ACTA UNIVERSITATIS AGRICULTURAE ET SILVICULTURAE MENDELIANAE BRUNENSIS

Volume 66 33 Number 1, 2018
https://doi.org/10.11118/actaun201866010293

LEADERAND RURAL DIFFERENTIATION: CZECH REPUBLIC (2007–2013)

Jiří Novosák[1], Oldřich Hájek[1], Joanna Górska-Szymczak[2], Jana Novosáková[1]

[1]Department of Regional Development, Public Administration and Law, Faculty of Management and Economics, Tomas Bata University in Zlin, Mostní 5139, 76001 Zlín, Czech Republic
[2]Jagiellonian College Toruń, Prosta 4, 87-100 Toruń, Poland

Abstract

NOVOSÁK JIŘÍ, HÁJEK OLDŘICH, GÓRSKA-SZYMCZAK JOANNA, NOVOSÁKOVÁ JANA. 2018. Leader and Rural Differentiation: Czech Republic (2007–2013). *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, 66(1): 293–301.

The goal of this paper is to reveal the socioeconomic and environmental characteristic differences between supported and unsupported Local Action Groups (LAGs) from the LEADER programme in the Czech Republic in the programming period 2007–2013. Hence, the associations between the LEADER programme and rural differentiation in the Czech Republic are explored. The results of this study point out that highly rural and disadvantaged LAGs were supported significantly more often, while LAGs with strong urban characteristics and growing suburban LAGs were supported significantly less often in the LEADER programme. Two crucial dimensions of rural differentiation in the Czech Republic were tackled by LEADER, namely rural aspects and socioeconomic disadvantages. This study consequently shows that LAGs may be a highly relevant place-based instrument that compensates for urban-rural gradient and socioeconomic disadvantages of rural areas.

Keywords: rural development, disadvantages of rural areas, LEADER, Local Action Groups (LAGs), rural differentiation, cluster analysis, principal component analysis, the Czech Republic

INTRODUCTION

The Czech Republic's transition from a centralised into a free-market economy has been accompanied by increasing spatial differentiation (see e.g., Blažek and Netrdová, 2012; Bartušková and Vrňáková, 2014). Rural areas have not been left out in this process. Hlavsa (2010) notes growing disparities between rural areas within the Czech Republic. Perlín *et al.,* (2010) and Bernard (2012) point out similarly, increasing spatial heterogeneity in development potential in rural municipalities in the Czech Republic. The mechanism underlying this has been the different abilities of rural areas to cope with ongoing processes of change. These processes include among others, the decreasing importance of agriculture in the economy, depopulation and also population ageing, employment and income loss, and various environmental problems (see e.g., Hlavsa, 2010; Vošta, 2010). Rural differentiation has been taken up as an important research and policy issue.

Traditionally, rural development was treated within the simple core-periphery conceptual framework. In this regard, rural areas are often perceived as a less developed periphery (see e.g., Perlín *et al.*, 2010; Novotný *et al.*, 2015). However, more recent rural development paradigms acknowledge that endogenous potential for development may be released in rural regions (see e.g., Hudečková and Lošťák, 2008; Perlín *et al.*, 2010; Navarro *et al.*, 2016). Stakeholder involvement, networking, good governance, and social capital building are essential components of the paradigm (see e.g., Volk and Bojnec 2014; Lošťák and Hudečková 2010; Ray, 2000; Pollermann *et al.*, 2013). Spatially, the new rural development paradigm emphasizes the need to adapt policies to regional and local needs. The knowledge of rural diversity is consequently, highly desirable (see e.g., Perlín *et al.*, 2010).

Regarding the essence of the new rural development paradigm–LEADER–the most prominent policy initiative was introduced in 1991 (see e.g., Ray, 2000; Shucksmith, 2000). A key LEADER objective is the search for innovative solutions to rural development problems. Moreover, local partnerships, community empowerment, capacity building and sustainable development are essential LEADER principles (see e.g., Shucksmith, 2000; Hudečková and Lošťák, 2008; Teilmann and Thuesen, 2014). Institutionally, Local Action Groups (hereafter referred to as LAGs) implement the LEADER initiative by gathering local actors in their territories (see e.g., Volk and Bojnec, 2014; Lošťák and Hudečková, 2010; Hudečková and Lošťák 2008). LAGs also formulate territorially based strategies as a framework for supporting development projects (see e.g., Navarro *et al.*, 2016; Teilmann and Thuesen, 2014). Hence, LAGs belong to place-based instruments that may tackle not only specific needs of rural areas but also the different natures of their disadvantages. Only the latter is the main interest of this paper.

Two lines of research are integrated in this paper. The first line relates to research on rural differentiation and disadvantages (see e.g., Perlín *et al.*, 2010; Li *et al.*, 2015; Bernard, 2012; Camaioni *et al.*, 2013; Agarwal, Rahman and Errington, 2009; Van Eupen *et al.*, 2012). The second line concerns the research on LAGs understood as a place-based instrument of rural development (see e.g., Lošťák and Hudečková, 2010; Hudečková and Lošťák 2008; Volk and Bojnec, 2014; Teilmann and Thuesen, 2014; Navarro *et al.*, 2016). Due to this, there is special interest in the LEADER programme implemented in the Czech Republic in the programming period 2007–2013. Many, but not all, LAGs were supported by LEADER to implement their local development strategies in this period (see e.g., Lošťák and Hudečková 2010; Hudečková and Lošťák 2008). The main goal of this paper is to show the differences between these two groups of LAGs regarding their socioeconomic and environmental characteristics. This paper adds, moreover, to the literature on rural differentiation in the Czech Republic.

This paper is structured as follows. The second section presents the theoretical framework. The third section introduces materials and methods. The fourth section summarises results that are further discussed in the fifth section. The last section provides conclusions.

Theoretical framework

Comprehending rural differentiation and specifics is an essential element of place-based policies of rural development (see e.g., Van Eupen *et al.*, 2012). Saraceno (2013) mentions the need to adapt rural development policies to local conditions. Similarly, Li *et al.*, (2015) argue that what is needed when indentifying an efficient rural development policy is both recognition of development needs and opportunities for rural areas. Agarwal *et al.*, (2009) display considerable research interest in factors associated with both leading and lagging rural regions. The definition of rural aspects is also debateable and ambiguous. Hence, Novotný *et al.*, (2015) point out different approaches to defining rural aspects in V4 countries, while Camaioni *et al.*, (2013), and Li *et al.*, (2015) review various theoretical frameworks for defining rural areas.

The common denominator of the abovementioned studies is the search for sources of rural differentiation. Camaioni *et al.*, (2013), Van Eupen *et al.*, (2012) distinguish four groups of factors that are relevant in the understanding of rural aspects: (a) socio-demographic factors (e.g. population density, population change, and age structure of population); (b) economic and sector factors (e.g. sector employment, characteristics of agricultural firms; (c) land use factors (e.g. agricultural and built-up land use statistics); (d) geographical factors (e.g., remoteness from large urban centres, transport accessibility). Likewise *et al.*, (2015), and Novotný *et al.*, (2015) accentuate the importance of population density, land use and the agrarian sector for defining rural aspects. Moreover, they add various social aspects (e.g. lifestyle, habits, and peoples' perceptions).

Other studies focussed on the sources of differences in rural development. These especially include economic and human capital relating to education and skills (see e.g. Bernard, 2012; Perlín *et al.*, 2010; Agarwal, Rahman and Errington, 2009; Li, *et al.*, 2015), sector employment (see e.g. Hlavsa, 2010; Li, *et al.*, 2015), unemployment (see e.g. Bernard, 2012; Perlín *et al.*, 2010), entrepreneurial climate (see e.g. Agarwal, *et al.*, 2009) and population dynamics (see e.g. Bernard, 2012; Perlín *et al.*, 2010), social capital relating to the concepts of local participation and stability (see e.g. Bernard, 2012; Agarwal, Rahman and Errington, 2009) and physical capital concerning environmental quality and accessibility (see e.g. Agarwal *et al.*, 2009).

Considering the sources of rural differentiation, several studies suggest a typology of rural areas (see e.g. Camaioni *et al.*, 2013; Perlín *et al.*, 2010). Concerning the Czech Republic, Vošta (2010) notes the existence of at least two types of rural regions, namely suburban-rural areas and peripheral rural areas. Perlín *et al.*, (2010), Bernard (2012) extend the typology by introducing additional types of rural areas. These relate to factors of structural disadvantages, to factors of tourism, and the character differences of rural settlement between Bohemia and Moravia. Hence, Perlín *et al.*, (2010) distinguish at least four subtypes of lagging rural areas: (a) peripheral rural Bohemian areas; (b) peripheral rural Moravian areas; (c) peripheral tourism rural areas; and (d) structurally disadvantaged rural areas. Similar conclusions are provided by spatial analysis given in Bernard (2012).

The variety in rural areas focuses us again on the associations between rural differentiation and rural disparities on one hand, and policy instruments on the other hand. The main interest of concern is about how policy interventions are spatially targeted

to tackle the disadvantages of rural areas. A number of studies show that the more disadvantaged regions may suffer from low absorption capacity, channeling more funds into their less disadvantaged counterparts (see e.g. Perlín *et al.*, 2010; Czyz and Hauke, 2011; Hájek *et al.*, 2014; Blažek and Macešková, 2010; and Janíček and Vaigel, 2016). Territorial competition for funds is crucial in this case, evoking the idea of using some place-based instruments to tackle the problem of low absorption capacity of disadvantaged regions. LEADER has the features of an instrument such as this, due to its spatial closeness. The question remains whether some types of rural areas, considering their disadvantages, are more likely to be supported from LEADER funds than other funds. This is the main innovative feature of this paper, discussed for the LEADER programme implemented in the Czech Republic in the programming period 2007–2013. Moreover, this paper extends the knowledge on rural differentiation in the Czech Republic, by focusing on LAG territories.

MATERIALS AND METHODS

The methodology of this study involves three stages: (a) the extraction of rural disadvantage factors by using exploratory factor analysis; (b) the creation of clusters of rural areas using K-means clustering; and (c) the evaluation of clusters of rural areas regarding support from the LEADER programme implemented in the Czech Republic in the programming period 2007–2013. The methodology is described briefly in this chapter.

The purpose of exploratory factor analysis is to establish meaningful factors underlying rural disadvantages. The input variables of the analysis are presented in Tab. I. All the variables refer to LAG territories and are dated as close to the year 2007 as possible, in order to understand the situation at the beginning of the programming period 2007–2013. The choice of variables was defined by the theoretical framework of rural differentiation discussed in the previous chapter. Two points are noteworthy. Firstly, the variables indicated by asterisks (*) were log-transformed, thus reducing the influence of extreme values. Secondly, the mean of the years 2001 and 2011 was calculated for the variables relating to census data. It was expected that the situation in 2007 was linearly interpolated in this way.

Principal Component Analysis (PCA) with varimax rotation was used for exploratory factor analysis. This is a common approach in rural studies for extracting underlying factors of rural differentiation (see e.g. Camaioni *et al.*, 2013; Li *et al.*, 2015; and Perlín *et al.*, 2010). The Kaiser-Meyer-Olkin measurement of sampling adequacy and Bartlett's test of sphericity were both run to determine whether the variables shared sufficient common variance for PCA. The results showed that the use of PCA was justified. In addition to this, Measures of Sampling Adequacy (MSA) were computed for individual variables. Tabachnick and Fidell (2007) consider 0.6 as an acceptable value for MSA. In our case, the individual MSAs were high enough to warrant retaining all the variables except the variable ENVI_INFRA. Hence, this variable was omitted from the PCA. The number of components was determined by the eigenvalue-one criterion and the interpretability of the component configuration. Three components were extracted from the PCA. Note that components 1, 2 and 3 respectively explained 31.1%, 19.8% and 16.5% of the overall variance, making up a total of 67.3%.

Tab. II shows the rotated component matrix of the PCA, providing information about the loadings of each variable on the three extracted components. The variables with high loadings are essential in identifying the dimensions each component is capturing. Considering the matrix, the first component has high loadings for the variables UNEMPLOY, ENTREPREN, ENTRE_DYN, TERTIARY, POP_CHANGE, LIVELIHOOD, and DISTANCE. These are all socioeconomic disadvantages variables of rural areas. Hence, the first component was labeled "socioeconomic disadvantage" (SOCECO_DIS). The second component has high loadings for the variables DENSITY, PRIMARY, AIR_QUAL, BUILT-UP, and CONTAM. These variables are relevant for urban-rural differences. The second component was therefore, labeled "urbanity-rural aspects" (URBAN_RURAL). Finally, the third component has high loadings for the variables ARABLE, ECOL_STAB, and FOREST. These variables closely relate to land use, resulting in the label of the third component as "land use" (LAND_USE). It is worth noting the strong theoretical background of the three extracted components concerning rural differentiation. Thus, the factors relevant for defining rural aspects (population density, land use and the agrarian sector) and the sources of differences in rural development, including the peripheral aspects, were all involved in the extracted components.

The three extracted components and the variable ENVI_INFRA were used as the input variables for K-means clustering. In this way, clusters of similar LAG territories were identified for further analysis. Three methodological notes are useful here. Firstly, the problems of multi-collinearity and over-parameterization were avoided by using orthogonal principal component scores. Secondly, the choice of using the clustering method was undertaken by the assertion that partition clustering methods are superior to hierarchical clustering methods, considering the influence of outliers (see e.g. Mooi and Sarstedt, 2011) and a high number of observations (see e.g. Meyers *et al.*, 2013). Thirdly, the optimal number of clusters was determined by the Variance Ratio Criterion (see e.g. Calinski and Harabasz, 1974; and Mooi and Sarstedt, 2011) and by the interpretability of the clusters, considering the theoretical framework of this study.

The last stage of the methodology is evaluating the associations between the clusters of LAG territories

I: *List of variables used in exploratory factor analysis*

Variable	Description	Year	Source
AIR_QUAL*	Index of air quality composed of NO_2, PM10 and SO_2 emissions per km^2	Mean of the year 2007–2011	CHMI
ARABLE	Share of arable soil area in the total area (%)	2007	CSO
BUILT-UP*	Share of built-up areas in the total area (%)	2007	CSO
CONTAM*	Number of old contaminated sites per km^2	2007	RSCS
DENSITY*	Population per km^2	2007	CSO
DISTANCE*	Weighted average distance from all regional cities in the Czech Republic; weights derived from city population	2007	ArcGis
ECOL_STAB*	Ratio of ecologically stable and unstable land use types	2007	CSO
ENTRE_DYN*	Number of new businesses and fast growing businesses per population aged 15–64	Mean of the years 2002–2007	CSO, MoF
ENTREPREN*	Share of employers and self-employed in economically active population (%)	Mean of the years 2001 and 2011	CSO
ENVI_INFRA	Share of population having access to water supply and sewerage (%)	Mean of the years 2001 and 2011	CSO
FOREST	Share of forest areas in the total area (%)	2007	CSO
INNOVATIO*	Number of patents and utility models per population aged 15–64	Mean of the years 2002–2007	IPO
LIVELIHOOD*	Number of livelihood allowances disbursed per population	Mean of the years 2007–2008	GAC
SECONDARY	Share of people working in secondary sector in economically active population (%)	Mean of the years 2001 and 2011	CSO
POP_CHANGE	Population change between 1996 and 2007, normalized by the population in 2007	Change between the two years	CSO
PRIMARY	Share of people working in the primary sector in economically active population (%)	Mean of the years 2001 and 2011	CSO
TERTIARY*	Share of people with tertiary education in the population older than 15 years (%)	Mean of the years 2001 and 2011	CSO
UNEMPLOY*	Share of registered unemployed people in the population aged 15–64 (%)	Mean of the years 2005–2007	CSO

* Log-transformed variables
Note: CHMI - Czech Hydro-meteorological Institute; CSO – Czech Statistical Office; GAC – map of excluded sites, available at: https://www.esfcr.cz/mapa-svl-2015/www/indexe14b.html?page=m44; IPO – Industrial Property Office; MoF - Ministry of Finance; RSCS - Register System of Contaminated Sites
Source: own compilation

and how eligible these LAGs are for support from the LEADER programme implemented, under the measure 'Implementation of Local Development Strategies', in the Czech Republic in the programming period 2007–2013. Note that a total of 111 LAGs were supported by this measure while 71 LAGs were NOT. Because of the categorical nature of the variables, the chi-square test was performed with associated levels of probability in order to evaluate the associations. However, the assumption that no cell should have an expected value of less than five was violated for two clusters of LAG territories. Therefore, these two categories were combined without affecting how well the results are interpreted. Finally, the knowledge acquired was extended by comparing the means of the four clustering variables between LAGs that were supported, from ones that were unsupported by the LEADER programme. A two-sided t-test for two independent samples, with Levene's test for equality of variance, was used in this regard. The normality assumption was checked by the Shapiro-Wilk test, indicating a violation of this assumption for the first component due to the presence of outliers. Therefore, the t-test results were compared for two cases: (a) including outliers; and (b) excluding outliers. However, the results remained stable in both cases. Therefore, the results for all LAGs are reported.

RESULTS

This chapter first presents the results of K-means clustering. The Variance Ratio Criterion was used, the solution was interpreted, and six clusters of LAG territories were specified. The final cluster centres are presented in Tab. III. Additionally, Fig. 1 shows the spatial pattern of LAG clusters.

The clusters may be interpreted in the following way; the first cluster is characterized by a low

II: *PCA - rotated component matrix*

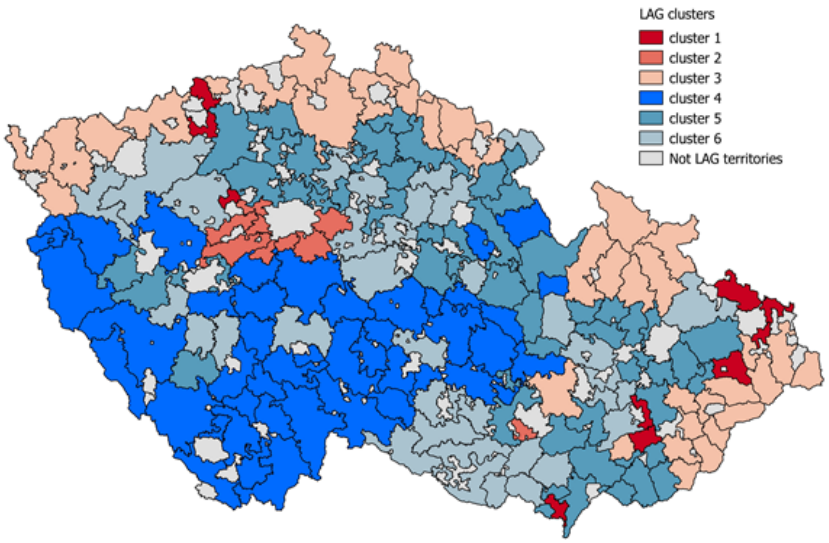
Variable	Component 1	Component 2	Component 3
AIR_QUAL	–0.107	0.822	–0.256
ARABLE	0.116	0.071	–0.967
BUILT-UP	0.216	0.778	–0.491
CONTAM	–0.296	0.602	–0.119
DENSITY	0.138	0.921	–0.135
DISTANCE	–0.545	0.182	0.364
ECOL_STAB	–0.124	–0.106	0.956
ENTRE_DYN	0.812	0.173	0.086
ENTREPREN	0.820	–0.070	0.101
FOREST	–0.058	–0.188	0.940
INNOVATIO	0.372	0.408	0.096
LIVELIHOOD	–0.649	0.091	0.221
SECONDARY	–0.471	0.033	0.236
POP_CHANGE	0.666	0.161	–0.091
PRIMARY	–0.158	–0.828	–0.332
TERTIARY	0.718	0.425	–0.023
UNEMPLOY	–0.851	0.010	0.079
Eigenvalue	5.279	3.372	2.807

Source: own calculations based on data from CHMI, CSO, GAC, IPO, MoF, and RSCS

III: *Cluster centres*

Variable	Clusters					
	1	2	3	4	5	6
SOCECO_DIS	–0.996	2.790	–0.483	0.407	-0.012	-0.461
URBAN_RURAL	2.064	0.738	0.268	–0.933	0.550	-0.693
LAND_USE	–0.062	–0.087	1.438	0.244	-0.470	-0.940
ENVI_INFRA	0.921	–1.125	–0.166	0.439	0.278	-0.734
Number of LAGs	9	9	34	42	53	35

Source: own calculations based on data from CHMI, CSO, GAC, IPO, MoF, RSCS



1: *Spatial pattern of LAG clusters*
Source: own calculations based on data from CHMI, CSO, GAC, IPO, MoF and RSCS

IV: *Categorization of supported and unsupported LAGs into various clusters*

Variable	Clusters					
	1	2	3	4	5	6
Supported LAGs – share	0.9%	2.7%	23.4%	24.3%	27.0%	21.6%
Unsupported LAGs – share	11.3%	8.5%	11.3%	21.1%	32.4%	15.5%
Total	*4.9%*	*4.9%*	*18.7%*	*23.1%*	*29.1%*	*19.2%*

Source: own calculations based on data from CHMI, CSO, GAC, IPO, MoF and RSCS

degree of rural aspects, also by good access to environmental infrastructure and also by many socioeconomic disadvantages. Hence, the LAGs of this cluster have a more urban character and have disadvantages because of their socioeconomic conditions. The second cluster differs from the first, particularly by its excellent socioeconomic conditions and by its poor access to environmental infrastructure. A typical feature of the second cluster is its suburban location in the Prague metropolis and Brno metropolis. Hence, the cluster consists of rapidly growing LAGs in suburban areas of the largest Czech cities.

The two distinctive features of the third cluster are its land use characteristics and relatively poor socioeconomic conditions. The land use characteristics of the LAGs in this third cluster are predominantly heavily forested territories. These are peripheral border areas located especially in northern Bohemia and Moravia. The fourth cluster has very rural characteristics. The LAGs of this cluster are highly rural areas of low population density and the primary sector is relatively important, which extends over a vast territory of western and southern Bohemia. The LAGs of this cluster indicate good socioeconomic and environmental conditions.

The underlying features of the fifth cluster are less rural aspects, and land use has less rural characteristics. However, the values indicate that the LAGs of the fifth cluster can be seen as stable and densely populated rural areas. Note that many of these LAGS are located in Moravia and close to large cities. The sixth cluster resembles the fourth cluster in its high degree of rural aspects. However, the LAGs of this cluster suffer from socioeconomic and environmental disadvantages. Many of these LAGs may be found in inner periphery Czech regions.

Tab. IV provides an insight about associations between the clusters of LAG territories, and also how eligible these LAGs were for support from the LEADER programme under the measure 'Implementation of Local Development Strategies' in the programming period 2007–2013. Two findings are of particular interest here. Firstly, the LAGs of the first, second and fifth clusters are usually classified as unsupported LAGs, while the LAGs of the third, fourth and sixth clusters are classified as supported LAGs. The second finding is that the LEADER status differences seem to be rather small, except for the first and second clusters.

DISCUSSION

The previous chapter presents the empirical results of this study. Firstly, clusters of similar LAG territories were defined by K-means clustering. To our best knowledge, LAGs have not yet been used in research on rural differentiation in the Czech Republic. This study shows unprecedented research by defining six clusters of LAG territories that are labeled as follows: (1) disadvantaged LAGs with strong urban features; (2) growing suburban LAGs; (3) peripheral forested border LAGs; (4) highly rural LAGs of western and southern Bohemia; (5) stable and more densely populated LAGs, and (6) disadvantaged and highly rural LAGs. This classification is substantiated both theoretically and empirically. Sources of rural differentiation given in relevant literature were taken into account when classifications were made, and this forms the basic theory in this study. Spatial clustering of LAGs was classified into those categories. These form the empirical results (see Fig. 1).

The empirical results of this study confirm that rural areas in the Czech Republic are diverse. There is potential to intervene with this diversity. Two intervening approaches may be considered. The first approach is only concerned with internal specifics of particular territories. Interventions are targeted at the needs of these territories. However, this study follows the second intervening approach of also considering the disparities between territories. The main idea is to support the highest development needs of the territories. The place-based instruments, such as LEADER, may tackle this because of their 'spatial closeness'. Tab. IV provides some introductory comments on the issue. It was shown that the LAGs classified into more rural clusters (i.e. clusters 3, 4 and 6) were more likely supported by the LEADER programme than their more urban counterparts (i.e. clusters 1, 2 and 5). Concerning socio-economic disadvantages, the conclusion was not so clear. While the disadvantaged highly rural clusters (i.e. clusters 3 and 6) were more likely supported by LEADER, this was not the case in the first cluster. The results for land use characteristics and access to environmental infrastructure were even more ambiguous.

On the whole, the empirical results provide evidence, albeit weak, that there is a link between LAG territory clusters and support from the LEADER programme in the programming period 2007–2013. Moreover, the main differences seem to arise in the first and second clusters. These results are later discussed in more detail.

V: *Chi-square test results*

Solution	Pearson chi-square	Asymptotic sig.	Cramer's V
Five-cluster solution*	16.261	0.003	0.299
Four-cluster solution**	3.822	0.281	0.153

*clusters 1 and 2 combined
**clusters 1 and 2 excluded from the analysis
Source: own calculations based on data from CHMI, CSO, GAC, IPO, MoF and RSCS

VI: *T-test results – clustering variables*

Variable	Mean difference	t-statistics	Significance
SOCECO_DIS	0.330	2.026	0.045
URBAN_RURAL	0.536	3.419	0.001
LAND_USE	–0.206	–1.362	0.175
ENVI_INFRA	0.012	0.099	0.921

Source: own calculations based on data from CHMI, CSO, GAC, IPO, MoF and RSCS

Tab. V gives chi-square test statistics for comparing the "cluster frequencies" with the "support from the LEADER programme frequencies". Two solutions are presented. The first solution involves all LAG territory clusters, and combines the first and second clusters into one category in order not to violate the rule 'no cell should have an expected value of less than five'. The second solution excludes the first and second clusters from the analysis. The chi-square test values support our introductory comments. The Pearson chi-square is significant at the 0.01 level only for the five-cluster solution. Significantly, on the contrary, the statistical significance is lost after excluding the first and second clusters from the analysis. The most distinctive feature of associations between LAG cluster territories and their support from the LEADER programme in the programming period 2007–2013 is that there was less frequent LEADER support allocated to disadvantaged LAGs that have strong urban features (cluster 1), and also to growing suburban LAGs (cluster 2). The differences between the other clusters of LAG territories are not statistically significant.

Tab. VI presents t-test results that compares the means of the four clustering variables between LAGs supported or unsupported by LEADER. The most significant difference is found for the variable between urbanity and rural aspects. The means are also significantly different for the variable of socio-economic disadvantages, although this is only at the 0.05 level. Hence, highly rural and disadvantaged LAGs were significantly more often supported by the LEADER programme in the programming period 2007–2013. These findings confirm that LEADER has potential to tackle rural disparities.

Finally, t-test were computed to examine differences between the two groups of LAGs on other variables of rural differentiation, as suggested e.g. by Musil and Müller (2008) and Bernard and Šimon (2017). In particular, three variables were used: (a) the share of people aged 15 years and younger in 2007 (source: CSO); (b) the share of people aged 65 years and over in 2007 (source: CSO); and (c) the share of people born in the LAG as the mean of the years 2001 and 2011 (source: CSO). However, no statistically significant differences were found.

CONCLUSION

The goal of this paper is to reveal the differences between LAGs supported or unsupported by the LEADER programme in the Czech Republic and in the programming period 2007–2013, regarding their socio-economic and environmental characteristics. The main findings show that highly rural and disadvantaged LAGs were significantly more often supported by the LEADER programme. On the contrary, disadvantaged LAGs with strong urban features, and also growing suburban LAGs, were both significantly less often supported by the LEADER programme. Hence, LEADER was able to tackle two crucial dimensions of rural differentiation: (a) rural aspects; and (b) socio-economic disadvantages. Consequently, LAGs were confirmed as a relevant place-based instrument that compensates various rural aspects and rural socio-economic disadvantages. This is important when considering the associations between rural aspects, socio-economic disadvantages and also absorption capacity. In this regard, Popescu (2015), Tatar (2010), and Lorvi (2013) point out that disadvantaged rural areas have a relatively low absorption capacity. LEADER may at least partially

help to overcome this problem by stimulating endogenous potential of the most disadvantaged rural areas. However, this opportunity will be lost if LEADER is implemented across the whole territory regardless of rural differentiation and disparities. Finally, it is worth noting that almost 90% of the LAGs supported from the LEADER programme in the programming period 2004–2006 were also supported from the LEADER programme in the programming 2007–2013, while this was the case of only 50% of the LAGs unsupported from the LEADER programme in the programming period 2004–2006. It seems, therefore, that social capital and the capacity to identify, prepare and manage LEADER projects created in the programming period 2004–2006 were of importance for the eligibility of LAGs in the programming period 2007–2013. However, more research is needed on the importance of social capital.

Acknowledgements

The authors are thankful for grant no. 16-22141S 'Determinants of Spatial Allocation of EU Cohesion Policy Expenditures in the Context of Territorial Impact Assessment' provided by the Czech Science Foundation for the financial support to carry out this research. Data provision from the Czech Statistical Office (the Zlín Office) is kindly acknowledged.

REFERENCES

AGARWAL, S., RAHMAN, S., ERRINGTON, A. 2009. Measuring the determinants of relative economic performance of rural areas. *Journal of Rural Studies*, 25: 309–321.

BARTUŠKOVÁ, H., VRŇÁKOVÁ, I. 2014. Regionální disparity NUTS 3 regionů Evropské unie [Regional disparities of NUTS 3 regions of the European Union]. *Scientia et Societas*, 10(3): 44–65.

BERNARD, J. 2012. Prostorové vzorce rozvinutosti venkovských obcí Česka [Spatial patterns in the development of Czechia's rural municipalities]. *Geografie*, 117(1): 72–94.

BERNARD, J., ŠIMON, M. 2017. Vnitřní periferie v Česku: multidimenzionalita sociálního vyloučení ve venkovských oblastech [Inner peripheries in the Czech Republic: the multidimensional nature of social exclusion in rural areas]. *Sociologický časopis/Czech Sociological Review*, 53(1): 3–28.

BLAŽEK, J., MACEŠKOVÁ, M. 2010. Regional analysis of public capital expenditure: to which regions is public capital expenditure channelled – to 'rich' or to 'poor' ones? *Regional Studies*, 44(6): 679–696.

BLAŽEK, J., NETRDOVÁ, P. 2012. Aktuální tendence lokální diferenciace vybraných socioekonomických jevů v Česku: směřuje vývoj k větší mozaikovosti prostorového uspořádání [Contemporary tendencies of the development of spatial pattern on the local level in Czechia, towards higher fragmentation of the spatial pattern]? *Geografie*, 117(3): 266–288.

CALINSKI, T., HARABASZ, J. 1974. A dendrite method for cluster analysis. *Communications in Statistics*, 3(1): 1–27

CAMAIONI, B., ESPOSTI, R., LOBIANCO, A. *et al.* 2013. How rural is the EU RDP? An analysis through spatial fund allocation. *Bio-based and Applied Economics*, 2(3): 277–300.

CZYZ, T., HAUKE, J. 2011. Evolution of regional disparities in Poland. *Quaestiones Geographicae*, 30(2): 35–48.

HÁJEK, O., SMÉKALOVÁ, L., NOVOSÁK, J. *et al.*, 2014. Prostorová koherence národní a evropské regionální politiky: poznatky z České republiky a Slovenska [Spatial coherence of national and European regional policy: the insights from the Czech Republic and Slovakia]. *Politická ekonomie*, 62(5): 630–644.

HLAVSA, T. 2010. The possibilities of complex assessment of the development and categorization of rural areas. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, 58(6): 151–160.

HUDEČKOVÁ, H., LOŠŤÁK, M. 2008. LEADER in the Czech Republic and the farming sector. *Agricultural Economics*, 54(12): 555–565.

JANÍČEK, P., VAIGEL, R. 2016. European Social Fund Investments in the Czech Republic and Slovakia. *International Journal of Public Administration, Management and Economic Development*, 1(1): 19–28.

LI, Y., LONG, H., LIU, Y. 2015. Spatio-temporal pattern of China's rural development: a rurality index perspective. *Journal of Rural Studies*, 38: 12–26.

LORVI, K. 2013. Unpacking administrative capacity for the management of EU structural funds in small and large municipalities: the Estonian case. *Halduskultuur – Administrative Culture*, 14(1): 98–124.

LOŠŤÁK, M., HUDEČKOVÁ, H. 2010. Preliminary impacts of the LEADER+ approach in the Czech Republic. *Agricultural Economics*, 56(6): 249–265.

MEYERS, L.S., GAMST, G., GUARINO, A.J. 2013. *Performing Data Analysis Using IBM SPSS*. Hoboken: John Wiley.

MOOI, E., SARSTEDT, M. 2011. *A Concise Guide to Market Research*. Berlin: Springer.

MUSIL, J., MÜLLER, J. 2008. Vnitřní periferie v České republice jako mechanismus sociální exkluzí [Inner peripheries of the Czech Republic as a mechanism of social exclusion]. *Sociologický časopis/Czech Sociological Review*, 44(2): 321–348.

NAVARRO, F.A., WOODS, M., CEJUDO, E. 2016. The LEADER initiative has been a victim of its own success. The decline of the bottom-up approach in rural development programmes. The cases of Wales and Andalusia. *Sociologia Ruralis*, 56(2): 1–18.
NOVOTNÝ, L., HRUŠKA, V., EGEDY, T. *et al.,* 2015. Defining rural areas of Visegrad countries. *Studia Obszarów Wiejskich*, 39(1): 21–34.
PERLÍN, R., KUČEROVÁ, S., KUČERA, Z. 2010. Typologie venkovského prostoru Česka [A typology of rural space in Czechia according to its potential for development]. *Geografie*, 115(2): 161–187.
POLLERMANN, K., RAUE, P., SCHNAUT, G. 2013. Rural development experiences in Germany: opportunities and obstacles in fostering smart places through LEADER. *Studies in Agricultural Economics*, 115(2): 111–117.
POPESCU, A.S. 2015. The absorption capacity of European funds – concepts. *Annals-Economy Series*, 18(3): 119–125.
RAY, C. 2000. The EU LEADER Programme: rural development laboratory. *Sociologia Ruralis*, 40(2): 163–172.
SARACENO, E. 2013. Disparity and diversity: their use in EU rural policies. *Sociologia Ruralis*, 53(3): 331–348.
SHUCKSMITH, M. 2000 Endogenous development, social capital and social inclusion: perspectives from LEADER in the UK. *Sociologia Ruralis*, 40(2): 208–218.
TABACHNICK, B.G., FIDELL, L.S. 2007. *Using Multivariate Statistics*. Boston: Pearson Education.
TATAR, M. 2010. Estonian local government absorption capacity of European Union structural funds. *Halduskultuur – Administrative Culture*, 11(2): 202–226.
TEILMANN, K.A., THUESEN, A.A. 2014. Important types of LAG-municipality interaction when collaborating on rural development: lessons from Danish LEADER LAGs. *International Journal of Rural Management*, 10(1): 21–45.
VAN EUPEN, M., METZGER, M. J., PÉREZ-SOBA, M. *et al.,* 2012. A rural typology for strategic European policies. *Land Use Policy*, 29(3): 473–482.
VOLK, A., BOJNEC, Š. 2014. Local action groups and the LEADER co-financing of rural development projects in Slovenia. *Agricultural Economics*, 60(8): 364–375.
VOŠTA, M. 2010. Udržitelný rozvoj venkovského prostoru České republiky v kontextu nástrojů Evropské unie [Sustainable development of rural areas of the Czech Republic in the context of instruments of the European Union]. *Acta Oeconomica Pragensia*, 18(5): 20–34.

Contact information

novosak@fame.utb.cz
hajek@fame.utb.cz
jgs@kjt.edu.pl
nekolova@fame.utb.cz