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THE TECHNICAL EFFICIENCY OF LOCAL ACTION GROUPS: A CZECH REPUBLIC CASE STUDY

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Abstract

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Local Action Groups (LAGs) represent a dynamic platform for inter-municipal cooperation in Europe. Their principal advantages include EU funding and the capacity to generate economic returns and stimulate the development of local communities. The methodology used for the evaluation of the performance of LAGs is defined by the EU on the one hand and by national authorities on the other. Furthermore, there are an entire array of evaluation tools and academic experiments available. The present paper does not aim at a comprehensive evaluation of LAGs, but instead only examines the technical efficiency of LAGs. Using the Czech Republic as an example, the paper introduces an evaluation tool to measure the technical efficiency of LAGs and describes how it can be applied. The adoption of this tool is seen as a means of improving one of the parameters of the performance of LAGs.

Keywords: LEADER, Local Action Groups, technical efficiency

INTRODUCTION

Local Action Groups (LAGs) have become the second most widespread and the most dynamic platform for inter-municipal cooperation in the Czech Republic due to the easy availability of subsidies. There are 185 LAGs and 550 Voluntary Leagues of Municipalities (VLM) in the Czech Republic as of 2016. Inter-municipal cooperation is extremely important as it facilitates municipal development and the provision of services which Czech municipalities are legally bound to provide. The population of the Czech Republic is substantially fragmented: over 80 % of the 6,253 municipalities in existence have populations under 1,000. Hence, municipalities must closely cooperate.

The concept of LAGs arrived in the Czech Republic with a delay of about 10 years from when this cooperation platform was introduced in Western Europe. The year 2001 saw the launch of an informational campaign for the LEADER methodology as well as the first meetings between representatives of the Rural Development Alliance, the Ministry of Regional Development (MRD) and other authorities. This period largely coincided with the creation of autonomous regions (the first regional elections were held in November 2000) as well as with the coming into effect of the public administration reform. Preparation for the establishment of the first LAGs commenced in 2002. These were typically based on the VLM platform. The MRD – through its Rural Development Programme (RDP) – funded the development of integrated strategies for the creation of rural micro-regions from 2002 to 2006. The year 2003 saw the formal establishment of management committees charged with the development of local development strategies which laid the foundations for the first LAGs.

The national LEADER CR programme (2004–2008) was launched in March 2004 and 16 LAG projects were accepted during the first year. By the beginning of 2005, 41 LAGs had been registered. The year 2005 saw the establishment of the National Network of LAGs – an overarching body which represents approximately 95 % of all LAGs; by December, the membership had grown to 79 LAGs. The establishment of LAGs gained momentum right from the start, with for example, 123 LAGs registered in March 2006 and 137 in May. Not all of the LAGs were fully active, however. The level of activity of the LAGs depended on whether they managed to secure funding or not. Preparation of the implementation documents for the Rural Development Programme was completed in 2007.

The first analyses and evaluations of the activity of LAGs were undertaken at this time, but these documents were largely descriptive, but retains a historical value, (Pavlíková 2007).

One of the prerequisites of the optimal development of LAGs was the supervision and evaluation of their activities which commenced after the first LAGs had been established and the LEADER methodology had been phased in. The evaluations conducted by the Ministry of Agriculture, the then owner of the LEADER methodology, which assigned points to LAGs based on a detailed questionnaire and a follow-up interview with the LAGs' representatives, were of great importance. LAGs were classified, based on the total number of points they received, into four categories (A – D). The highest ranked LAGs were in the first category, while the lowest ranked LAGs were in the last category. The number of LAGs in the first two categories constantly increased while the number of LAGs in the C and D categories decreased – a positive trend. Additional attempts to assess the efficiency and performance of LAGs were to follow. The Methodology for the Implementation of the Management of the Development of Micro-Regions was published in 2006 by a non-profit organisation. A micro-region was understood here as a category which includes both VLMs and LAGs. The document introduced 1) indicators of the efficiency of the management of micro-regions and the concept of 2) the economic efficiency of the management of micro-regions. Tools commonly used to measure efficiency in public administration in the Czech Republic such as benchmarking and the Common Assessment Framework were also employed.

Activities of LAGs also are focused on strengthening relationships within local communities. Among the concepts which express these values is "community vitality" – a measure which looks at not only the economic health of a municipality but also at the quality of life in the municipality, the activities of non-profit organisations based there as well as the overall attractiveness of the municipality for its inhabitants (Grigsby 2001). A number of concepts go beyond measurable variables and actually examine the quality of life, satisfaction with the environment, etc.

Evaluation at the national level was guided by a document issued by The European Evaluation Network for Rural Development (ENRD) which introduced a methodology for the evaluation of the implementation of the LEADER scheme as well as guidelines on the evaluation of organisations (incl. LAGs) based on activities such as communication, management, local economy, etc.

There is a substantial body of research on the efficiency of LAGs in the European context which predominantly deals with the LEADER programme which was directed at supporting rural economic development from its inception. The concise Self-evaluation Workbook for Local Action Groups (Keränen 2003) contained a detailed description of the evaluation process and its importance as well as a number of methods used for this purpose. Many of the evaluations took their starting point from the study Capturing impacts of Leader and of Measures to Improve Quality of Life in Rural Areas (Grieve and Wenspach 2010). Eggers *et al.* (2007) interviewed local players, focusing on: "a) higher economic efficiency of AES; b) higher environmental effectiveness and c) greater acceptance of AES". Both quantitative and qualitative methods were employed (Midmore *et al.* 2008). An evaluation of LAGs in Greece was conducted by Arabatzis *et al.* (2010), in Baden-Württemberg by Schiller (2009), in Latvia by Krievina *et al.* (2015) and in the Czech Republic by Svobodová (2015) and Trantinová (2015), etc. A number of measurements and evaluations were made in the last programming period from 2007 to 2013 at the international, national, regional and local levels.

This paper will deal with efficiency only, with a little exception. This is based on sociological survey within LAGs, which will be introduced later. There is intense debate in the Czech Republic concerning how to strengthen inter-municipal cooperation in which efficiency is an important consideration. Efficiency is the key parameter of the economic performance of organisations and is usually expressed as a function of the variables assessed. Farrel (1957), followed by Hollingsworth (2008), Dooren *et al.* (2010), defined economic efficiency as a concept which includes technical and allocative efficiency. Economic efficiency is the capacity of an organisation to obtain a certain output (production) based on a given technology at the lowest possible cost. Abdourahmane *et al.* (2001) defined technical efficiency as the capacity of an organisation to obtain the maximum possible output from a given volume of inputs and based on a given technology – a definition which echoes Debreu's (1951, quoted in Songsrirote and Singhapreecha 2007).

In a sector exempt from market forces where specific production units (e.g. LAGs) undertake economic activities aimed at a mutual or common benefit, technical efficiency can be measured with

DEA models based on selected input and output parameters. An example is the studies by Pechrová (2015) and Svobodová (2015).

The present paper deals with technical efficiency which is understood as the ability of a LAG to obtain the maximum output from given inputs. In the context of the 2008–2013 LEADER programme, the maximisation of output refers to the amount of subsidy allocated and the number of projects accepted over the given period of time while taking into consideration the technical realities and maintaining a set level of quality and using defined procedures, while also considering the criteria used for selecting projects. The output mentioned above refers to the impacts of the primary business of the LAG, the increase of which – while other variables remain constant – translates into higher efficiency for that production unit, in this case a LAG. Inputs are understood as the resources consumed by the production unit as part of its main business. Lower inputs mean higher efficiency for the production unit under evaluation. The aim of the paper is to present certain ways of measuring technical efficiency in the context of LAGs, specifically the ability of selected LAGs to generate the best return on subsidies which they received under the 2007–2013 LEADER programme in order to fund specific projects (undertaken by recipients from among LAGs).

The following questions are verified in relation to the issue under study:

- Q1: How does the population size of a LAG influence the LAG's efficiency?
- Q2: Is the number of LAG members an important factor of efficiency, and consequently, does it affect the number of funded projects and the volume of allocated subsidies?

The basis for our first question is the formulation of research (Denters *et al.* 2014) on the impact of the population size of municipalities on the quality of democracy. Instead of the quality of democracy, we focus only on one of its segments – efficiency on the territory of partnered municipalities.

MATERIAL AND METHODS

As part of the project "Analysing the Outputs of the LAG as an Instrument of Inter-Municipal Cooperation for Effective Operation of Agencies", a sociological survey was conducted with members of the relevant LAGs. The objective was to obtain information on the views of, attitudes to and experience with selected aspects of LAGs, and to complement the insights generated at the round tables in early 2015. The tables were mainly attended by mayors. We carried out 774 structured consultative interviews, where no quota was applied in selecting respondents; the only requirements were participation of all the LAGs and a (roughly) even ratio of representatives of all the three LAG segments (public administration, local employers, NGOs). The one-third ratio was roughly observed, with the highest number of responses coming from local authorities (37 percent), followed by local employers (33 percent) and the non-profit sector (30 percent). While this is not representative, our findings highlight certain trends. Respondents were first interviewed about what they considered the most important condition for the development of LAGs. Tab. I shows the response for all

I: *The most important precondition for a successful LAG (Respondent category, %).*

Q2. "Could you please tell me what you think is the most important condition for your LAG to be successful?"	Category of respondents			Total
	local government	local employers	non-profit	
Willingness to associate and to participate in solving problems	42.5	35.1	43.3	40.3
Competent LAG manager	23.9	33.5	24.0	27.1
Sufficient number of young people interested in living in rural areas	2.6	4.6	5.5	4.1
Support from external political structures	1.5	1.3	1.4	1.4
Winning grants	24.3	21.8	23.5	23.2
Good location	0.4	0.4	0.0	0.3
Good living conditions	3.7	2.1	0.9	2.3
Don't know	0.0	0.8	0.5	0.4
Other	1.1	0.4	0.9	0.8
Total	100.0	100.0	100.0	100.0

Source: Sociological survey (2015)

respondents (total) and also how this attitude differs according to the three categories of the respondents. For the majority (40 percent), the most important condition was the willingness to associate and to participate in solving problems; the attitudes of local employers (mainly entrepreneurs, the self-employed) fell below this mean. Unlike the other two groups, these strongly indicated that the most important condition for the successful development is a competent LAG manager.

The respondents are clearly against the idea that LAGs take over responsibilities pertaining to self-government and delegated powers. The respondents nevertheless agreed that LAGs should coordinate and monitor the problems of municipalities and consequently represent the municipalities in negotiations with the regional authorities. Approximately half of the respondents expect the same from LAGs in the case of negotiations with the ministries, but not with members of parliament. Other tasks that the respondents feel LAGs should perform include, in particular, strengthening citizen participation in the life of communities in the given territory. We also asked whether the respondents found LAGs beneficial, and in what way. The vast majority sees the collaboration of players on the platform as beneficial, with 56 percent stating that it allows for more efficient problem solving, and 40 percent believe that the greatest benefit is information and contacts. The findings show the meaning the key stakeholders attach to LAGs. Besides the human potential, there are however economic criteria that indicate the efficiency of each LAG.

The essential components of the technical efficiency evaluation are the following: (i) identification of the optimal DEA model; (ii) identification of a sufficient number of production units with a homogeneous output; (iii) definition of input and output variables and their limits.

DEA (Data Envelopment Analysis) models are part of the family of multi-criteria decision-making methods which take into account multiple factors and the inputs and outputs used to estimate the efficiency of the production units under evaluation. There are several modifications of the DEA methods. The output-oriented BCC model was selected for the purposes of determining the technical efficiency of LAGs with respect to their use of funds from the 2008–2013 LEADER programme.

The output-oriented BCC model (named after the authors Banker, Charnes and Cooper) presupposes variable returns to scale and defines a convex data envelope. It is a modification of the CCR model which presupposes constant returns to scale and defines a conical data envelope. Output-oriented models attempt to improve output parameters so that the units become more efficient (Jablonský and Dlouhý 2004).

This is expressed in the following mathematical formulation:

$$
\begin{aligned}
& g = \sum_{i}^{m} v_j x_{jq} + v, \\
& \sum_{i}^{r} u_i y_{\mathrm{ik}} \le \sum_{j}^{m} v_j x_{\mathrm{jk}} + \mathrm{v}, \\
& k = 1,2,\ldots,n, \\
& \sum_{i}^{r} u_i x_{\mathrm{iq}} = 1, \\
& u_i \ \ge \varepsilon, i = 1,2,\ldots,r, \\
& v_j \ge \varepsilon, j = 1,2,\ldots,m. \\
& v - arbitrary
\end{aligned}
\tag{1}
$$

where v is the dual variable which pertains to the condition on convexity $e^T\lambda = 1$ in the dual BCC output-oriented model. In BCC, the optimal value of the objective function g is 1 for efficient units; for inefficient units, g is greater than 1 and indicates the increase in outputs needed in order to attain the efficiency frontier.

If the DEA model provides a greater number of efficient units, these must be ranked. In super-efficiency models, the level of super-efficiency (2) is obtained by equating the weight of the original efficient unit with zero, thereby changing the original efficiency frontier. The super-efficiency model consequently estimates the distance from the efficiency frontier of the inputs and outputs of the unit under evaluation.

The mathematical formulation (2) of the [Super Radial-I-C] super-efficiency model (Cooper *et al.*, 2007) is as follows:

minimize $\theta^{\text{super}}{}_{q,}$

$$
\begin{aligned}
\text{subject to} \quad & \sum_{j=1,\neq q}^{n} x_{ij}\lambda_j + s_i^- = \theta_q x_{iq,} \ i = 1,2,\ldots,m, \\
& \sum_{j=1,\neq q}^{n} x_{ij}\lambda_j - s_i^+ = y_{iq,} \ i = 1,2,\ldots,r, \\
& \lambda_j \ge 0, s_i^+ \ge 0, s_i^- \ge 0.
\end{aligned}
\tag{2}
$$

For variable returns to scale, the additional condition of $e^T\lambda = 1$ is applied where $\lambda_q = 0$.

Research sample

58 LAGs were selected in all for the evaluation of technical efficiency (hereinafter referred to as the selected LAGs). These were LAGs which voluntarily participated in a project undertaken by the Local Government Association, the overarching body for small and mid-sized municipalities. The Association organised a project focused on LAGs in 2015 in which LAGs were taken as a tool for strengthening cooperation between municipalities and improving the efficiency of local authorities. The selected LAGs represented approximately 60 % of the total number of LAGs in the Czech Republic which received funding under the LEADER scheme

in 2007–2013. The selected LAGs were formed between 2004 and 2007 and their development strategies were approved between 2008 and 2009.

The LAGs are divided into 8 categories by size (c1 – c8) with respect to the generally established basic parametres of LAG, which include the LAG population, ranging from 10,000 to 100,000 inhabitants. Quantity k and interval width h of the categories were determined based on (2):

$$k=2\sqrt{n} \quad (2)$$

$$h = R/k,$$

where n is the number of studied LAGs, $R = x_{min} - x_{max.}$

The member structure of the selected 58 LAGs falls into three groups: (a) public administration, constituting 30 % of the total membership, (b) non-profit public and civil sector, forming 32 % of the total membership, (c) private profit and non-profit sector that represents 38 % of the total membership, including farmers and agricultural companies (farms). Tab. II compares the totals and averages of LAG memberships based on the LAG size categories, including the average LAG population per LAG member.

To evaluate the technical efficiency of LAGs using an output-oriented DEA model, two inputs and two outputs were chosen.

Inputs:

- x_1 – operating expenses per LAG member (in thousands of CZK);
- x_2 – total operating expenses (in thousands of CZK); the operating expenses are calculated as the difference between the amount of subsidy received and reallocated.

Outputs:

- y_1 – amount of subsidy allocated (in thousands of CZK);
- y_2 – number of accepted projects.

Size parameters such as the population and the number of municipalities in the LAG area are deliberately excluded from the input and output parameters so as to avoid skewing the efficiency measurement. The construction of the input and output parameters takes into account the linear relationship between the particular input and output parameters, which should not be strong.

The selected LAGs are characterised in Tab. III which contains, in addition to the totals, the maximal, minimal and average values as well as the standard deviation. The selected LAGs used 50.4 % of the total subsidy. 85.3 % of this amount was reallocated to projects on average. The largest subsidy received by a LAG was CZK 73,788, while the smallest subsidy was CZK 17,262. The average amount of subsidy received by the selected 58 LAGs was CZK 41,837. Overall, 71.5 % of the projects were accepted. The LAG size parameters (membership size, population size, number of municipalities) demonstrate substantial differences. Do LAG size parameters have an effect on technical efficiency? Can there be a relationship between the number of members and the number of projects accepted or between the population of the LAG area and the amount of subsidy received?

Relationships between selected LAG parameters were determined (see Tab. IV) using the Pearson product-moment correlation coefficient which gives values in the range <–1;1>. The significance of the correlation coefficient t was tested with $t_{krit}(0{,}975;\ n–2)$ where H_0 is rejected if t is larger than the quantile of the Student's t-distribution t_{krit}. The probability of the rejection of H_0 was tested with P-value at the significance level of 0.05.

As shown in Tab. IV, an extremely strong relationship (r = 0.99) exists between the subsidies received and allocated. This is logical and will not be tested further. A very strong relationship (r = 0.77 and 0.73) exists between the amount of subsidy (received and allocated) and the number of projects accepted as well as between the population size and the number of municipalities (r = 0.63). A strong relationship (r = 0.52 and 0.54) has been shown to exist between the amount of the subsidy (received and allocated) and the population of the LAG area. A weaker relationship exists between the number of projects accepted and population

II: *LAG size categories and memberships*

Size category c	Number of LAGs in size category	Total membership by size category	Average number of members per LAG	Average number of inhabitants per 1 LAG member
c1 [10,000–19,999]	11	540	49.09	361.25
c2 [20,000–29,999]	17	814	47.80	649.22
c3 [30,000–39,999]	10	612	61,20	633.74
c4 [40,000–49,999]	8	535	66.87	916.62
c5 [50,000–59,999]	6	479	79.83	802.86
c6 [60,000–69,999]	4	175	38.75	1,656.99
c7 [70,000–79,999]	1	64	64.00	1,126.73
c8 [80,000–89,900]	1	53	53.00	1,637.34
Total	58	3,252	56.06	739.49

III: *Parameters of the selected LAGs, membership size, population size and area as of 31 December, 2013. Source: The Czech National Network of LAGs (31 December 2013).*

	Total	Maximum	Minimum	Average	Standard deviation
Subsidy received in thousands of CZK*	2,384,701	73,788	17,262	41,837	13,649
Subsidy allocated in thousands of CZK*	2,034,693	61,466	13,949	35,081	11,768
Project submissions	7,902	260	59	136	52
Number of projects accepted	5,649	186	43	97	31
LAG membership size	3,252	136	12	56	26
Population of LAG area	2,042,448	86,779	12,301	35,215	17,194
Number of municipalities in LAG area	2,057	77	8	35	17

* The total subsidy received by the selected 58 LAGs represents 50.4 % of the total maximal subsidy defined by the State Agricultural Intervention Fund for 2007–2013.

size (r = 0.42). A weaker relationship exists between the number of municipalities and the amount of the subsidy (received and allocated) as well as between the number of projects accepted and the LAG membership size. In contrast, a linear relationship has not been shown to exist between LAG membership size and the number of projects accepted.

The correlation analysis of the selected parameters has shown that:

- the number of projects accepted, in particular LAGs, increased with the amount of subsidy received and allocated;
- the amount of subsidy received and allocated in particular LAGs increased with the LAG population size;
- the number of projects accepted in particular LAGs did not vary noticeably with the LAG membership size.

RESULTS

Technical efficiency modelling based on the output-oriented DEA model which presupposes variable returns to scale and is expressed in formulation (1) was used to determine whether the two outputs y_1 (the amount of subsidy allocated) and y_2 (the number of accepted projects) indicated an efficiency relative to the volume of the two inputs, i.e., x_1 (operating expenses per LAG member) and x_2 (total operating expenses).

The model assumes that an efficient unit (LAG) is one which can maximise the allocation of the subsidy received and the number of accepted

IV: *The linear relationship between selected parameters*

		Subsidy received	Subsidy allocated	Number of accepted projects	LAG membership size	Population of LAG area	Number of municipalities
Subsidy received	r	x	0.9968	0.7722	0.3014	0.5159	0.3372
	t	x	95.0489	9.2549	2.4071	4.5869	2.7282
	p val	x	0.0000	0.0000	0.0193	0.0000	0.0084
Allocated subsidy	r		x	0.7331	0.2680	0.5448	0.3959
	t		x	8.2085	2.1184	4.9483	3.2829
	p val		x	0.0000	0.0384	0.0000	0.0017
Number of accepted projects	r			x	0.2340	0.4211	0.3426
	t			x	1.8327	3.5354	2.7770
	p val			x	0.0720	0.0008	0.0074
LAG membership size	r				x	0.2145	0.3424
	t				x	1.6728	2.7755
	p val				x	0.0998	0.0074
The population of the LAG area	r					x	0.6285
	t					x	6.1539
	p val					x	0.0000
Number of municipalities in the LAG area	r						x
	t						x
	p val						x

V: *Characteristics of the results of technical efficiency based on c1-c8*

Size category c, (number of LAGs)	Number of efficient LAGs, e=1	Least efficient LAG, $e_{max.}>1$	Average e LAG
c1 (11)	5	1.4984	1.1899
c2 (17)	1	1.5945	1.3000
c3 (10)	1	1.6516	1.2439
c4 (8)	1	1.5157	1.2482
c5 (6)	1	1.2187	1.1078
c6 (4)	2	1.1505	1.0454
c7 (1)	0	1.0458	1.0458
c8 (1)	1	x	1.0000
Total (58)	12	1.6516	1.2152

VI: *Classes of efficiency (percentage) and LAGs.*

%	Number	LAGs
[100]	12	LAG 8, LAG 10, LAG 41, LAG 26, LAG 29, LAG 42, LAG 49, LAG 55, LAG 58, LAG 3, LAG 7, LAG 18
[98–81]	15	LAG 16, LAG 5, LAG 44, LAG 25, LAG 1, LAG 28, LAG 35, LAG 27, LAG 32, LAG 46, LAG 39, LAG 31, LAG 50, LAG 38, LAG 13
[80–62]	20	LAG 37, LAG 52, LAG 6, LAG 34, LAG 43, LAG 19, LAG 2, LAG 36, LAG 33, LAG 15, LAG 51, LAG 40, LAG 21, LAG 57, LAG 17, LAG 53, LAG 20, LAG 48, LAG 4, LAG 30
[58–35]	11	LAG 24, LAG 12, LAG 47, LAG 9, LAG 54, LAG 45, LAG 22, LAG 11, LAG 56, LAG 23, LAG 14

projects. An inefficient unit is one which has high operating expenses relative to the amount of subsidy allocated and the number of accepted projects.

Out of the 58 LAGs, 20 % were found to be efficient (e = 1). The remaining LAGs are to a varying degree inefficient, as is shown in Fig. 1. 26 % of the LAGs have e-values in the relation [1.0234; 1.1875]. 34 % of the LAGs have e-values in the relation [1.2008; 1.3847]. 19 % of the LAGs fall into the least efficient category with e-values in the relation [1.4208; 1.6516]. Tab. V shows findings based on LAG size categories (c1-c8).

Tab. VI shows the efficiency in percentage, where efficient units reach 100 %. This table shows LAGs and the degree of efficiency.

To identify the 12 most efficient LAGs, super-efficiency was computed based on the defined conditions (2). The most efficient unit was LAG 3. Tab. VII also indicates the output parameter values for the efficient units. It is evident that the level of efficiency is not related to the amount of subsidy allocated and instead depends on the optimal combination of output variables relative to input variables.

All of the evaluated (selected) LAGs used the subsidy received in accordance with the subsidy rules. The threshold of 80 % reallocation to

VII: *The most efficient LAGs, the output parameters achieved*

Order	LAG	x_1	x_2	y_1	y_2
1	LAG 3	212	6,371	125	37,654
2	LAG 49	108	4,977	99	32,076
3	LAG 26	76	6,501	120	32,164
4	LAG 41	67	2,697	57	17,693
5	LAG 8	47	5,663	59	29,896
6	LAG 7	72	3,313	74	13,949
7	LAG 58	63	6,649	114	43,946
8	LAG 29	156	8,281	156	49,098
9	LAG 42	96	4,258	62	34,775
10	LAG 18	315	12,322	186	61,466
11	LAG 10	74	10,140	149	60,474
12	LAG 55	41	2,671	53	16,460

projects by submitters was reached or exceeded by a number of LAGs. 85.3 % of the subsidy received was on average allocated to projects. The results of the efficiency evaluation demonstrate, however, that 12 LAGs were significantly more efficient than the rest in using their subsidies.

Although the optimal number of projects accepted under the 2007–2013 LEADER programme is a matter for debate, as part of this evaluation, parameters such as involvement, participation and the level of activity within the LAGs are also being looked at as part of this debate. The most efficient LAGs are those which can maximise the reallocation of the subsidy to the project submitters. A subsidy which is not allocated and which ends up being spent on the operating expenses of a LAG can be viewed as an efficiency gap. It can be argued that operating expenses are essential for the proper functioning of LAGs, but in the technical efficiency evaluation model used, these expenses should be covered with internal funds from LAGs (e.g. from membership fees).

The evaluation of the technical efficiency of LAGs, with respect to the use of subsidies in the 2007–2013 LEADER programme which was relied on the DEA model, has demonstrated that the benefits of this method and approach to evaluation could be reaped by the State Agricultural Intervention Fund, the Ministry of Agriculture, the Ministry of Regional Development, the National Network of Local Action Groups in the Czech Republic and other participants in the flow of public money towards LAGs. The results can be used by these organisations as well as the LAGs themselves to conduct efficiency benchmarking.

The evaluation of the technical efficiency of LAGs based on selected input and output parameters only captures one aspect of efficiency, although the proposed approach is objective and standardised. The choice and combination of input and output parameters presents certain limitations. These limitations also open up, however, new research directions. Additional input and output parameters which might be used in DEA modelling should be looked at, particularly in additive (non-parametric) models, the Malmquist index, etc.

CONCLUSION

The present paper was concerned with the technical efficiency of LAGs in the Czech Republic. The correlation analysis between the selected parameters has demonstrated that the number of projects accepted increased with the amount of subsidy the LAGs received and reallocated. This finding is far from surprising. The calculations have also shown that the amount of subsidy received and allocated in particular LAGs correlated with the LAG population size. There was no significant relationship, however, between the number of projects accepted in particular LAGs and the LAG membership size. This is an important finding which can be cited in debates concerning the importance of size for LAGs, in light of the fact that smaller LAGs are often regarded as less efficient. Nonetheless, returning to the two questions (Q1 and Q2) set out at the beginning, we can say that the smallest MAS c1 [10,000–19,999 inhabitants, see Tab. II] are more efficient than LAGS with a higher number of inhabitants. The correlation analysis performed indicates a moderate positive dependence of the LAG population and the subsidies received and allocated and also the number of municipalities. No correlation was established between LAG population and the number of supported subsidies and number of LAG members. The efficiency results based on the output-oriented DEA model (CCR) show that the smallest LAGs (c1) are more efficient if the two largest LAGs (c7 and c8 categories) are eliminated. It is also of interest that the average LAG population per LAG member is clearly the lowest in the case of c1 (361.25 inhabitants per LAG member), which supports the hypothesis that the number of LAG members is an important factor of efficiency and may have a major impact on the number of funded projects and allocated subsidies. Smaller LAGs have lower operation costs, and the greater part of subsidies goes to project support. LAG members are interested and therefore have better information about subsidies compared with other players in the LAG area. Consequently, a greater number of LAG members in all areas (public administration, local employers, NGOs) generates a higher and better demand for LAG subsidies. Furmankiewicz *et al.* (2016) highlight the imbalanced membership of LAGs in Poland, focusing their research on the smallest group – NGOs.

Technical efficiency modelling, based on the output-oriented DEA model, was used to determine whether the two outputs (the amount of subsidy allocated and the number of accepted projects) indicated an efficiency relative to the two inputs, i.e., operating expenses per LAG member and the total operating expenses. The model assumes that an efficient unit (LAG) is one which can maximise the allocation of the subsidy received and the number of accepted projects. An inefficient unit is one which has high operating expenses relative to the amount of subsidy allocated and the number of accepted projects. Out of the total of 58 LAGs, 12 (20 %) were found to be efficient, while the others were to a varying degree inefficient.

The aim of the paper was not a comprehensive evaluation of the efficiency or performance of LAGs, but instead focused on technical efficiency exclusively. Due to our efforts to achieve transparency and the best possible quantification of performance, our findings also reflect on the activity and structure of LAGs.

In conclusion, the LAG size may be one of the factors influencing the awareness of stakeholders, and also, smaller LAGs may on the whole be more efficient. Our study, however, did not consider the area size, which is discussed in literature. In less populated municipalities, all the inhabitants know and trust one another and typically there is a higher voter turnout. This issue is less important in the case of territorial collaboration between municipalities and stakeholders compared with elected local governments. It is difficult to make the Czech experience with LAGs and the LEADER method universally applicable. As our research has shown, LAG stakeholders view the structure as advantageous for territorial collaboration and believe that its success largely depends on the inhabitants' will to cooperate. The positive understanding of LAGs might also be due to the good experience with LAGs and the considerable fragmentation of Czech municipalities, a fact that very much encourages collaboration.

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