AgroLife Scientific Journal - Volume 6, Number 1, 2017
ISSN 2285-5718; ISSN CD-ROM 2285-5726; ISSN ONLINE 2286-0126; ISSN-L 2285-5718

HAS THE LEADER PROGRAMME BEEN EFFECTIVE IN PROMOTING LOCAL RURAL DEVELOPMENT? AN EVALUATION ON TWO ROMANIAN REGIONS

Cristina Bianca POCOL[1], Călin MOLDOVAN-TESELIOS[2], Daniele CAVICCHIOLI[3], Mirela Irina CORDEA[1]

[1]University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Faculty of Horticulture, 3-5 Mănăștur Street, Cluj-Napoca, 400372, Romania
[2]Metro Media Transylvania, Cluj-Napoca, Romania
[3]University of Milano, Department of Environmental Sciences and Policies, Italy

Corresponding author email: daniele.cavicchioli@unimi.it

Abstract

The aim of the research was to evaluate the effects of projects developed by Local Action Groups (LAGs) on the economic development of rural areas in two development regions of Romania: North-West and North-East. Using Propensity Score Matching (PSM) we have compared communes belonging and not belonging to a LAG having similar characteristics, observing their differences in terms of outcome variables (turnover, number and employees in non-agricultural firms). Results show that there is not a statistically significant difference in change (2011-2015) of outcome variables between the two groups, both in the whole sample and in each region. This points to a lack of effectiveness of LAGs projects in promoting non-agricultural rural development. Furthermore, according to regression results, the outcome indicators are significantly affected by the degree of socio-economic development at the beginning of the examined period.

Key words: *Leader, impact evaluation, rural development, economic growth, Propensity Score Matching.*

INTRODUCTION

Leader Program ('Links between the rural economy and development actions') represents an integrated part of rural development policy in the European Union countries. The main principles of Leader are: 'partnership', 'bottom-up' 'territorial development', 'innovation' and 'cooperation'. Leader Program represents a tool for the socio-economic development of rural areas, through local initiatives and innovations (Esparcia et al., 2016). Leader approach, which has been used for 20 years, allowed local actors to valorise local resources and to create local development strategies through Local Action Groups (LAGs). These entities are created by public, private and civil partnership and they are selected for financial support by the management authorities of European Union member states. LAGs carry out projects, obtained by grants competition (European Commission, 2016).

The Leader Program in Romania started in 2011 and aimed at the valorisation of rural development potential: improvement of economic, social, environmental aspects of rural area - employment, education, health, living standard and quality of life (Rahoveanu and Rahoveanu, 2013; Albu and Chițu, 2014). About 163 Local Action Groups (LAGs henceforth) were chosen over the period 2011. These groups represented a prominent part of both total (63%) and of the Leader (58%) eligible population (National Rural Development Program, 2014-2020). LAGs proved to be successful both in terms of teams' organisation and for their capacity to absorb European Union funds (The National Network for Rural Development, 2015). Mosora (2012) considers that Leader initiatives in Romania represented an economic driver for rural communities and small towns.

Nevertheless LAGs project design skills suffered of lack of innovativeness, yielding proposals quite similar to those presented over the previous National Rural Development Programme 2007-2013 (The National Network for Rural Development, 2015). The Leader approach in terms of innovation can be

understood as the original way of Local Action Groups to identify opportunities, to explore local resources, to change the agricultural and non agricultural sectors, to integrate sustainability issues in their projects (Spada et al., 2016).

In a recent study about the initiatives for promoting innovation among Local Action Groups in Romania, Pocol and Kassai (2016) show that, in the programming period 2007-2013, these actions met to a smaller extent the Leader' anticipations on innovation. Petrescu (2015) considers that innovation was difficult to be found in the Romanian LAGs projects due to various factors: the confusion created, the lack of concept understanding among different stakeholders involved, including management authorities and the excessive bureaucracy. The innovation continues to be an important aspect of Leader approach in the programming period 2014-2020 and lies in how LAGs manage the opportunities identified at local level, for example: promoting energy efficiency, renewable energy, ICT, local products, natural and cultural heritage (The National Network for Rural Development, 2015).

Studies made in Italy demonstrated a contrast between the perception of innovation: "from a programmatic point of view" innovation is seen as an important tool for the development of territories, in terms of competitiveness, social and cultural aspects, "on a local scale" it is reduced to "a product or process innovation" (Labianca et al., 2016). Subjects involved in Leader programs across European Countries too often interpret the concept of innovation in a disappointing manner (Katonáné Kovács et al., 2016).

According to Annibal and Price (2014), Leader can provide instruments, named "small-scale interventions" for encouraging entrepreneurial activities, having as a consequence the sustainable economic growth of rural space.

The European Commission through the Regulation (EU) No. 1305/2013 recommends a stronger assessment of rural development programs, including LAGs activity, hence evaluation is "the eight feature of Leader" (ENRD, 2016). The European Network for Rural Development (2016) provides different tools and methods in evaluating the Leader Program, for both purposes: self-evaluation and external evaluation. The impact assessment could be achieved by using qualitative, quantitative or triangulated approaches. The tools used can be more conventional (desk research, interviews, surveys, census, focus groups and case studies) or more technical and sophisticated ("Most Significant Changes (MSC) Monitoring", "The Potential and Bottleneck Analysis (PBA)", "Plugging the leaks", "Social Network Analysis", "Social accounting", "Measuring the improvement in rural community capacity", "Social Return on Investment (SROI)", "RUDI, the Rural Development Impacts"). Such tools have been used in different contexts across European countries, in order to assess the outcomes of Leader programs.

Annibal and Price (2014) used the SROI approach to measure the economic growth at local level and the long-term effects of Leader. Grieve and Weinspach (2011) developed a working paper on capturing impacts of Leader and of measures to improve quality of life in rural areas and identified four categories of impact: socio-cultural, environment, rural economy and governance.

Evaluations on Leader' impact made in England demonstrated an effective neo-endogenous development: diversification of production, competitiveness and maximisation of local resources, empowerment of local communities through participation in networks and projects that meet local needs (Bosworth et al., 2016). The neo-endogenous development concept is focused on the valorisation of local resources and participation of local actors in the creation and implementation of local development strategies (Guzal-Dec and Zwolińska-Ligaj, 2016).

The impact assessment of Leader Program in Spain reveals the fact that important progress was made in terms of diversification of rural economy, improvement of governance and social capital (Esparcia et al., 2016). Sometimes, Leader was perceived by local society as an "instrument of power" which determined the rise of conflicts and tensions among different stakeholders (Esparcia et al., 2016). In Spain, the economic development is the most recognizable function of Leader Program by local stakeholders, more important

than governance, social capital or local empowerment (Esparcia et al., 2015). A SWOT analysis of the local development strategies belonging to Local Action Groups in Austria reveals the fact that social issues are still subordinate to economic issues (Dax and Oedl-Wieser, 2016). The correlation between the socio-economic development of the Romanian regions measured by GDP/capita, unemployment rate, VDI (village development index) and the value of the LAGs projects was analyzed by Mosora and Mosora (2012). Their results demonstrated a negative correlation in the case of GDP/capita and VDI and a positive correlation in the case of unemployment rate.

There is an increased tendency to recognise the importance of economic activities based on innovation, modernisation and valorisation of local resources and also the role of entrepreneurship for rural development (Dax and Oedl-Wieser, 2016). The technical-entrepreneurial dimension was also mention by De Los Ríos-Carmenado et al. (2012) as being an important factor for increasing regional competitiveness.

Given all the above-mentioned considerations, our research goal points to evaluate the effectiveness of projects carried out by LAGs in two different Romanian regions. The impact of LAGs projects is measured in terms of effectiveness in fostering both diversification and development of non-agricultural activities in rural areas; the level of employment in non-agricultural firms is also evaluated.

The paper aims to contribute to the existing literature by assessing the impact of Local Action Groups on the economic development of rural areas, measured in terms of number of non agricultural companies, total turnover and number of employees (dependent variables). Such evaluation exercise starts from some hypothesis to be confirmed or rejected, based on data evidence:

1. Local action groups (LAGs) created in North-Western and North-Eastern Regions of Romania had a positive impact on the economic growth of rural areas belonging to these regions.
2. The impact of LAGs creation on the development of non-agricultural activities is different in the above-mentioned regions under study.
3. The impact of LAGs on the development of non-agricultural activities is influenced by the socio-economic development of the communes under analysis, where the socio-economic development is measured with IDSL, an index of social development calculated by Sandu (2011) as factorial score from 7 indicators: community level education, the average age of people over 14 years, life expectancy at birth, number of vehicles/1000 inhabitants, average living floor space, gas consumption/capita and residence.

MATERIALS AND METHODS

The research area was represented by the North-West and the North-East development regions of Romania. These units belong to the 8 Romanian regions (level 2 of the Nomenclature of Territorial Units for Statistics) and were established in 1998 with the purpose to attenuate the disparities between territories and to create a better social and economic cohesion. According to Eurostat (2016), the GDP/capita in 2014 was 6500 € in the North-West Region and only 4700 € in the North-East Region (one of the lowest regions in EU ranking of economic development). The unemployment rate in 2014 was 3.8% in the North-West Region and 6.6% in North-East Region. In the same years, there were 1301 registered emigrants in the North-West Region and 1964 in North-East Region (National Institute of Statistics, 2016).

The strong differences in terms of socio-economic development indicators guided our choice in selecting the two regions for this analysis.

In order to test the validity of previous mentioned hypothesis, we made use of statistical matching techniques, in particular of Propensity Score Matching (PSM). According to the literature, PSM is a well-known instrument used in a variety of research fields. Many authors used it in healthcare studies to measure the effect of a treatment by comparing two groups of patients - treated and non-treated (Austin, 2011). In agriculture, PSM was used to measure the impact of farmer fields schools on crop and livestock productivity (Davis et al., 2012), the effects on direct selling on farming profitability (Caracciolo et al., 2015), the

impact of cooperative membership on agricultural intensification and increased market orientation for the small farms (Verhofstadt and Maertens, 2014) or the effect of farm succession on performance (Bertoni et al., 2016). PSM was also used in other fields: education (Hong and Raudenbush, 2005) and policy evaluation research.

In our study, PSM was used to assess the impact of implemented projects developed by LAGs on the establishment of small and medium non-agricultural enterprises and economic growth of rural areas. The statistical tool was also used to test whether the impact of LAGs creation was influenced by the socio-economic development of the commune. The main arguments for using this method were: the data availability for both categories - LAG members or non-members, the advanced stage of projects implementation and the relevant dimension of the sample.

In the present analysis the statistical unit on which all the relevant variables are computed is the UAT (commune). The National Institute of Statistics (2016) defines the commune as a "territorial-administrative unit which includes one or several villages comprising rural population, and it is organized according to economic, socio-cultural and geographical conditions.

The idea behind the PSM is to measure the treatment effect consequent to an external shock, such as a policy intervention. In our case the treated group are the UATs belonging to a LAG (and the treatment are development projects promoted by each LAG). In order to measure the true effect of LAG membership, the PSM selects a counterfactual group of UATs that are as much as possible similar to LAGs UATs, except for LAG membership. The selection of counterfactuals is based on observable characteristics of the treated group listed in the first step. Such observable characteristics are also called confounders. The PSM make a statistical matching, comparing the treated and the control group, measuring the treatment effect (LAG membership) in terms of outcome variables. The outcome variables of interest are number of non-agricultural enterprises, number of employees in non-agricultural enterprises and turnover (volume of sales) of non-agricultural enterprises. Initially, we identified 82 LAGs in the regions under study (Figure 1), which comprises 282 rural UATs (municipality). A set of 627 UATs that do not belong to a LAG have been considered to select the control group (according to the procedure described in the second step) to be compared with the intervention group (UATs belonging to a LAG) according to the procedure described in the third step.

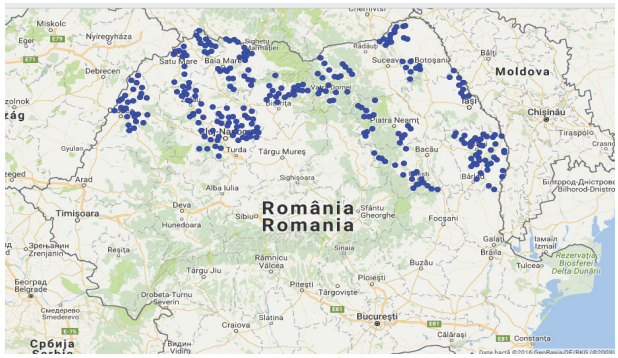

Figure 1. The 82 LAGs used in the research
Source: own composition

Propensity Score Matching consisted of several systematic steps, using the SPSS program (Thoemmes, 2012).

The first step was the selection of a proper pre-test covariates (confounders) used to select a control group of UATs that is similar to the UATs belonging to a LAG. The authors build a set of confounders: housing infrastructure (total number of dwellings, number of majority state ownership dwellings, number of majority private ownership dwellings, finished dwellings, finished dwellings - of which: of population funds, finished dwellings - of which: of private funds, total living floor space, living floor space - majority state ownership, living floor space - majority private ownership, total length of network of drinking water, total simple length of sewerage pipes, total length of distribution pipes of natural gas); population, vital statistics, internal and international migration: total resident population, female resident population, total number of live-births, total number of deaths, number of deaths under one year, late foetal deaths, marriages, divorces, settling of domicile - including external migration, departures from the domicile - including external migration, settlings of the residence, departures from the residence, emigrants, immigrants); working force: total number of employees; infrastructure of

education: school units, pupils enrolled in education system, classrooms, class laboratories, number of PC-s in the school, total number of libraries, public libraries, museums; infrastructure of health: ancillary medical staff – public ownership, ancillary medical staff – private ownership, pharmacies – private ownership, pharmaceutical offices – private ownership, dentist's surgeries – public ownership, family surgeries – public ownership, family surgeries – private ownership, general surgeries – private ownership; tourism: total number of touristic accommodation units, touristic accommodation capacity, arrivals of tourists accommodated in the structure of tourists reception, staying overnight in the establishments of touristic reception; distance to the nearest town. This set of variables has been computed for each UAT both belonging and not belonging to a LAG.

The second step was the estimation of Propensity Score based on the above-mentioned covariates.

This was done using the following regression equation (Thoemmes, 2012):

$$e(x) = P(Z=1 \mid X)$$

where:

(x) is the abbreviation for propensity score, P is the probability, Z=1 a treatment indicator with values 0 for control and 1 for treatment, "|" stands for conditional on and X represents the set of observed covariates (Thoemmes, 2012).

The quality of PSM model, the measure of how the model fits the data is offered by a set of statistical indicators (Cox & Snell R Square and Nagelkerke R Square). As we can see in the Model summary table (Table 1), the values of Cox & Snell R Square and Nagelkerke R Square are at a medium level (the superior limit of Cox & Snell R Square is variable and under 1), indicating a reasonable fitting model.

Table 1. The results of regression equation

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	730,961[a]	0.352	0.496

a. Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

The third step consisted in matching procedure, using the nearest neighbour technique, meaning that a single UAT from intervention group (UAT from LAG) was matched to a single UAT from control group (non-LAG member). After the logistic regression, which gives us the PSM score, the matching (fuzzy procedure, with +/- 0.05 tolerance) can matched only 164 UAT without replacement (Table 2).

Table 2. The structure of the sample

	North-East	North-West	Total
Control Group	88 (53.7%)	76 (45.7%)	164
Intervention group	129 (46.3%)	153 (54.3%)	282
Total	258 (100.0%)	306 (100.0%)	564

The fourth step consisted in several models adequacy checks. It was applied a balancing test to examine if plausible counterfactuals was obtained after the matching procedure (Lee, 2013). The Kolmogorov-Smirnov test indicates a value of p=0.994, sig.=0.277, which means we cannot reject the null hypothesis, and we have a balanced selection of covariates. The Paired Samples Test was also used to test the differences between the intervention and control groups.

These differences between 2015 and 2011 were calculated for the following aspects: number of existing non agricultural companies (dif_f - intervention group, dif_fp - control group), total turnover of these companies in euro (dif_ca - intervention group, dif_cap - control group), total number of employees belonging to these companies (dif_sa - intervention group, dif_sap - control group). A General Linear Model was applied in order to test the third hypothesis.

RESULTS AN DISCUSSIONS

The comparison between the intervention group (UATs belonging to a LAG) and the control group (matched UATs not belonging to a LAG) has been based on three outcome variables used as proxy of economic growth in rural areas. Such variables are the number of non-agricultural companies, their sale volume (turnover) and the number of their employees, all referred to each UAT.

The comparison is carried out over the period 2011-2015.

In both groups, the average number of non-agricultural businesses/commune UAT increased. The trend was quasi-linear for both groups, with an increase of approximately 40% (Figure 2).

In the control group, we identified an increase of the average turnover/commune, while in the intervention group; it can be observed that the growth is not linear (Figure 3).

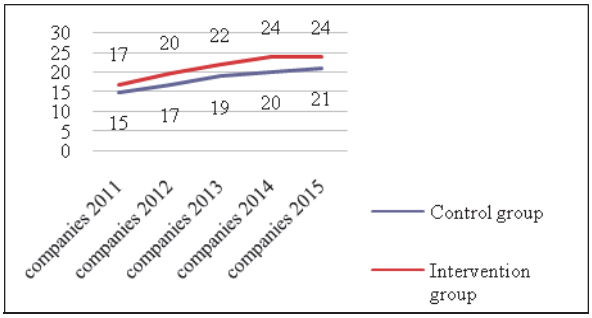

Figure 2. The average number of non-agricultural companies/UAT (commune)

Between 2014-2015, there was a decrease of average turnover with 1,274,109 euro/UAT. This can be explained by the fact that starting to 2014, some companies were not prepared to adapt their strategies to the new rules of programming period 2014-2020.

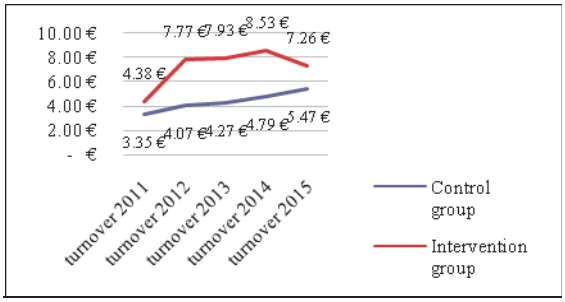

Figure 3. The average turnover (mln euro) of non-agricultural companies/UAT (commune)

Concerning the average number of employees in non-agricultural companies / UAT (commune), there was an increase trend between 2011-2014, followed by a decrease between 2014-2015 (Figure 4), in both analyzed groups.

Table 3. Paired Samples Statistics

Change 2015-2011		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	dif_f	6.800	164	8.364	0.653
	dif_fp	6.555	164	18.068	1.412
Pair 2	dif_ca	2 876 366	164	8 654 674	67 582
	dif_cap	2 118 944	164	6 294 738	491 536
Pair 3	dif_sa	17.531	164	87.256	6.814
	dif_sap	16.360	164	73.671	5.753

The results of Paired Samples Test, used to asses the differences between the intervention and control groups have been computed considering only 164 matched UATs in each group.

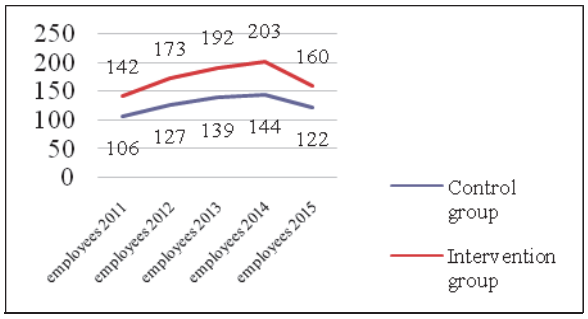

Figure 4. The average number of employees in non-agricultural companies/UAT (commune)

In order to capture the differential effect of the Leader program, for each group has been computed the change in the variable between 2011 and 2015 (see for example tables 3 and 5) and then the change in the control group has been subtracted to the change in treatment group, obtaining the average treatment effect of the LAG membership.

For such effect has been computed the statistical significance in order to test whether the change (2011-2015) in enterprises, turnover and employees have been significantly different as a consequence of LAGs membership (see tables 4 and 6). Such results shows that between 2011 and 2015, in the intervention group, the number of non-agricultural companies increased with an average of 6,800 companies, while in the control group the number of companies increased with 6,555 companies. The difference between the two groups (Table 3), actually the impact of LAG, is 0.234 companies, but the value is not statistically different from 0 (t=0.133, sig.=0.879) (Table 4). Also, the average turnover (euro) of non-agricultural companies/UAT (municipality) increased in the last 5 years with more than 2,000,000 euros in control group and with almost 3,000,000 euros in intervention group.

But, the Paired Samples Test shows us that the differences are not statistically significant. Regarding the number of employees, there was an increase in the last 5 years with 17,531, in intervention group, and with 16,360, in control group.

The difference of 1,171 is not statistically different from 0.

Table 4. Paired Samples Test

Difference Intervention group-control group		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	dif_f - dif_fp	0.244	20.430	1.595	-2.906	3.394	0.153	163	0.879
Pair 2	dif_ca - dif_cap	757 422	10 213 517	797 542	-817 423	2 332 268	0.950	163	0.344
Pair 3	dif_sa - dif_sap	1.171	112.630	8.795	-16.196	18.537	0.133	163	0.894

In these conditions, we can see a progress in terms of development of non agricultural activities in intervention group, compared to control group, but, due to the fact that the difference is not statistically different from 0, we cannot validate the first hypotesis. Then there is not statistical evidence that Local action groups (LAGs) created in North-Western and North-Eastern Regions of Romania had a positive impact on the economic growth of rural areas belonging to these regions. Including the region as a factor (Table 5), and following the same reasoning done for tables 3 and 4, there are no statistical differences in the effect of LAGs within the two-development regions under study (Table 6).

Is the development of locality an influence factor of the impact of LAGs in non-agricultural activities? If we test a General Linear Model for our three observable variables (number of companies–variable COMPANIES, the turnover – variable TURNOVER and number of employees–variable EMPLOYEES) regressed against two factors, LAG (1 – intervention group and 0 – control group) and time (2011 and 2015) and a covariate (IDSL), which is an index of local development, evidences indicate that LAGs membership does not impact significantly on the three outcome variables.

Table 5. Paired Samples Statistic by region

regio Change 2015-2011			Mean	N	Std. Deviation	Std. Error Mean
North -West	Pair 1	dif_f	9.727	77	9.904	1.129
		dif_fp	7.156	77	13.078	1.490
	Pair 2	dif_ca	4 702 784	77	11 944187	1 361 166
		dif_cap	2 773 570	77	7 838 692	893 302
	Pair 3	dif_sa	27.533	77	110.179	12.556
		dif_sap	17.857	77	45.017	5.130
North -East	Pair 1	dif_f	4.207	77	5.606	0.601
		dif_fp	6.023	77	21.611	2.317
	Pair 2	dif_ca	1 259 880	77	3 203 609	343 463
		dif_cap	1 539 561	77	4 480 758	480 388
	Pair 3	dif_sa	8.678	87	59.447	6.373
		dif_sap	15.035	87	92.152	9.880

Table 6. Paired Samples Test by region

Regio			Paired Differences					t	df	Sig. (2-tailed)
			Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
						Lower	Upper			
North-West	Pair 1	dif_f - dif_fp	2.571	17.154	1.955	-1.322	6.465	1.315	76	0.192
	Pair 2	dif_ca - dif_cap	1 929 214	14 003 661	1 595 865	-1 249 227	5 107 655	1.209	76	0.230
	Pair 3	dif_sa - dif_sap	9.675	121.417	13.837	-17.883	37.234	0.699	76	0.487
North-East	Pair 1	dif_f - dif_fp	-1.816	22.846	2.449	-6.685	3.053	-0.741	86	0.460
	Pair 2	dif_ca - dif_cap	-279 681	4 700 816	503 980	-1 281 561	722 199	-0.555	86	0.580
	Pair 3	dif_sa - dif_sap	-6.356	104.372	11.190	-28.600	15.888	-0.568	86	0.571

First example, in the case of the number of companies, the goodness of fit of our model indicates a value for Akaike's Information Criterion (AIC) of 6,373,751 and Likelihood Ratio Chi-Square value is 113,638 (sig.=0.000). As we see in table of parameter estimates, the value of coefficient for [LAG=1] *[YEAR=2015] (the interaction between groups and time) is -0.244, similar with the value of difference result in Paired Sample Test, but not statistical different from 0 (Table 7 and Table 8).

Table 7. Tests of Model Effects - companies

Source	Type III		
	Wald Chi-Square	df	Sig.
(Intercept)	67.726	1	0.000
LAG	1.732	1	0.188
YEAR	7.669	1	0.006
LAG * YEAR	0.003	1	0.960
IDSL	104.324	1	0.000

Dependent Variable: COMPANIES
Model: (Intercept), LAG, YEAR, LAG * YEAR, IDSL

Table 8. Parameter Estimates - companies

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	-37.377	5.8169	-48.778	-25.976	41.288	1	0.000
[LAG=0]	-3.281	3.9216	-10.967	4.405	0.700	1	0.403
[YEAR=2011]	-6.799	1.6414	-10.016	-3.582	17.158	1	0.000
[LAG=1] * [YEAR=2015]	-0.244	4.8219	-9.695	9.207	0.003	1	0.960
IDSL	1.362	0.1334	1.101	1.624	104.324	1	0.000
(Scale)	953.285[b]	52.6364	855.506	1062.240			

Dependent Variable: COMPANIES
Model: (Intercept), LAG, YEAR, LAG * YEAR, IDSL

Second example, in the case of the turnover, the goodness of fit of our model indicates a value for Akaike's Information Criterion (AIC) of 25,608 and Likelihood Ratio Chi-Square value is 66,898 (sig.=0.000). As we see in table of parameter estimates, the value of coefficient for [LAG=1]*[YEAR=2015] (the interaction between groups and time) is -3,408,400, higher than the value of difference result in Paired Sample Test, but not statistical different from 0 (Table 9 and Table 10).

Table 9. Tests of Model Effects - turnover

Source	Type III		
	Wald Chi-Square	df	Sig.
(Intercept)	33.443	1	0.000
LAG	1.399	1	0.237
YEAR	4.010	1	0.045
LAG * YEAR	0.092	1	0.761
IDSL	39.763	1	0.000

Dependent Variable: TURNOVER
Model: (Intercept). LAG. YEAR. LAG * YEAR. IDSL

Table 10. Parameter Estimates - turnover

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	-75 209 155	13 979 816	-102 609 091	-47 809 218	28.943	1	0.000
[LAG=0]	-8 354 780	9 211 568	-26 409 121	9 699 561	0.823	1	0.364
[YEAR=2011]	-12 943 646	8 553 821	-29 708 827	3 821 535	2.290	1	0.130
[LAG=1] * [YEAR=2015]	-3 408 400	11 225 845	-25 410 651	18 593 852	0.092	1	0.761
IDSL	2 386 537	378 468	1 644 754	3 128 320	39.763	1	0.000
(Scale)	5 166 803E9	285 288E9	4 636 840E9	5 757 337E9			

Dependent Variable: TURNOVER
Model: (Intercept), LAG, YEAR, LAG * YEAR, IDSL

Third example, in the case of the turnover, the goodness of fit of our model indicates a value for Akaike's Information Criterion (AIC) of 9,444,931 and Likelihood Ratio Chi-Square value is 87,078 (sig.=0.000). As we see in table of parameter estimates, the value of coefficient for [LAG=1] * [YEAR=2015] (the interaction between groups and time) is -1,171, similar the value of difference result in Paired Sample Test, and not statistical different from 0 (Table 11 and Table 12).

Table 11. Tests of Model Effects - employees

Source	Type III		
	Wald Chi-Square	df	Sig.
(Intercept)	50.931	1	0.000
LAG	2.375	1	0.123
YEAR	0.458	1	0.499
LAG * YEAR	0.001	1	0.981
IDSL	62.608	1	0.000

Dependent Variable: EMPLOYEES
Model: (Intercept). LAG. YEAR. LAG * YEAR. IDSL

Table 12. Parameter Estimates - employees

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	-407.992	64.225	-533.872	-282.112	40.354	1	.000
[LAG=0]	-39.185	35.992	-109.727	31.358	1.185	1	.276
[YEAR=2011]	-17.530	35.159	-86.440	51.379	.249	1	.618
[LAG=1] * [YEAR=2015]	-1.171	50.099	-99.364	97.022	.001	1	.981
IDSL	12.562	1.588	9.450	15.673	62.608	1	.000
(Scale)	102,908	5,682	92,353	114,670			

Dependent Variable: EMPLOYEES
Model: (Intercept), LAG, YEAR, LAG *YEAR, IDSL

Results emerged from the previous section deserve to be discussed in some details. At first glance, looking at Figures 2, 3 and 4 the treatment group (having UATs belonging to a LAG) seems to have better economic development indicators than its counterfactual group. Over all the examined period (2011-2015) the number of non-agricultural companies, their turnover and their employees were constantly higher in LAG communes than in similar areas out of the Leader Program. This seems to be a contradiction, as the Leader Program is meant, among others, to bring less developed rural areas at the same socio-economic development level of other territories. In our analysis the situation seems to be reversed and this is a quite unexpected evidence of our analysis that would suggest a more depth inquiry about the level of socio-economic development of those rural areas included in the control group. This aspect, however, is out of the scope of the present analysis even if deserve attention in future research. Moving to the comparison among the three research questions and the results of the analysis, the statistical evidence points to a non significant treatment effect of Local Action Groups initiatives on the economic development of the rural areas under their membership (Research question 1). The LAG impact measurement is based firstly on the change in outcome variables over the 2011-2015 period both in LAGs and non-LAGS groups (second column table 3) testing whether the difference in such change is statistically significant between the two groups (last column Table 4). From our analysis emerges that in areas under Local Action Groups, the improvement of economic indicators has not been significantly higher than in similar areas out of LAG initiatives. Such evidence, however, pertains the whole sample of LAGs-non LAGs areas examined; it is then plausible ask whether this lack of impact is different in the two regions under scrutiny (North-East and North-West), as pointed by the research question 2. Following the same reasoning made in answering to research question 1, Table 5 and 6 report the results of table 3 and 4 for the two Regions. From the last column of Table 6 none of the impact variables are significantly different between LAGs and non-LAGs groups, in both Regions. The actions promoted by LAGs have then been not effective in fostering economic development, both in the North East and in North West regions. Even if change in economic indicators is not significantly different between the two groups, it is relevant testing whether and to what extent the three indicators of economic development of non-agricultural activities are influenced by the degree of socio-economic development (research question 3). This point has been addressed within a regression analysis framework, where the dependent variables were the economic indicators (number of companies, turnover and employees) and the explanatory variables were LAG membership, time and a proxy of socio-economic development (IDLS, described in the introduction). It turned be out that economic performance indicators are affected positively and significantly by the initial degree of socio-economic development (Tables 8, 10 and 12). This result is compatible with a vast amount of literature that points to a positive effect of social capital (closely linked to socio-economic development) on the economic prosperity of rural areas.

CONCLUSIONS

In the present analysis we have tested the effectiveness of actions promoted by Local Action Groups (LAGs) in fostering the economic development of non-agricultural activities (measured in terms of number of enterprises, their turnover and their employees) in two regions of Romania. In particular has been compared the 2015-2011 difference in LAGs and non-LAGs areas. Statistical evidence points to a non-significant difference in economic indicators, suggesting that action undertaken by LAGs did not achieve the goal of promoting economic development of non-agricultural activities in rural areas of their pertinence. Such lack of impact applies to both of the regions examined (North-East and North-West). The effect of socio-economic development on economic performance in non-agricultural activities has also been tested, and turned out to be positive and significant. Interestingly in the group of communes belonging to a LAG, the levels of non-

agricultural activities indicators were higher than those observed in the control group (communes not belonging to a LAG). According to the criteria used to assign the communes to a LAG the situation were expect to be reversed. However we have not tested the statistical significance of such difference between groups, and this issue should be explored more deeply in future researches. The main point that emerges in our research is the lack of efficacy of LAGs in promoting economic development of non-agricultural activities in the two regions examined over the period 2011-2015. As LAGs are an important tool of the Leader Program our results points to two different considerations. The first one is on the research side: further analyses are necessary to confirm or refute our evidence, replicating the impact assessment in other regions of the Country and fixing some potential methodological caveats in the present paper. For instance a potential limitation is the lack of counterfactual communes (164) with respect to the whole sample of treated communes (282). A possible improvement would be to enlarge the number of counterfactuals, in order to have more reliable results. On the policy implication side, our evidence points to an in depth analysis of the actions adopted by LAGs, in order to isolate the less and more effective in achieving the Leader Program goals, abandoning the former and enhancing the latter. The kit of qualitative methods for impact assessment mentioned in the introduction may be useful in performing such selection

REFERENCES

Albu R.G., Chitu I.B., 2014. Local Action Groups (LAGS)-An Important Instrument in Ensuring the Sustainable Development of Rural Areas in Romania. Bulletin of the Transilvania University of Brașov, Economic Sciences. Series V, 7(2), p. 97-104.

Annibal I., Price L., 2014. The Role of 'Leader' in Delivering Resilient Communities. Exploring Rural Enterprise: New Perspectives on Research, Policy & Practice (Contemporary Issues in Entrepreneurship Research, Vol. 4) Emerald Group Publishing Limited, 4, p. 81-104.

Austin P.C., 2011. Comparing paired vs non-paired statistical methods of analyses when making inferences about absolute risk reductions in propensity-score matched samples. Statistics in medicine, 30(11), p. 1292-1301.

Bertoni D., Cavicchioli D., Latruffe L., 2016. Impact of succession on performance: The case of the Italian family farms. In 149th EAAE Seminar "Structural change in agri-food chains: new relations between farm sector, food industry and retail sector", Rennes, France, p. 27-28.

Bosworth G., Annibal I., Carroll T., Price L., Sellick J., Shepherd J., 2016. Empowering Local Action through Neo-Endogenous Development. The Case of LEADER in England. Sociologia Ruralis, 56(3), p. 427-449.

Caracciolo F., Bonanno A., Lombardi A., Pascucci S., Cembalo L., 2015. Farming profitability of direct selling in Italy: A propensity score matching approach. In 144th EAAE Seminar "9th International European Forum on System Dynamics and Innovation in Food Networks", Igls, Austria, February 9-13.

Davis K., Nkonya E., Kato E., Mekonnen D.A., Odendo M., Miiro R., Nkuba J., 2012. Impact of farmer field schools on agric. productivity and poverty in East Africa. World Development, 40(2), p. 402-413.

Dax T., Oedl-Wieser T., 2016. Rural innovation activities as a means for changing development perspectives - An assessment of more than two decades of promoting LEADER initiatives across the European Union. Studies in Agricultural Economics, 118(1), p. 30-37.

De Los Ríos-Carmenado I., Adrian T.R., Miguel S., Pablo R., 2012. Territorial competitiveness for rural development in Romania: Analysis of critical influential factors from WWP model. Agrarian economy and rural development - realities and perspectives for Romania, p. 89-94.

Esparcia J., Escribano J., Serrano J.J., 2015. From development to power relations and territorial governance: Increasing the leadership role of LEADER Local Action Groups in Spain. Journal of Rural Studies, 42, p. 29-42.

Esparcia J., Escribano J., Buciega A., 2016. A perspective of LEADER Method in Spain based on the Analysis of Local Action Groups. Evaluating the European Approach to Rural Development: Grass-roots Experiences of the LEADER Programme. Ashgate, Perspectives on Rural Policy and Planning, p. 33-51.

Grieve J., Weinspach U., 2011. Capturing impacts of Leader and of measures to improve Quality of Life in rural areas. In 122nd EAAE Seminar "Evidence-based agricultural and rural policy making: methodological and empirical challenges of policy evaluation", Ancona, p. 1-13.

Guzal-Dec D., Zwolińska-Ligaj M., 2016. The impact of LEADER Programme on entrepreneurship and employment in the context of multifunctionality of rural areas. A case study of UE peripheral region (Lublin Voivodeship, Poland). In 160 EAAE Seminar "Rural Jobs and the CAP", Warsaw, Poland.

Hong G., Raudenbush S.W., 2005. Effects of kindergarten retention policy on children's cognitive growth in reading and mathematics. Educational Evaluation and Policy Analysis, 27, p. 205-224.

Katonáné Kovács J., Navarro F., Labianca M., 2016. Introduction: Human and social capital in rural areas.

Studies in Agricultural Economics, 118(1), p. 1-4.
Labianca M., De Rubertis S., Belliggiano A., Salento A., 2016. Innovation in rural development in Puglia, Italy: critical issues and potentialities starting from empirical evidence. Studies in Agricultural Economics, 118(1), p. 38-46.
Lee W.S., 2013. Propensity score matching and variations on the balancing test. Empirical economics, 44(1), p. 47-80.
Mosora L.C., Mosora M.H., 2012. The importance of local action groups in the Romanian European integration process: An empirical study. Informatica Economica, 16(4), p. 44-48.
Mosora L.C., 2012. The local development initiatives in the rural development context. Theoretical and Applied Economics, 6(6), p. 75-84.
Petrescu C., 2015. Association and Cooperation in Romanian Rural Areas-the Leader Experience 1. J. of Community Positive Practices, 15(2), p. 28-42.
Pocol C.B., Kassai Zs., 2016. Initiatives for promoting innovation among local Action Groups in Romania. Bulletin UASVM Horticulture, 73 (2), p. 291-298.
Rahoveanu A.T., Rahoveanu M.M.T., 2013. Socio-Economic development prospects of rural areas in the context of application of LEADER program in Romania development. 13(4), p. 295-302.
Sandu D., 2011. Disparitati sociale in dezvoltarea si in politica regionala din Romania in International Review of Social Research. 1, p. 1-30.
Spada A., Fiore M., Caruso D., Contò F., 2016. Explaining Local Action Groups Heterogeneity in a South Italy Region within Measure 311 Axis III Notice of LDP. Agriculture and Agricultural Science Procedia, 8, p. 680-690.
Thoemmes F., 2012. Propensity score matching in SPSS. Univ. of Tubingen, http://www.human.cornell.edu/hd /qml/upload/Thoemmes_2012.pdf (accessed 1st of Sept., 2016).
Verhofstadt E., Maertens M., 2014. Smallholder cooperatives and agricultural performance in Rwanda: do organizational differences matter? Agricultural Economics, 45(S1), p. 39-52.
***European Commission, 2016. Leader+, Available online https://ec.europa.eu/agriculture/rur/leaderplus/faq_en.htm#188 (accessed on 19th of September, 2016).
***Eurostat, 2016.2014 GDP per capita in 276 EU regions, http://ec.europa.eu/eurostat/documents/2995521/7192292/1-26022016-AP-EN.pdf/602b34e8-abba-439e-b555-4c3cb1dbbe6e (accessed on 17th of June, 2016).
***National Rural Development Program 2014-2020, 2016. Available on line at http://www.madr.ro/pndr-2014-2020/implementare-pndr-2014-2020/documente-aprobate.html (accessed 2nd of November, 2016).
***National Institute of Statistics, 2016. Administrative organisation of Romanian territory, by administrative units category, macroregions, development regions andcounties, http://statistici.insse.ro/shop/index.jsp?page=tempo3&lang=en&ind=ADM101A (accessed on 6th of August, 2016).
***The European Network for Rural Development, 2016. Leader Monitoring and Evaluation, Tools and Methods, http://enrd.ec.europa.eu/leader/leader-tool-kit/monitoring_evaluation/tools_methods_en (accessed 1st of Nov., 2016).
***The National Network for Rural Development, 2015. Publicația Tematică Numărul 30, GAL, http://madr.ro/docs/dezvoltare-rurala/rndr/bu-letine-tematice/PT30.pdf (accessed on 15th of Aug., 2016).
***Regulation (EU) No. 1305/2013 of the European Parliament and of the Council of 17 December 2013 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) and repealing Council Regulation (EC) No. 1698/2005, http://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:32013R1305 (accessed 16th of Oct., 2016).