ROLE OF FINANCIAL SUBSIDIES ALLOCATED BY THE COMMON AGRICULTURAL POLICY IN REDUCING OUT EMIGRATION IN ITALIAN COUNTRYSIDE

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Biographical Note

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Abstract - The Common Agricultural Policy has had some direct impacts on the rural spaces and activities of farmers generating a new concept of rurality, which is pivotal to the growth of socio-economic development of the European countryside. Financial subsidies allocated by the European Union have acted on the labour workforce in the countryside, corroborating the hypothetical framework according to which subsidies can halt and contrast the out emigration in rural space. A low level of financial payments allocated by the EU is typical for poor rural areas with a high level of out emigration. In this paper one has used the Probit model aimed at assessing the relationships between financial subsidies and out emigration. Findings have highlighted that a low level of emigration in countryside is indirectly correlated to financial subsidies allocated by the second pillar of the CAP, which is aimed at halting the out emigration.

Keywords: choice model, FADN, Italy, II pillar, rural development.
JEL code: Q18, J61, R12

1. Introduction

In all European countries there has been an intense emigration from the countryside towards the urban space, making worse living conditions of population in rural areas (Kasimis, 2010) even if lots of citizens in these days are moving from urban space to urban territories looking for best job opportunities in touristic activities such as agritourism and rural tourism (Paniagua, 2002) in a perspective of multifunctionality with new challenges for rural communities and rural landscape (Van Huylenbroeck et al., 2007; Gosnell and Abrams, 2009). According to these latter authors, a new concept of activities in rural areas is fundamental in implementing the multifunctionality in the European countryside and in strengthening the socio-economic development by a contrasting action against the declining rural economy. Furthermore, the European Union throughout the Common Agricultural Policy has financially supported several initiatives towards the socio-economic development in rural areas and the L.e.a.d.e.r. initiative has implied by its own bottom-up approach a revitalization of rural areas and new job opportunities (Galluzzo, 2015; 2014a; 2012).

Since the early 1990s, the European Union has addressed its own efforts towards the diversification in farmer's activities as a consequence of the transition from a productivist model, based on the production of ag-commodities, to a post productivist one (Galluzzo, 2015; 2014b; Ilbery, 1998); hence, farms can be classified in function of their level of multifunctionality and non-productivist ability with significative impacts on the rural development in rural areas, sometimes correlated in few European countries and in a biunique perspective to the territorial heterogeneity, able to follow the transition from a productivist model to a post-productivist one and vice versa (Wilson, 2008; Wilson, 2001). The Common Agricultural Policy has had some positive and direct impacts on the rural spaces and the activities of farmers generating a new concept of rurality pivotal in the growth of socio-economic development of the European countryside and their activities deeply rooted on the rural space and in reducing out-emigration (Gray, 2000).

On the European countryside located in the basin of Mediterranean sea, a positive role has been conducted by a new flow of immigrants, who have acted on the local rural communities with effects such as a drop of out emigration and impoverishment of rural space due to a significant source of labour force, even if economic crises can impact directly on the level of immigration and integration in the rural space (Kasimis and Papadopulos, 2005). As a consequence of emigration phenomenon, several European countries since the 1960s have suffered of a significant level of socio-economic marginalization in the countryside, connected to ageing of population. Recently, small rural villages close to urban centres have pointed out a significant growth in the counter-urbanization process due to lots of people such as retired people, high skill people and urban school leavers who have decided to come back in the countryside (Champion and Shepherd, 2006). One of

the most positive impact of the counter-urbanization is to implement the level of technical and economical efficiency in farm by a new generation of farmers with high level of skills and competence able to diversify their activity in farms, in particular in few countries part of the new enlargement of the European Union both in 2004 and also in 2007 (Galluzzo, 2014a; 2014b).

Stockdale et al. in 2000 and Ní Laoire in 2007 argued that in some European rural areas the counter urbanisation and the consequently in-migration if in one side has implemented economic and job opportunities, but in the other it does not express its own positive towards rural areas. In fact, the level of human capital is one of the main constraints in generating new job opportunities by an endogenous development process (Stockdale, 2006); in the same time, the process of counter urbanization can act on the gentrification in rural areas similarly to urban territories with negative impact on the socio-economic growth in the countryside (Stockdale, 2010).

Rural areas have been for the southern European countries an opportunity to guarantee an economic growth in disadvantaged rural areas, halting economic imbalances among rural territories. Unfortunately these areas have suffered rural exodus and non-rural activities have partially solved social and economic problems in the countryside (Kasimis, 2010). According to this author, the rural space should be the main context able to express a buffer effect against the out rural emigration from the countryside.

Theoretically, it is harsh to define the role of the Common Agricultural Policy in halting the rural out-emigration from the countryside by analysing the impact of the financial subsidies allocated in favour of farmers (Olper et al., 2012). According to these authors, a negative impact has been found between emigration and CAP payments able to contrast the socio-economic dichotomy between rural and urban space (Gray, 2000). Olper et al. in 2012 have investigated the main relationships in several European countries among financial subsidies allocated by the Common Agricultural Policy and their impact on the labour in the primary sector, pointing out significative differences among countries. All the same, other socio-political exogenous variables have acted on the job opportunities in the primary sector and towards the emigration from the countryside (Tocco et al., 2014). In general, relationships have been assessed between payments allocated by the CAP and emigration in the countryside, even if an univocal nexus and conclusive findings have been found about these two variables (Tocco et al., 2014).

2. Aims of the research

The purpose of this paper was to assess main correlations between the variables emigration from Italian countryside and financial subsidies allocated by the Common Agricultural Policy, focusing the attention particularly towards the payments disbursed by the first and second pillar of the CAP.

Previous studies have deeply described throughout a quantitative approach which is one of the first and foremost tools to estimate the nexus between rural emigration and CAP subsidies in different European countries, with diverging findings among countries (Tocco et al., 2014; Olper et al., 2012). For instance, these latter authors did not find an univocal nexus between labour force and emigration in Italian countryside and financial subsidies allocated by the European Union through the National Rural Development Plan. Tocco et al. in 2004 investigated if the financial subsidies allocated by the European Union acted on the labour workforce in the countryside corroborating the hypothetical framework according to which subsidies can halt and contrast the out migration in the rural space.

3. Materials and Methods

Using a quantitative approach and different sources of data from 2004 to 2013 published by the European Union in the FADN dataset and annual results of demographic statistics published by the Italian National Institute of Statistics (ISTAT), the paper has estimated at first stage by a multiple regression model the main correlations among out emigration from the countryside and financial subsidies allocated by the CAP. Furthermore, the model has investigated if multifunctionality in rural space throughout the agritourism has contrasted the emigration from the countryside.

The second phase has been to asses by a choice model, such as the Probit model, if out emigration from the countryside correlates with the financial subsidies allocated by the first and second pillar of the Common Agricultural Policy.

The third part of the quantitative analysis has estimated by a structural equation modelling (SEM) the main relationships among financial supports allocated by the CAP, crop specialization and rural emigration, by the software Stata IC 13.

In order to investigate and to assess the main relationships among the dependent variable - out emigration from Italian countryside and the independent variables as - subsidies allocated by the first and second pillar of the Common Agricultural Policy, farm net income and total output produced in the sample of farms part of the FADN since 2004 to 2013, it has used a multiple regression model, estimating parameters by the Ordinary Least Square.

In the structural equation modeling (SME), the variable emigration in Italian countryside has been correlated to different variables such as total assets in farms part of the FADN dataset, taxes paid by farmers, farm net income, investments, land capital in terms of utilized agricultural areas (UAA), financial subsidies allocated by the first and by the second pillar of the CAP and precisely payments in favour of stayed behind rural areas (LFA) and single farm payments. In order to assess the impact of crop specialization on the rural out emigration in the SME, we have included

variables such as: areas cultivated with cereals, vegetables and flowers, typical of high specialized farms, olive crops and forage representative of farms with a poor level of specialization.

With the purpose to assess if the diversification in farms by the agritourism has been able to lessen the rural emigration, a further stage of the structural equation modeling has investigated the nexus among emigration and the workforce employed in the primary sector, financial funds allocated by the Common Agricultural Policy, Gross Domestic Product produced in the primary sector or rather by the agricultural branch.

The estimation of regressors has used the open source software GRETL 1.8.6 and in its algebraic form of matrix, the multiple regression models can be so expressed (Verbeek, 2006):

$$y = X\beta + \varepsilon \qquad (1)$$

where y is the dependent variable and ε is the statistical error but both are vectors with n-dimensions; X is a matrix of independent variables which has a dimension n x k.

In analytical terms, the model of multiple regression in its general formulation can be written in this way (Asteriou and Hall, 2011; Baltagi, 2011; Verbeek, 2006):

$$y = \alpha_0 + \alpha x_1 + \beta x_2 + \gamma x_3 + \delta x_4 + \varepsilon_{jt} \qquad (2)$$

y is the out emigration from Italian countryside

α_0 constant term

x_1, x_2, x_3, x_4 independent variables such as total output, farm net income, financial subsidies allocated by the II pillar of the CAP and financial subsidies allocated by the I pillar of the CAP α, β, γ, δ estimated parameters of the model

ε_{jt} term of statistic error.

Basis assumptions, to use a multiple regression model, are (Asteriou and Hall, 2011; Baltagi, 2011):

1)   statistic error u_i has conditional average zero that is $E(u_i|X_i) = 0$;

2) (X_i, Y_i), $i = 1....... n$ are extracted as distributed independently and identically from their combined distribution;

3) X_i, u_i have no fourth moment equal to zero.

There is no correlation among regressors and random noise if the value between β expected and β estimated is the same; in order to analyze if there is also heteroscedasticity on standard errors in the multiple regression model, it has used White's test on the error terms (Verbeek, 2006).

The choice model in this paper has used the Probit one instead of Logit one because the values of statistical criterion of information or rather of criteria of model selection, such as Hannan-Quin, Akaike and Schwartz (Hannan and Quin, 1979; Schwartz, 1978; Akaike, 1992) have pointed out ~~as~~ that Probit gives more information and it is also able to minimize the statistics than the Logit one. The Probit model has allowed to assess the impact of financial subsidies on the out emigration in Italian rural areas.

The Probit model is a binary model in which the probability of success is given by the value of the function of distribution in a casual standardized probabilistic variable $\Phi(.)$ in correspondence to an opportune linear combination of regressors, in such way to estimate if some interactions exist among dependent variable, necessarily categorical variable, and independent variable, that are not categorical variables, with an error that is distributed like a s-shape function which looks like a standardized logistic function.

Formally the binary model can be written in this way:

$$\text{Prob } (Y_i=1) = \Phi(\beta X_i) \quad i = 1, 2, 3, 4 \ldots \ldots n \qquad (3)$$

Y_i has a binary value 1 or 0

X_i is a vector of independent variables

Φ is a function of distribution of cumulative likelihood

β is a vector of estimated parameters.

Figure 1. Evolution of permanent emigration in all Italian regions.
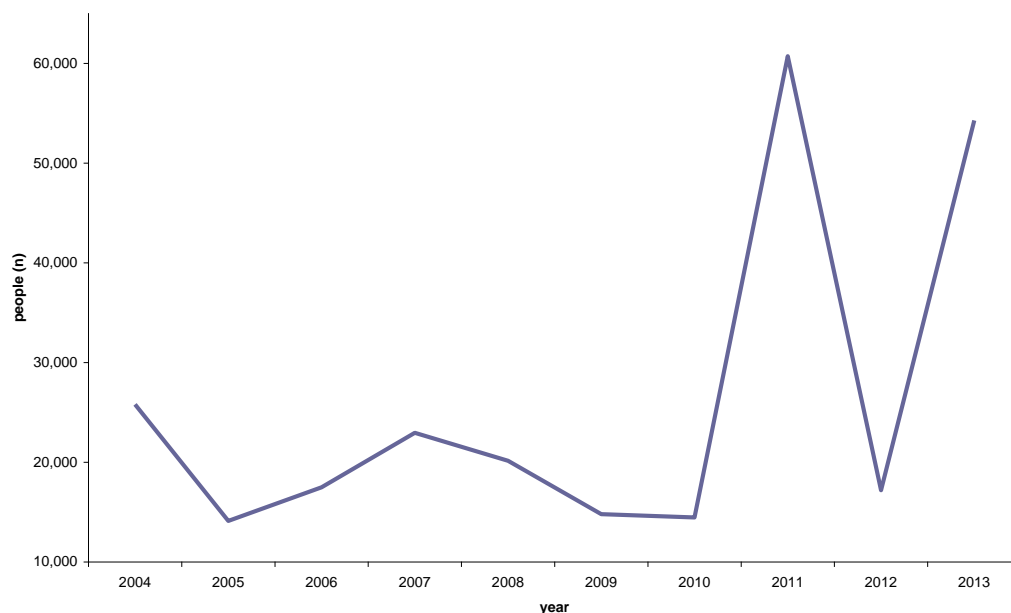*(Source: our elaboration on data www.istat.it)*

Figure 2. Emigration in different Italian regions since 2004 to 2014.
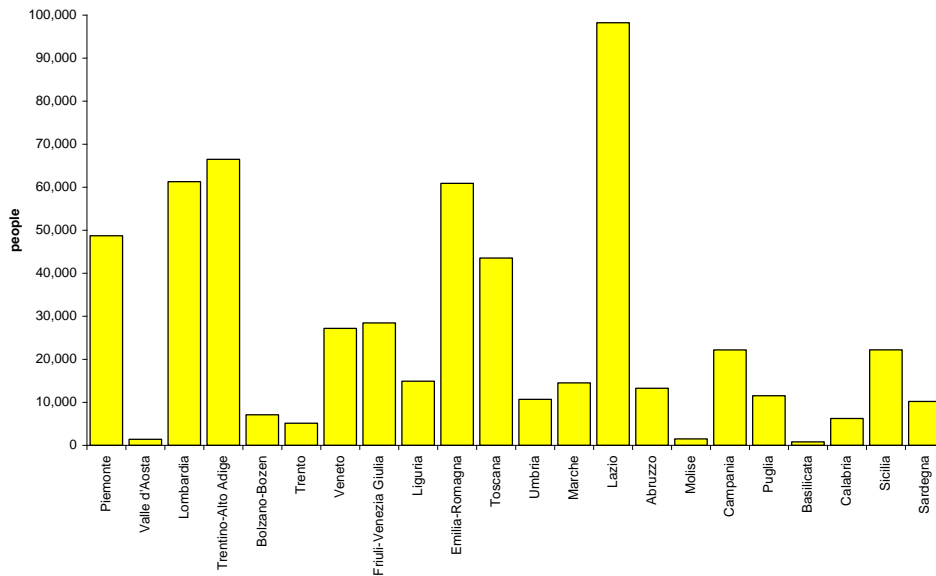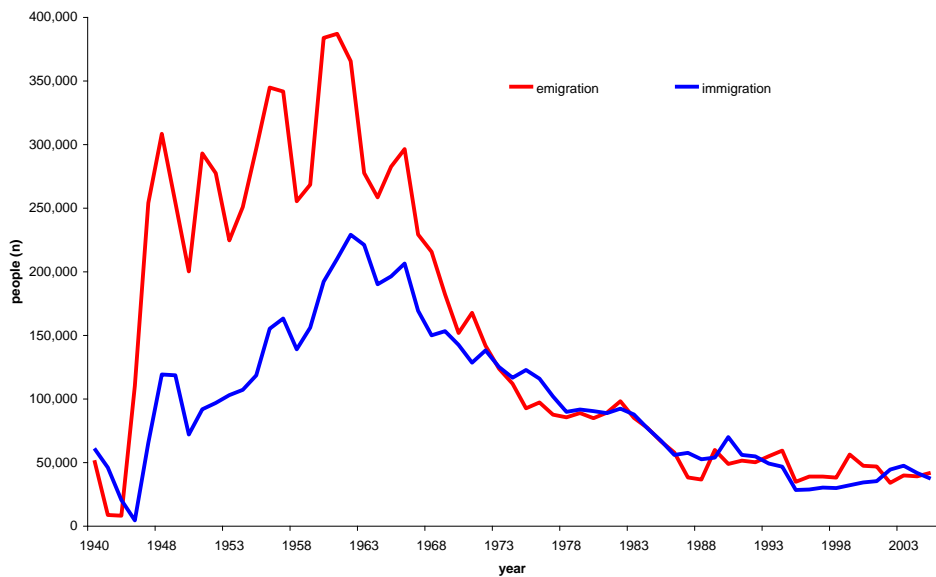*(Source: our elaboration on data www.istat.it)*

Figure 3. Comparing emigration and immigration flows since 1940 to 2005 in Italy.
(Source: our elaboration on data www.istat.it)

The function of distribution of a casual standardized logistics variable $\Phi(.)$ belongs to a parametric family that, in the case of the model Probit, is estimated as a s-shape function where variables follows a normal distribution, with an opportune linear combination of regressors, that have the advantage to describe an analytical expression and to be symmetrical like a normal function.

The model Probit has been utilized to value the probability that a region has had a level of out emigration from the countryside lower than the average assessed from 2004 to 2013 attributing

a value of 1, otherwise 0, if the value was below the average. The parameters of Probit model have been estimated with the method of the maximum generalized likelihood.

4. Results and Discussion

In general, in Italian regions the latest statistical data have highlighted an uneven fluctuation of permanent emigration even if since 2010, as a consequence of economic crisis, people living the country arose significantly the emigration from rural areas and less favored areas as well and this phenomenon seems to be consolidated over the time (Fig. 1).

In average value, over the period 2004-2013, statistical data have pointed out that northern Italian regions have had a significant emigration flow than those located in the south of Italy (Fig. 2). Time series analysis of emigration and immigration flow in Italy has highlighted that since the early 1990s emigration has overcome the immigration (Fig. 3).

Findings in the multiple regression model have pointed out that the emigration in Italian countryside has been directly correlated to the level of output produced in Italian farms part of the FADN dataset and a non significant correlation has been pointed out considering the financial subsidies allocated by the first pillar of the CAP (Tab.1).

Table 1. Main results in the multiple regression model over the time 2004-2013 in FADN dataset. Dependent variable is the emigration from the countryside

Variable	Coefficient	Std. error	t value	p-value	significance
Total output	0,983367	0,225304	4,3646	0,00002	***
Farm net income	-1,05869	0,47942	-2,2083	0,02833	**
Financial subsidies allocated by the II pillar of the CAP	-1,50991	0,663645	-2,2752	0,02392	**
Financial subsidies allocated by the I pillar of the CAP	-0,239897	0,603063	-0,3978	0,69119	n.s.

** at 5%; *** at 1%; n.s. not significant
Source: our elaboration on data www.istat.it and http://ec.europa.eu/agriculture/rica/database/database_en.cfm

Table 2. Main results investigating the role of diversification in farm's activities in the multiple regression model over the time 2004-2013 in FADN dataset. Dependent variable is the emigration from the countryside

| Variable	Coefficient	Std. error	t value	p-value	significance
Financial subsidies allocated by II pillar of the CAP	477,904	66,8341	7,1506	<0,00001	***
Agritourism	0,161616	0,0702657	2,3001	0,03735	**

** at 5%; *** at 1%
Source: our elaboration on data www.istat.it and http://ec.europa.eu/agriculture/rica/database/database_en.cfm

Table 3. Main results in the Probit model over the time 2004-2013 in FADN dataset. Dependent variable is the emigration from the countryside

Variable	Coefficient	Std. error	z	p-value	significance
Constant	-0,852302	0,314073	-2,7137	0,00665	***
II Pillar payments allocated by the CAP	-0,000673338	0,000263465	-2,5557	0,01060	**
I Pillar payments allocated by the CAP	0,000195554	5,31604e-05	3,6786	0,00023	***

Source: our elaboration on data www.istat.it and http://ec.europa.eu/agriculture/rica/database/database_en.cfm

**Figure 4. Main results in the structural equation modelling over the time of investigation.**
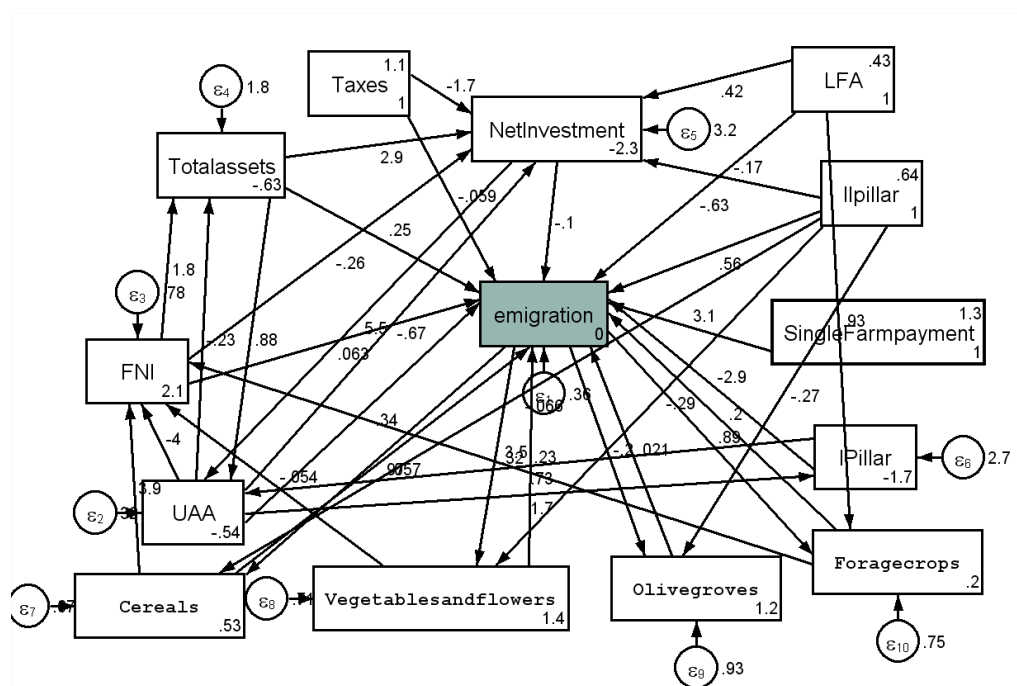
Source: our elaboration on data www.istat.it and http://ec.europa.eu/agriculture/rica/database/database_en.cfm

An indirect correlation, as argued and estimated by other authors such as Olper et al., 2012 and Tocco et al., 2014, has been found between the out-migration from the countryside and the financial subsidies allocated by the second pillar of the Common Agricultural Policy. The assessment of dataset published by the FADN has pointed out that a lower level of farm net income has implied an higher level of rural emigration from the countryside; hence, poor rural areas are more frequently influenced by out emigration issues - as a consequence of the need of farmers to emigrate - aimed at implementing their standard living conditions with the consequence to impoverish in environmental and socio-economic terms the protection of the rural space by the multifunctionality in the wide sense.

Focusing the attention on the role of diversification activities in Italian farms throughout the agritourism, which is one of the tools able to promote the multifunctionality in the countryside, the multiple regression model has pointed out a direct correlation between the variable emigration from Italian rural areas, agritourism and financial subsidies allocated by the second pillar of the Common Agricultural Policy (Tab. 2). In general, a low level of financial subsidies allocated by the European Union and national authorities is typical for rural areas characterised by low level of out emigration and where the agritourism is not used to diversify the source of income in farms.

Figure 5. Main results of socio-economic variables in the structural equation modelling over the time of investigation.
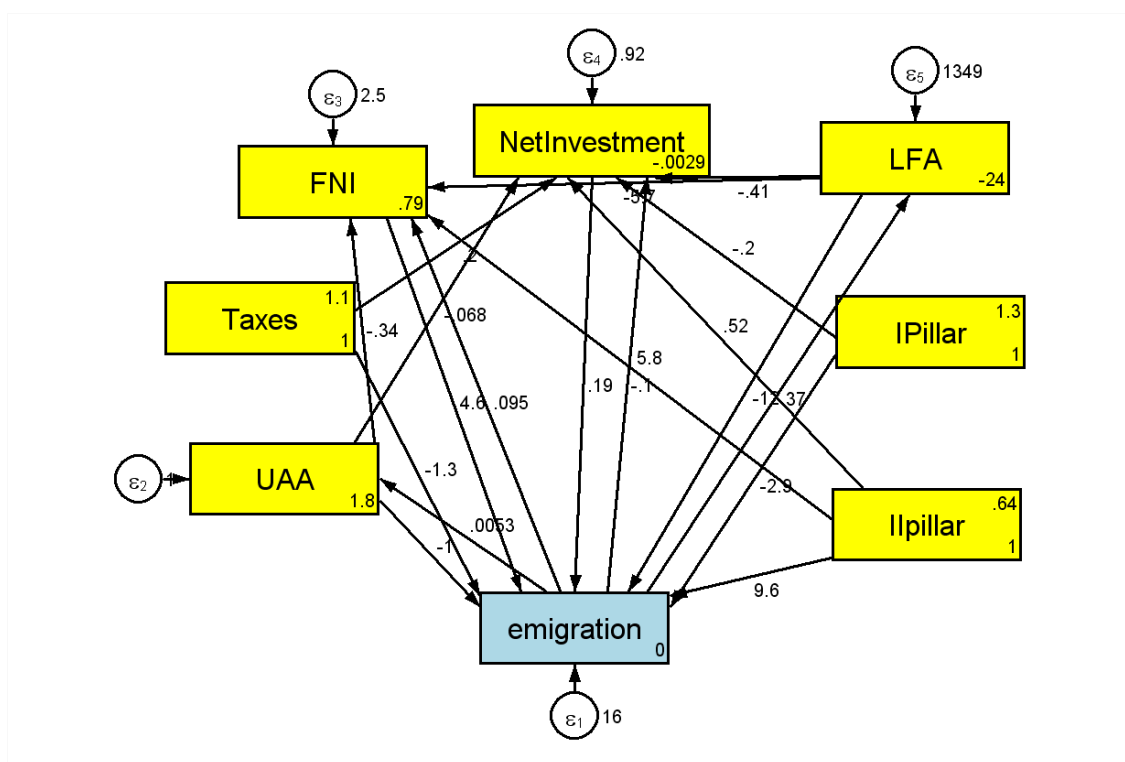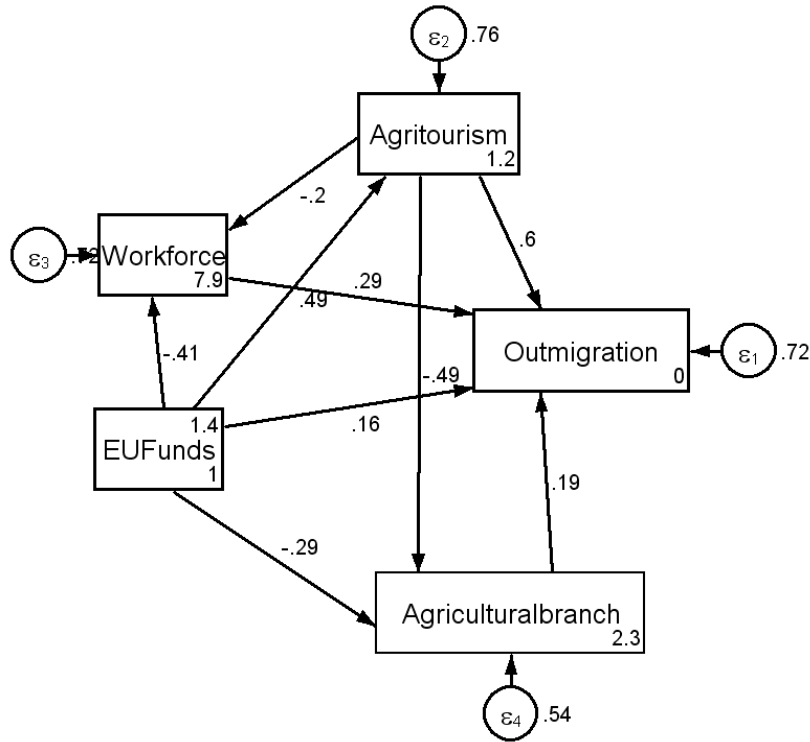

Source: our elaboration on data www.istat.it and http://ec.europa.eu/agriculture/rica/database/database_en.cfm

The choice model has pointed out that a low level of emigration in the countryside is indirectly correlated to the financial subsidies allocated by the second pillar of the CAP aimed at halting the out emigration throughout payments towards stayed-behind rural areas; hence, an higher level of financial payments allocated by the II pillar of the Common Agricultural Policy has implied a drop of the out migration from the countryside as a consequence of differentiation in farm's activities as rural tourism and agritourism (Tab. 3). On the contrary, the higher the level of subsidies allocated by the I[st] pillar, addressed to support decoupled payments to ag-commodities, the higher is the level of the emigration.

Summing up, findings have pointed out that there is an indirect correlation between financial subsidies paid by the second pillar of the Common Agricultural Policy and emigration from rural areas.

Figure 6. Main results in the structural equation modelling over the time of investigation considering the farm's diversification and other socio-economic variables.

The structural equation modelling (SEM) has also highlighted a positive impact of crops specialization on the level of investments and on the rural emigration in Italian rural areas. Italian regions located in the south, where there are scattered lots of rural villages and farms with poor agrarian areas, have pointed out the highest level of rural out emigration with a nexus to the highest level of financial subsidies towards less favored rural areas and where agritourism and rural tourism are the main tools in order to implement their own level of farm net income (Fig. 4). Findings have highlighted that cereals, olive and forage crops have acted directly on the out emigration from the countryside instead an indirect correlation has been found between the agrarian capital, in terms of hectares of utilised agricultural areas (UAA), and exodus from Italian rural areas (Fig. 4). The poorer level of financial subsidies allocated by the second pillar of the CAP has implied a low level of emigration even if this latter variable is indirectly correlated to the payments allocated towards stayed behind rural areas (LFA payments).

SEM results in figure 5 have corroborated that utilised agricultural areas, LFA payments, taxes and financial subsidies allocated by the I pillar of the Common Agricultural Policy correlated indirectly to the out-emigration from the countryside (Fig. 5). Farm net income and financial subsidies allocated by the second pillar of the CAP correlates directly to the variable emigration from the countryside hence, rich areas receiving a low level of aids have implied a poor level of out-emigration from the countryside.

In general and in statistical terms, the agritourism has been able to act on the variable out-emigration from Italian countryside and in particular on the variable work force employed in the primary sector more than the gross domestic product in the primary sector and the funds allocated by the European Union in supporting the rural development have acted on the exodus from rural areas (Fig. 6).

5. Conclusion

The European Union throughout specific financial subsidies has tried to curb the rural emigration even if this phenomenon has been strongly influenced by an exogenous variable such as the economic crises hence, farm diversification and a new generation of farmers by the agritourism and other activities of diversification have been pivotal in contrasting out emigration in particular in poor rural areas, where there are scattered farms with low level of agrarian capital and usable agricultural surface and modest level of technical and economic efficiency.

The National Rural Development Plan is a good opportunity to increasing enterprise's diversification and in supporting the stayed behind rural areas by specific funds able to compensate lower level of income. Investing in farmer's skills and competences in particular in favour of a new young generation of farmers and a growth in agrarian capital are one of the pivotal - but not the unique - tool in contrasting the rural out-emigration from the countryside.

For the future, it is important to capitalize on the financial subsidies allocated by the second pillar of the CAP aimed at implementing the diversification in Italian countryside by the agritourism and rural tourism. It is pivotal also to increase the level of agrarian capital, in terms, of utilizable agricultural areas, with the purpose to intensify the level of investments and technical and economical efficiency in Italian farms.

The national and regional Italian authorities should implement the financial aids aimed at reducing some bureaucratic aspects that sometimes have been a bottleneck in stimulating the initiatives of diversification in Italian farms, which are able to reduce the socio-economic marginalization in Italian countryside.

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