

## ROLE OF FINANCIAL SUBSIDIES ALLOCATED BY THE CAP AND OUT EMIGRATION IN ROMANIAN RURAL AREAS

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### **Abstract**

*In all European countries there has been a significant emigration from the countryside and this has been particularly intense in some nations after the collapse of Communist regimes. On average every year more than 15.000 Romanian people emigrate to other countries. The purpose of this paper was to investigate by a quantitative approach over the time 2007-2013 the main correlation between the emigration in all Romanian counties and financial supports allocated by the Common Agricultural Policy. The methodology has used a multiple regression model comparing Fixed Effect (FE) panel data to pooled Ordinary Least Square (OLS). Hausman's test has pointed out as the FE approach has been the best in estimating the parameters of the multiple correlation. Findings have highlighted out a positive correlation between rural emigration and financial payments allocated by the first pillar of the CAP. The impact of financial supports allocated by the second pillar of the CAP has not implied any effects in reducing emigration from Romanian countryside. In general, less favoured rural areas, characterised by a low level of assets and investments have had the highest level of permanent emigration. Summing up, the Rural Development Plan should implement the financial allocation towards rural areas which recently are involved in an intense process of counter-urbanization from urban space.*

**Keywords:** permanent emigration, multiple regression model, panel data, Rural Development Plan, counter-urbanization.

**Clasificare JEL :** Q18, R10

### **1. Introduction**

Since the end of the Second World War in all European countries there has been an intense emigration from the countryside towards the urban space able to offer newly employment opportunities with the consequence to make worse living conditions of population in rural areas [17]. This author has argued as from the 1970s in many states there has been a counter urbanisation with the consequence to generate a new productive model in the countryside correlated to a new idea and a new approach by urban citizens in favour of rural areas; hence, the rural space is being enriched by different significance and intrinsic values. In fact, farmer is able to produce different positive codified and not codified services towards the urban space as a consequence of the transition from a productivist model to a post productivist one [16]-[23]. Recent studies have argued about this latter concept emphasizing by contrast a territorial element or rather a diversification in the agrarian fabric linked to kaleidoscopic and heterogenic rural contexts able to reinforce the multifunctionality in the countryside [26]-[27].

Countries located in a framework of planned economies have not been influenced by rural out emigration phenomenon even if aftermath the collapse of Communist regimes the exodus from the countryside has arisen significantly. In theoretical terms, it is extremely harsh to define a specific role that the Common Agricultural Policy (CAP) has had in contrasting the social-economic dichotomy between rural versus urban spaces [12] and some scholars, by a quantitative approach, have tried to estimate whether there is a nexus between rural emigration and subsidies allocated by the CAP [22]. These authors have highlighted the fundamental role of quantitative methods in order to investigate the strategic function of medium term political choices in reducing rural emigration with different effects in some investigated European countries.

Before the enlargement of the EU the European Commission has financed lots of initiatives by the Sapard, Ispa and Phare programmes aimed at making less traumatic the transition from a planned economy to an open economy in a perspective of the enlargement and the entry in the European Union able in the same time in implementing agrarian enterprises and productive fabric [9].

Over the time 2007-2013 the National Rural Development Plan has been able to support financially throughout specific measures a significant generational turnover in Romanian farms where it is possible to find a new innovative and high skill generation of entrepreneurs at the head of small farms which by the diversification of activities have

efficiently stopped out the haemorrhage from the rural areas [10]. In other European countries findings have strengthened the counter-urbanization phenomenon [19]. In particular, in Spanish rural areas some scholars have highlighted as a consequence of counter-urbanization there has been a growth of rural activities in some areas where significant has been the presence of people coming from the urban space [19] looking for a rural idyllic atmosphere in the countryside [4]-[5]-[20]-[21].

According to the estimation published by the European Commission in 2007, almost 2 million of Romanian and Bulgarian people may emigrate leaving definitely poor less favored rural areas even if focusing the attention on the phenomenon of rural out emigration from Romanian countryside is obvious as this latter aspect is sometimes a temporary remover of labour force [17]. The negative consequence of the emigration is to impoverish rural areas reducing lots of opportunities in tourism services and healthcare in order to modernize the primary sector. Kasimis and Papadopoulos in 2005 have highlighted as one of the main effect in transformation in the European countryside by the CAP has been to foster an exodus from the countryside to urban areas with negative impact on the restructuring process in rural areas [18].

## 2. Aim of the research

The purpose of this research was to assess main correlations between the variable emigration from Romanian rural areas, using the time series of data published by the Romanian Statistical National Institute (INSEE) since 2007 to 2013, and the financial subsidies allocated by the Common Agricultural Policy (first and second pillar) and other economic variables investigated by the Farm Accountancy Data Network.

The European Union in 1965 by the Council Regulation number 79 established an annual analysis on a sample of farmers through a specific in depth investigation called Farm Accountancy Data Network (FADN); the aim of this analysis is to evaluate the impact of Common Agricultural Policy decisions towards European farmers. FADN is an annual survey which covers approximately 80,000 European farms and a population of about 5,000,000 farmers located in all European countries able to represent more than 90% of utilized agricultural area [8]. In this quantitative analysis we have used the data published by the European Union in the Farm Accountancy Data Network (FADN) since 2007 to 2013.

A literature review has pointed out as previous studies have argued as before the MacSharry reform of the CAP, there has been a greater impact of direct payments paid by the first pillar on the income distribution towards European farmers [19]. As a consequence of the enlargement of the EU and due to the respect of WTO rules, there has been a significant shrinking of direct payments to ag-commodities and to farmers as well. By contrast many scholars have argued that direct payments have been more efficient than other typologies of financial aids provided by the CAP even if the amount of supports has had an unequal distribution among countries because of the small size of agrarian surface of farms [25]. This latter aspect assumes a pivotal role in poorest rural areas in new comers member states of the European Union[6]. Focusing our attention on the Romanian rural spaces more than 70% of agricultural enterprises are classified as subsistence and semi-subsistence farms, due to poor agricultural areas, and towards them the fundamental are the financial subsidies allocated by the second pillar of the CAP able to support their role of public goods in producing positive externalities and in reducing socio-economic marginalization of rural areas [10]-[11]-[15].

## 3. Methodology

Using a quantitative approach and different source of data from 2007 to 2013 such as FADN dataset and annual results of demographic statistics in order to evaluate the permanent emigration from rural areas published by the INSSE in TEMPO on line lime series, the paper has estimated by a multiple regression model the main relationships among financial supports allocated by the first and second pillar of the CAP and rural out emigration.

The multiple regression has estimated the parameters using a panel data approach which is a good tool to reduce and to explain the heterogeneity in units of observation over the time [13]. This latter methods is pivotal to analyse the most significant changes during the time of study in all Romanian counties, estimating effects inside and outside different set or clusters of administrative units using the main information within and between groups and reducing consequently the statistical error term [2] [3].

Roughly speaking, a linear model of regression can be written as [2]-[13]:

$$y_{it} = x_{it}\beta + c_i + z_i + e_{it} \quad (1)$$

$i=1...N$  in terms of units,

$t=1...T$  in terms of time of investigation

In the above mentioned formula  $\beta$  is a vector  $k \times 1$  dimension made by  $\beta_1, \beta_2... \beta_k$  parameters and  $x_{it}$  is a vector  $1 \times k$  dimension of explanatory independent variables refer to the time of observation. The term  $c_i$  is a not observed component or rather an unobserved heterogeneity, specially whether  $i$  is an individual it takes the name of individual effect or individual heterogeneity. The term  $c_i$  in the equation is able to generate a correlation between  $y_{it}$  and  $y_{is}$  even

if  $e_{it}$  is uncorrelated over the time and among different units of observation;  $z_i$  is a vector of variables refer specifically to  $i$  which is time invariant. The error term  $e_{it}$  is made by residuals called idiosyncratic errors or disturbances. The main reason of using panel data is due to a problem of variable omission and this is particularly true if one has a cross-section dataset hence, in the model there is a random variable not observable as  $c_i$  and the model can be written as [2]-[3]-[13]:

$$y_i = x_i\beta + c_i + e_i \quad (2)$$

In the case  $c_i$  is a random variable impossible to observe in the model; if it is not possible to exclude that  $\text{cov}(x_{ki}, c_i) \neq 0$ , where  $x_k$  is the  $k$ -nth variable, for any  $k$ , omitting  $c_i$  from the estimated model because it is not an observable term or it is not available hence, the model absorbs the error term in this equation:

$$y_i = x_i\beta + \eta_i \quad (3)$$

where  $\eta_i = c_i + e_i$  could cause serious issues because  $x_{ki}$  would be an endogenous variable [ $\text{cov}(x_{ki}, \eta_i) \neq 0$ ] in the above mentioned equation. Summing up, without more specifications it is not possible to assess  $\beta$  in a consistent and unbiased way.

In general, the function of a linear regression fixed effect (FE) panel model used in this paper is written in algebraic terms in this equation [1]-[3]-[24]:

$$Y_{it} = a_i + x'_{it}\beta + u_{it} \quad (4)$$

$a_i$  are  $N$  constant unknown parameters

$t$  stands for the time periods of observation that is 1, 2, 3, ..... $T$

$i$  are the analysed section that is 1, 2, 3, .... $N$

$u_{it}$  error term

The panel data fixed effects model is useful to investigate a panel dataset when one assumes there are fixed effects or rather there are individual effects such as in our case of study with a nexus to the different Romanian counties, hence, every individual effect is not constant and unknown in each section which can be used as fixed [1]. A simple way to define the fixed effect in a panel data model is to introduce in the regression model a dummy variable in every unit of observation or rather in every  $i$ -nth Romanian county [1]-[13]-[24]:

$$Y_{it} = \sum_{j=1}^N a_j d_{ij} + x'_{it}\beta + u_{it} \quad (5)$$

where  $d_{ij}$  is 1 if  $i = j$  0 otherwise and the model is made by  $N$  dummy variables estimating the parameters  $a_j$  and  $\beta$ .

In this model the basic assumptions are that  $u_{it}$  is independent and identically distributed among all investigated counties and over the time of investigation and also  $u_{it} \sim N(0, \sigma^2_e)$  [13]. Comparing the Random Effects panel data model to the Fixed Effect the latter is able to estimate individual effects as a part of the error term in a stochastic way [24] hence, effects in Fixed Effect panel data are related with regressors.

The estimation of parameters was carried out using the open source GRETL software. The pooled Ordinary Last Square estimator has been useful and it has been efficient but comparing this latter to the Fixed Effect (FE) panel data in terms of parsimony, using the Akaike Criterion, Hannan-Quinn and Schwarz criterions as well, it emerges as FE has been more thrifty than pooled OLS.

The Hausman test has been used to decide which between Fixed Effect panel data and Random Effect panel data was the best [14]; this statistic test has been able to demonstrate if there is a significant difference between these two approaches Fixed versus Random Effect panel data [24] and it has justified the use of the fixed effect panel data to estimate the model of regression with a not significant error of parameters [1]. The random effect panel data assessed by the Generalized Least Square (GLS) has been less efficient than pooled OLS and FE panel data because there are fluctuations over the time of investigation; furthermore, the Hausman test has pointed out as Fixed Effect has been more adequate than pooled OLS and Random Effect Panel data in investigating the emigration from the countryside. The  $p$ -value of the estimated chi-square has been able to assess if there have been significant differences between the Fixed and Random Effect panel data model [13].

#### 4. Results and discussion

In Romanian counties since the early 1990s there has been a significant and steady increase of temporary departures and inner emigration among Romanian counties even this has particularly involved urban population than

rural one with the exception from 1990 to 1996 when the departure from rural areas were highest than from urban space (Figure 1). In general, the economic crises seems to act directly on the domestic departures slackening the movement between Romanian counties.

Figure no 1. **Temporary departures and inner emigration in Romania** (Source: elaboration on data INSSE in TEMPO on line time series on the website <http://statistici.insse.ro/shop/?lang=en>)

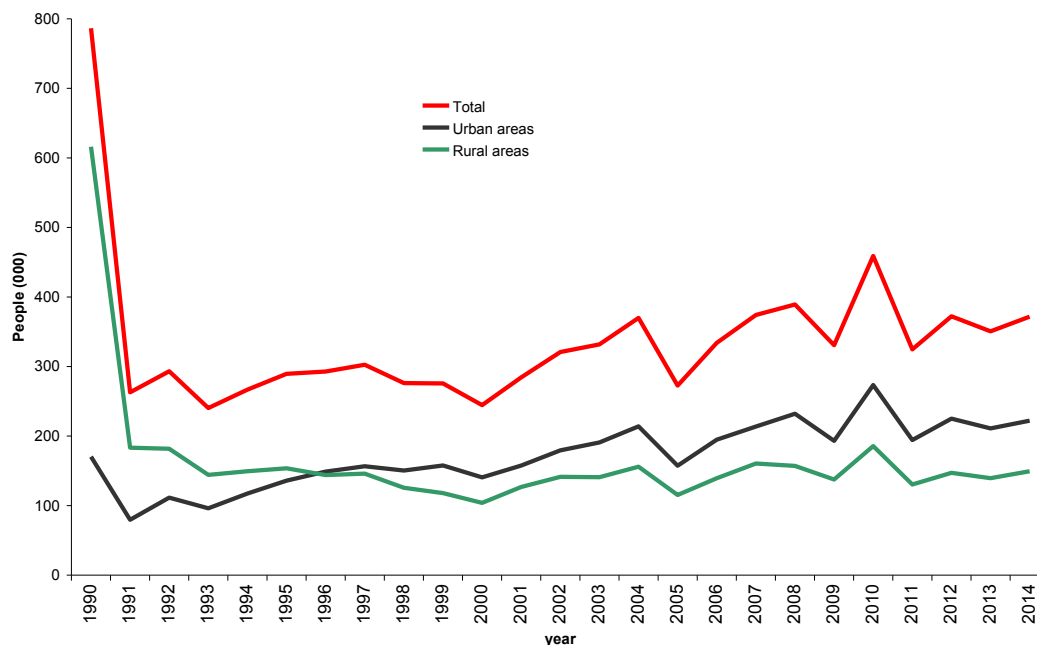
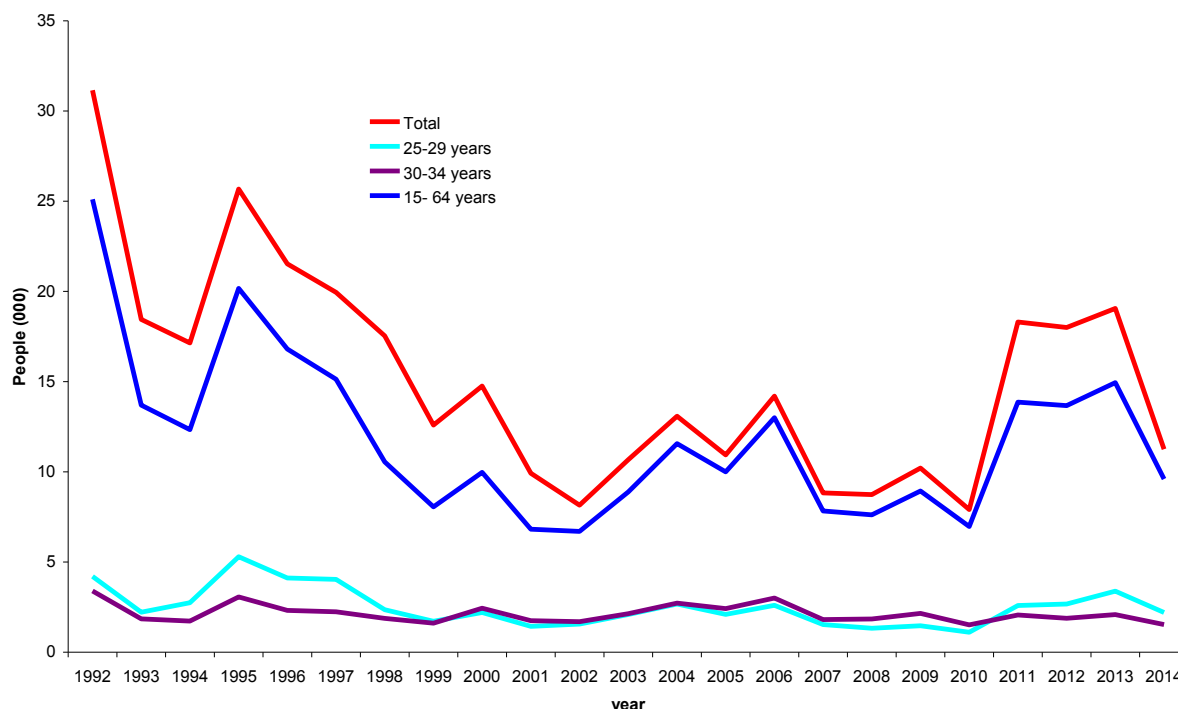


Figure no 2. **Permanent emigrants over the time in function of some clusters of age** (Source: elaboration on data INSSE in TEMPO on line time series on the website <http://statistici.insse.ro/shop/?lang=en>)



Since the collapse of the Communist’s regime in Romania there has been a significant drop of permanent emigration even if the average value of permanent emigrant is above 15.000 people. Findings have pointed out a path dependency between the variable emigration and economic crises; in general, the highest level of permanent emigration

have involved predominately active Romanian population in the range of age 15-64 year (Figure 2). By contrast, an uneven swing has been assessed in two clusters of people in the class of age 25-29 and 30-34 years with the first group of people predominating since 1992 to 1999 and from 2010 to 2014 in the permanent emigration phenomenon than in the cluster 30-34 year.

Analysing in depth the evolution of emigration in all Romanian counties calculating the increment ratio between emigration in 1990 as base value and emigration in 2014, Arad and Botosani have pointed out the highest value of emigration in a range which runs from 36% to 39% (Figure 3); by contrast, the lowest value of inner emigration growth among countries has been assessed in 5 Romanian counties such as Bihor, Salaj, Sautu Mare, Maramures and Dolj.

Figure no 3. Evolution of temporary inner emigration in Romanian counties comparing 2014 over 1990

(Source: elaboration on data INSSE in TEMPO on line time series on the website <http://statistici.insse.ro/shop/?lang=en> elaboration by GeoDa 1.6.7)

Natural Breaks: SRS-Smoothed Year2014 over Year1990

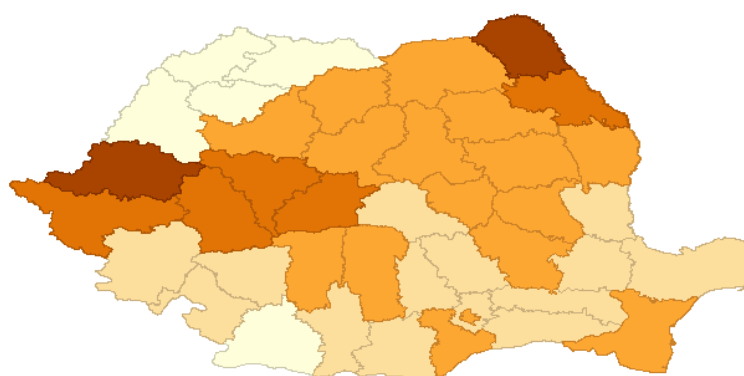
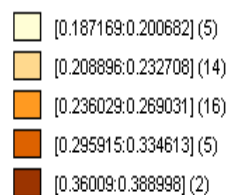


Table no 1. Main correlations in some economic variables (Source: elaboration on data INSSE in TEMPO on line time series on the website <http://statistici.insse.ro/shop/?lang=en> and FADN dataset on the website [http://ec.europa.eu/agriculture/rica/database/database\\_en.cfm](http://ec.europa.eu/agriculture/rica/database/database_en.cfm))

	Emigration	Workforce	Farms	UAA	FNI	Assets	Investments	I pillar	II pillar
Emigration	1.00								
Workforce	0.3943*	1.00							
Farms	-0.4192*	-0.2150	1.00						
UAA	0.2298	0.0678	-0.4911*	1.00					
FNI	0.3886*	0.1934	-0.5556*	0.4059*	1.00				
Assets	0.4995*	0.5500*	-0.6308*	0.4462*	0.4494*	1.00			
Investments	-0.0357	0.0759	-0.2796*	0.3024*	0.1325	0.4257*	1.00		
I pillar	0.3585*	0.1285	-0.5527*	0.6649*	0.5170*	0.5553*	0.4112*	1.00	
II pillar	0.3042*	0.3729*	-0.5150*	0.6032*	0.5258*	0.3579*	0.2235	0.6699*	1.00

\* significant at 5%

Using the FADN dataset, the correlation among different variables (Table 1), estimated using the Spearman correlation with a significant level at 5%, such as emigration, workforce in the primary sector, farms, utilized agricultural area (UAA), farm net income (FNI), total asset (Assets), net investments (Investments), financial subsidies allocated by the first pillar of the Cap (I pillar) and financial subsidies allocated for the rural development by the II pillar of the CAP (II pillar), has pointed out as the emigration correlates directly with the agricultural areas, level of assets, workforce employed in the primary sector and with the financial subsidies allocated both by the first pillar and also by the second pillar of the CAP. By contrast, poorer are the level of investments and farm higher is the permanent

emigration from Romanian counties. Focusing the analysis on the payments allocated by the CAP in its first and second pillar, results have highlighted a direct nexus of these subsidies to the agrarian capital, in terms of agricultural surface, level of investments and farm net income. Summing up, small farms with a poor endowment in machinery and circulating capital tend to receive an inadequate level of financial aids.

Findings in multiple regression model estimated by pooled OLS have pointed out as financial subsidies allocated by the II pillar of the CAP have not a nexus to dependent variable emigration whereas the all financial subsidies allocated by the first and second pillar of the Common Agricultural Policy have correlated positively to the emigration (Table 2). By contrast, net investments and total farming costs correlate indirectly to the dependent variable emigration hence, a low level of costs or, *ceteris paribus*, poor investments in Romanian farms have acted on an higher level of out emigration from the countryside. This has corroborated the theoretical framework, according to which, emigration is a downside of less favored areas characterised by low levels on investments and a poor technical-economic efficiency. The variable Farm Net Income has not had any relationships on the emigration instead assets correlates directly to the emigration. The values of  $R^2$  and adjusted  $R^2$  have been lower than these pointed out in the Fixed Effect panel data which has implied as the panel data model fits well to our analysis. Furthermore, other specification tests have highlighted as the errors are distributed normally and heteroscedasticity does not exist both in pooled OLS and also in Fixed Effect panel data. The Fixed Effect panel data has pointed out and corroborated findings assessed in the pooled OLS even if the independent variable farm net income correlates directly with the variable emigration (Table 2); hence, a low level of income in Romanian farms has implied a poor level of emigration due to a consolidated and stable process of emigration in previous years which does not supply new emigration flows.

Table no 2. **Main results in multiple regression model over the time 2007-2013** (Source: elaboration on data INSSE in TEMPO on line time series on the website <http://statistici.insse.ro/shop/?lang=en> and FADN dataset on the website [http://ec.europa.eu/agriculture/rca/database/database\\_en.cfm](http://ec.europa.eu/agriculture/rca/database/database_en.cfm))

Variable	Pooled OLS			Fixed Effects		
	Coefficient	Standard error	Significance	Coefficient	Standard error	Significance
Constant	1094,24	377.53	***	563,85	384,714	n.s.
Total farming costs	-0,679	0,024	***	-0,627	0,096	***
Farm Net Income	0,035	0,029	n.s.	0,073	0,0326	**
Total assets	0,012	0,0003	***	0,014	0,0011	***
Net Investments	-0,229	0,061	***	-0,218	0,0851	**
CAP total subsidies	0,523	0,088	***	0,506	0,131	***
CAP II pillar	0,014	0,152	n.s.	0,123	0,204	n.s.
$R^2$	0,80			0,90		
Adj. $R^2$	0,78			0,87		

n.s. not significance; \*\*\* <1%; \*\* 5%

## 5. Conclusions

Over the time of investigation all Romanian counties have pointed out a sharply emigration even if lots of people move predominately from disadvantaged and less favoured rural areas to urban territories in order to find more convenient job opportunities. Many farms scattered in Romanian rural areas are managed by female entrepreneurs; all this linked to the aging issues of farmers, not only in Romania but in many European rural territories as well, is a negative aspect that strengthens emigration from the countryside. The European Union by the allocation of specific funds such as less favored subsidies, which in Romanian countryside has not produced completely the expected effects, and in particular by the Single Area Payments, which is considered one of the most important financial tool in supporting Romanian farmers, has tried to lessen the out emigration from the countryside.

For the future it is important to allocate more financial resources towards farmers, in particular to young entrepreneurs, in order to stimulate a generation turnover and an implementation of agrarian capital, in terms of usable agricultural areas, able to implement the technical and economic efficiency in Romanian farms. A good endowment of public services and health care are two pivotal priorities in reducing the emigration from the countryside but in this context of economic downturn and budget constraints in the European public finance, few public authorities have addressed their attention and invested in a process of countryside protection. For these reasons next actions and financial initiatives in the rural development programming should be based on a tightly collaboration between public authorities and farmers aimed at planning an holistic rural development plan able to protect the rural space stimulating a counter-urbanization able to bring back urban people who are looking for a place close to urban areas but characterised by specific amenities and public services. The bottleneck of counter-urbanization should be set up by an

intense process of return that could produce more negative impacts in terms of an excessive exploitation of environment resources and positive externalities in the countryside; then, the process of rural space planning has to involve rural stakeholders in a bottom-up approach that seems only a theoretical concept instead of a real pillar in the process of an integrated and holistic path of rural development in many European rural areas

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