the farmers are supposed to defend themselves from being bypassed and marginalised by liberalisation and globalisation. The producer groups have played an important role in the development of agriculture in industrialized countries as suppliers of farming requisites, marketers of agricultural commodities, and providing services such as gain storage and transport (Ortmann, King, 2007). To be successful on the agrarian markets, farmers including the agricultural cooperatives have to achieve the sufficient level of its competitiveness. Establishment of the producer groups is considered as one of the more ways how to be competitive. Membership in producer groups brings several advantages, e.g. stronger position in the bargaining, joint ownership of expensive technology, rental of storage facilities, products marketing, quantity discounts when purchasing the inputs, etc. The NCBA (2005) argues that producer groups are formed by their members when the marketplace fails to provide needed goods and services at affordable prices and acceptable quality; producer groups empower people to improve their quality of life and enhance their economic opportunities through self-help.

The producer groups have several economic functions, such as collecting, processing and marketing agricultural products, implementing quality assurance programs, and giving advice and training to their members. By exploiting economies of scale and scope as well as by reducing transaction costs, producer groups can improve the efficiency and efficacy of agri-food supply chains (Bijman et al., 2006). As each producer has its own farm, the main goal of the producer group is to provide services that support producers in their farming activities, including the marketing of the farm products (Bijman, Wollni, 2009). Producer groups may develop networks, in order to reduce transaction costs, to facilitate knowledge transfer and exchange of resources, and be competitive (Karantininis, 2007). The NCFC (2005) provides the following reasons why producer groups are being formed: to strengthen bargaining power; maintain access to competitive markets; capitalize on new market opportunities; obtain needed products and services on a competitive basis; improve income opportunities; reduce costs; and manage risk.

The role of producer groups in market chains has received increasing attention in recent years, both from governments and donors. Markets are increasingly fragmented in value chains that link farmers with specific processors, retailers and consumer segments (Ton, Bijman, Oorthuizen, 2007). The European Union has provided for the possibility for Member States to recognise producer groups across all agricultural sectors for some years (NFU, 2013). Council Regulation No 1698/2005 on support for rural development by the European Agricultural Fund for Rural Development represents the legal basis on which the primary producers allowed to associating into producer groups. There are lot of studies interesting in external and internal conditions under which producer groups may be more or less effective at serving their members. Bruynis and co-authors (2001) argue that member equity, limited returns, patronage refunds, democratic voting, and open membership are all considered necessary for any emerging cooperative to be successful. Adamowicz and Lemanowicz (2004) state it is necessary to promote program of cooperation within a group and to promote

usage of instruments supporting creation and development of horizontal integration activities. Markelova, Meinzen – Dick, Hellin, and Dohrn (2009) indicate that without sufficient incentives in place for smallholders to organize around marketing of a particular commodity, collective marketing will not be successful. Neven et al. (2005) reveal in the Southern Africa that economic success does not automatically imply social success. A farm (producer group) may be economically successful in that its value, sales, profitability increase and in that it constantly upgrades its capacities but at the same time have little or no impact on the living conditions of the rural poor that are involved in the project. Chirwa et al. (2005) argue that farmer organisations can encourage market access and commercial agricultural development but face many challenges, require sensitive but committed support, and are unlikely to succeed in directly helping the poor in more difficult environments; external support needs to be skilled, sensitive, consistent and patient if farm organisations are not to be another development disappointment at the start of the 21 century. Attwood and Baviskar (1987) state that the success of the cooperative sugar factories in India depends not only on a superior cane supply system, but also on their ability to generate a stable alliance among small, medium and large cane growers who are the shareholders. Bernard et al. (2007) found in Senegal and Burkina Faso that the performance is constrained by low professional management capacity and lack of access to resources. Karami and Rezaei-Moghaddam (2005) found in Iran that cooperative structure and government support factors are the most important factors explaining the performance of farmers. Barham and Chitemi (2008) suggest in Tanzania that more mature groups with strong internal institutions, functioning group activities and a good asset base of natural capital are more likely to improve their market situations. However, there are also pessimistic visions of the future existence of the producer groups. Despite the emergence of the new producer groups and better performance of the cooperatives in recent years, there are doubts whether we will be able to observe a consolidation of the cooperative sector in a longer perspective (Valdez 2012).

2 The impact of collective action groups on their member

There are only few studies interesting in the impact of collective action groups (e.g. agricultural marketing cooperatives) on their member and comparison farmers´ economic situation with the economic situation of the non-members. Some of them documented positive impact of collective action groups on the economic performance of their members (e.g. Vandeplas, Minten, Swinnen, 2013; Wollni, Zeller, 2007; Librero, Tidon, 1996; Liebrand, 2007; Bernard, et al., 2008). The higher economic performance of producer groups´ members than the economic performance of the non-members is not certainty itself. Verhofstadt and Maertens (2014) find that producer group´s membership in general has a positive impact on different farm performance indicators but that these effects are driven be specific types of producer groups. Hellin, Lundy and Meijer (2006) provided research in Mexico and Central America and have suggested that the benefits of producer organization when it comes to access output markets are more evident in the vegetable sector, which is characterized by high transaction costs; there is far less incentive for farmers producing a commodity such as maize to organize themselves as the transaction costs associated with market access are relatively low. Berdegué (2001) provided research in Chile about the empresasa sociatives campesinas (ESC) whose main purpose is to improve the performance of their members´ farms as economic units that engage in market transactions. According to this research participation in EACs is high only for those small farmers working with the products-markets with high transaction costs. Bernard and Spielman (2009) find that poorer farmers in Ethiopia tend not to participate in rural producer organizations although they may indirectly benefit from them. When they do participate, they are often excluded from decision-making processes.

Most of these studies related to the impact of membership in the producer groups on the economic performance of the agricultural producers were provided in the developing countries. There are very few studies available on producer groups in the Central and Eastern European Countries. The producer groups and possible long term development of the agricultural sector in Poland were discussed by Valdez (2012), Adamowicz and Lemanowicz (2004) or Banasczak (2008).

3 The classifications of the producer groups

The producer groups' functions are the oldest and very often used criterion of producer groups' classification. According to Helm (1968) there are usually production producer groups, supply producer groups, environmental producer groups, credit producer groups, insurance producer groups, machinery producer groups, processing producer groups or marketing producer groups. Cropp and Ingalsbe (1989) classify the producer groups into three broad categories according to their main activity, namely marketing cooperatives (which may bargain for better prices, handle, process or manufacture, and sell farm products), farm supply cooperatives (which may purchase in volume, manufacture, process or formulate, and distribute farm supplies and inputs such as seed, fertilizer, feed, chemicals, petroleum products, farm equipment, hardware, and building supplies), and service cooperatives (which provide services such as trucking, storage, ginning, grinding, drying, artificial insemination, irrigation, credit, utilities, and insurance).

However, producer groups are classified from the various points of views. According to the position of the producer groups in the food chains, Bijman and Hanisch (2012) distinguish three types of producer groups: The first type consists of cooperatives that directly engage in farming activities, like in the case of joint production and joint nature conservation. The second type consists of cooperatives that provide all kinds of goods and services to the farmers. Production of these services involves substantial economies of scale and scope. The third type consists of cooperatives that have taken over the sales activities of the farmer (Bijman, Hanisch, 2012). Cropp and Ingalsbe (1989) made a classification based on the geographical scope of the membership; there are local, regional, interregional, national and transnational producer groups. For production groups, Helm (1968) distinguishes six categories: joint ownership, joint planning, joint organising, joint cultivating, joint harvesting, and joint animal husbandry. In marketing farm products, the producer groups may choose from a range of 'marketing' activities, which ranges from just providing a market place, like auction producer group, collective bargaining, collecting farm products including transport and storage, primary processing for the food industry, secondary processing - producing final consumer products, marketing commodities, marketing branded products, wholesaling and retailing (Bijman, Hanisch, 2012). From the research of Bijman et al (2012) results that the key functions of all marketing producer groups are improving the bargaining power of their members and letting members benefit from economies of scale; in addition, producer groups are reducing market risks, reducing transaction costs, providing access to resources, and strengthening their competitive position through product innovation and guaranteeing food quality and safety. They added that a large number of producer groups have expanded their activities in downstream stages of the food chain, thus strengthening their customer and consumer orientation by enhancing efforts in marketing (including branding), product innovation, and customization (Bijman et al., 2012). Barton cited by Ortmann and King (2007) argued that farmers form(ed) cooperatives with the objective to generate greater profits, (1) by obtaining inputs and services at lower costs than they could obtain elsewhere or that were not available, and (2) by marketing their products at better prices or in markets that were previously not accessible. In our research paper, we try to identify the main roles of the

Slovak producer groups according to the results of effectiveness of agricultural cooperatives on the market, especially in both selected regions.

MATERIAL AND METHODS

The aim of this paper is to verify, whether agricultural cooperatives associated in the producer groups are more effective on the market than the non-associated ones. In order to achieve this aim we analysed the relationships between economic indicators of agricultural cooperatives which are producer groups´ members and agricultural cooperatives which are not associated as members in any producer group. We assume that the members (agricultural cooperatives) associated in the producer groups are more economic effective than the non-associated ones.

We used the data from information letters issued by the Ministry of Agriculture and Rural Development of the Slovak Republic. We were monitoring 109 agricultural cooperatives (67 of them from the Nitra region and 42 from the Žilina region) during the years 2009 – 2012. Of the total number, 48 agricultural cooperatives were the members of producer groups and 61 of them were the non-members. For being included into the panel we chose only the agricultural cooperatives which were the producer groups´ members or non-members permanently throughout the reporting period.

The method of statistical induction (F test, two tailed z- test) was used while verifying the statistically significant differences of the economic indicators (revenue per hectare; profit per hectare; costs per hectare; revenue per employee; value added per hectare; revenue without subsidies per hectare; cost per employee; cost/revenues) achieved by agricultural cooperatives. The significant difference of the standard deviation of two main groups (members and non-members) with normal distribution was tested by using the F-test. Due to the relatively large range of the selected sample groups, we used the reciprocal two-tailed z-test for testing two medians of independent member and non-member groups. The analysis was realised in Nitra region, in Žilina region and in both regions together.

RESULTS

1 Producer groups in Slovak agriculture

Only several of the producer groups have been established before access of Slovakia into European Union. There are more reasons for it, such as lack of knowledge of the producer group´s relevance, structure, benefits and effect, but the main one was probably lack of financial incentives. After the accession of Slovakia into EU Slovak government decided to support the associations of the farmers to improve their bargaining position on the markets (Bandlerová et al., 2012). There are two funding programming periods. The first one 2000-2006 had begun for Slovakia in 2004 (the year of the accession of Slovakia into EU); there were established 34 producer groups. Most of them were oriented on the plant production, such as cereals, oil seeds, potatoes, tobacco or hop (20 producer groups). However, there were also some of producer groups oriented on the animal production, e.g. dairy, beef meat, pig meat, sheep and poultry (table 1). During the second programming period 2007-2013, there were established 63 producer groups, mainly in the Western Slovakia (Yearbook, 2013). The producer groups were supported through the programme of rural development for period 2007-2013 in Slovakia including measures "1.5 Producers groups." The main aim of this measure was to support of producer groups´ establishment, to adapt the agricultural production on the market requirements, marketing of agricultural products and to increase of added value of the agricultural production. There were sent 66 applications for this grant; 63

of them were successful and received together 20 139 950 EUR (Yearbook, 2013). According to the sectors (table 1), the most of producer groups were oriented on the plant production (61%); the rest ones were oriented on the animal production, such as dairy (24%), poultry (6, 5 %), pig meat (6, 5%) and beef meat (2%).

Table 1 Number of producer groups in Slovakia

Sector	Number of founder enterprises	Max. number of enterprises per producer group	Number of producer groups		Total number of producer groups founded
			2004-2006	2007-2013	
Cereals	243	22	12	28	40
Oil-plants and legumes	105	26	2	10	12
Potatoes	28	13	4	0	4
Tobacco	73	73	1	0	1
Hop	1	13	1	0	1
Dairy	206	25	8	16	24
Beef meat	7	7	0	1	1
pig meat	33	7	3	3	6
Sheep	11	11	1	0	1
Poultry and eggs	39	7	2	5	7

Source: Yearbook, 2013

According to the data from the Research Institute of Agricultural and Food Economics (RIAFE, 2013), all 97 producer groups were established with the EU support. These producer groups associate about 746 farmers.

The Slovak law does not prescribe the business form for producer groups; however, most of them were established as cooperatives in Slovakia. There were only few business companies such as limited liability companies or joint stock companies. There were more than 90 % of cooperatives (Bandlerová et al., 2012). The reasons for this choice are following: Firstly, the cooperative form is traditional form for associating of farmers; the aim of first cooperatives was to protect farmers against stronger businessmen in the market food chains. Secondly, the agricultural cooperatives as the primary agricultural producers are the most frequent form of doing business in agriculture in Slovakia; and the members of producer groups are mostly these agricultural cooperatives. These members have naturally the best experiences in the business form of cooperative and so they have chosen this form also for their producer groups they are members. Thirdly, according to the Slovak Commercial Code, just five members are the minimum of members to establish a cooperative and one of the conditions to receive a financial support is to establish a producer group by at least five members. However, minimum number of producer groups´ members should be considered very sensitive. In some sectors, there is too difficult to find at least five farmers who have an interest in establishment of a producer group (e.g. sheep meat sector or sugar sector). Fourthly, the capital corporation need to create equity capital and cooperative has the lowest level of the minimum of equity capital from all business corporations (1250 EUR).

The producer groups in Slovakia are most relevant in the collective bargaining and marketing of farm products, collecting farm products, wholesaling, retailing, selling branded consumer products (mainly fruits and vegetables), and buying inputs (e.g. seeds, fertilizers, pesticides). The producer groups in Slovakia usually offer more than one service to their members. However, there are mostly services of economic character; the services such as social, cultural or environmental services are more seldom.

2 Effectiveness of the producer groups for their members

The farmers are confronted with the question to become or not to become a member of a producer group. By other words, which type of farmers is more effective? Are there the members of a producer group or the farmers who are not associated in any producer group (hereinafter only non-members)? The analysis provided in this chapter gives answer only in generally. It is depends mainly from the farmers and their specific conditions. However, it is possible to provide an answer to the effectiveness of the farmers and producer groups in generally. It is important especially from the reason if the financial support oriented to the producer groups is meaningful and useful.

2.1 Characteristics of the research sample

Panel data (2008-2012) consisted of 67 agricultural cooperatives from Nitra region (i.e. 68% of the total number of active agricultural cooperatives) and 42 agricultural cooperatives from Žilina region (i.e. 52% of the total number of active agricultural cooperatives). Selected cooperatives were farming on the 28% of agricultural land´s area in Nitra region and on the 25% of agricultural land´s area in Žilina region.

Žilina region and Nitra region are very different regions of Slovakia; Nitra region are typical agricultural region with high quality of arable land and suitable climate. Žilina region is a mountainous region where the animal production is prevailed. The effectiveness to be or not to be a member of producer groups is provided extra for both regions and also together regardless of the region.

The agricultural cooperatives which are not members of any producer group were prevailed in both regions; however in our sample the number of members and non-members is quite balanced (Table 2).

Table 2 Number of agricultural cooperatives according to districts

Districts of Žilina region		Districts of Nitra region	
Bytča	2	Komárno	11
Čadca	5	Levice	20
Dolný Kubín	4	Nitra	9
Kysucké Nove Mesto	2	Nové Zámky	14
Liptovsky Mikuláš	6	Šaľa	3
Martin	4	Topoľčany	8
Námestovo	2	Zlaté Moravce	2
Ružomberok	6		
Turčianske Teplice	2		
Tvrdošín	3		
Žilina	6		
Producer group members	**20**	**Producer group members**	**28**
Producer group non-members	**22**	**Producer group non-members**	**39**
Total	**42**	**Total**	**67**

Source: Ministry of Agriculture and Rural Development of the Slovak Republic (Information letters), 2014

According to the employees, the panel of agricultural cooperatives consisted mostly of the small enterprises with number of employees from 10 to 49.

According to the agricultural land, the highest number of agricultural cooperatives in Nitra region (27 cooperatives) belonged to the category of large enterprises with area of 1 000– 1 999 ha of agricultural land (according to LPIS – Land parcel identification system). The category of enterprise with area of 250 – 999 ha represented the most common category in Žilina region (17 cooperatives). Table 3 documented the characteristics of sample of the agricultural cooperatives according to their size.

Table 3 Characteristics of the sample of the agricultural cooperatives

		micro	small	medium	big
Number of employees		< 9	10 – 49	50 – 249	250 >
Nitra region	members	0	13	15	0
	non-members	2	20	17	0
Žilina region	members	0	11	9	0
	non-members	5	11	6	0
Total		7	55	47	0
Agricultural land area in hectares (LPIS)		**< 249**	**250 – 999**	**1000 – 1999**	**2000 >**
Nitra region	members	0	5	10	13
	non-members	2	9	17	11
Žilina region	members	0	7	5	8
	non-members	3	10	5	4
Total		5	31	37	36

Source: Ministry of Agriculture and Rural Development of the Slovak Republic (Information letters), 2014

2.2 Economic indicators of producer group members and non-members

The economic indicators of agricultural cooperatives were revenue per hectare, profit per hectare, costs per hectare, revenue per employee, value added per hectare, revenue without subsidies per hectare, cost per employee and cost per one unit of revenues. The results of statistic induction are in the table 4.

Table 4 Test of significance of the differences of the average values of economic indicators of PG members and non-members

Economic indicator	Test characteristics	Nitra region	Žilina region	Total
revenue / ha (LPIS)	F-test	0.000***	0.000***	0.000***
	z-test (two-tail)	0.023**	0.016**	0.027**
profit /ha (LPIS)	F-test	0.053*	0.258	0.030**
	z-test (two-tail)	0.943	0.600	0.783
costs / ha (LPIS)	F-test	0.000***	0.000***	0.003***
	z-test (two-tail)	0.020**	0.011**	0.094*
revenue/employee	F-test	0.000***	0.002***	0.003***
	z-test (two-tail)	0.000***	0.002***	0.000***
value added/ha (LPIS)	F-test	0.000***	0.003***	0.002***
	z-test (two-tail)	0.795	0.002***	0.000***
revenue without subsidies /ha	F-test	0.000***	0.001***	0.000***
	z-test (two-tail)	0.057*	0.069*	0.003***
costs/employee	F-test	0.000***	0.041**	0.013**
	z-test (two-tail)	0.776	0.060*	0.004***
costs/revenues	F-test	0.000***	0.000***	0.000***
	z-test (two-tail)	0.448	0.016**	0.000***

Explanatory notes: *, **, and *** represents the level of significance on 10%, 5%, and 1%

The values of the variances of the economic indicators measured at the producer group members and non-members in both regions were statistically significant different regardless of the region where the agricultural cooperatives were located. There were only one exemption; the variance of the profit per hectare was not statistically significant different.

According to the z-test we can conclude that there are statistically significant differences between the economic indicators of producer group members and non-members regardless the region; only the profit per hectare is not statistically significant different between the producer group member and non-members. The cost per hectare is statistically significant different between members and non-members; however the level of significance is not a typical standard (0, 1). Therefore we can conclude that the producer groups are oriented mainly on the activities which are close connected with the revenue. By other words, the producer groups help their member to receive the higher revenue; however they are not interesting in the activities to decrease their production costs. This implies the main function of Slovak producer groups is bargaining and marketing of farm products. The producer groups are enabled to sell the farm products for significant higher prices than the farmers who are not associated in any producer group. The activities such as buying the inputs (seeds, fertilizers, pesticides) for lower prices are not any incentive for agricultural cooperative to become a member of a producer group.

According to the regional analysis, there are some differences between the results of both selected regions.

In Nitra region, the revenue of producer group members are statistically significant different and higher than the revenue of non-members regardless of hectare or employee´s unit. However, the costs per employee were not statistically significant different between the producer group members and non-members. The costs per hectare was statistically significant different between them on the significance level of 0, 05 but it can be influence by the fact

that most of producer group member cultivated more than 2000 hectares of agricultural land, so their cost per hectare can be lower than the cost of non-member cultivating mostly less than 2000 hectares of agricultural land. This is reason why there is not statistically significant difference of profit per hectare and value added per hectare between the producer group members and non-members. This implies the above mentioned statement that the producer group are oriented mainly on the marketing of farm products and they are less oriented on the decreasing of the inputs costs of their members.

In Žilina region, there is possible to remark some differences from the general above mentioned statements. In Žilina region, there were statistically significant differences not only in relation to the revenue indicator but also to the costs indicators between producer group members and non-members. According to the results the producer group members receives higher revenue and lower costs per hectare or per employee than the non-members. We can conclude that producer group in Žilina region are oriented not only on the marketing of farm products but also on the services which are able to decrease the costs of their members, such as buying of cheaper inputs (seeds, fertilizers, pesticides etc.) or using of common expensive mechanisms.

CONCLUSIONS

In generally, we can conclude that the agricultural cooperatives associated in the producer groups are more effective on the market than the non-associated ones. On the basis of the achieved results, we identified significant statistical differences of the economic indicators between the producer group members and non-members in the period from 2008 to 2012 in favour of the producer group members. However, the objectives and roles of the producer groups in the Slovak regions are different. The producer groups of Nitra region are oriented on the marketing activities related of the farm products. The producer groups of Žilina region are oriented also on the decrease of the production costs of their members. Before the association of a farmer in to a producer group, there is necessary to find out if the producer group is interesting in the activities which this farmer really needs. However, from the macroeconomic point of view, we can conclude that the financial support for the producer groups is meaningful and useful.

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