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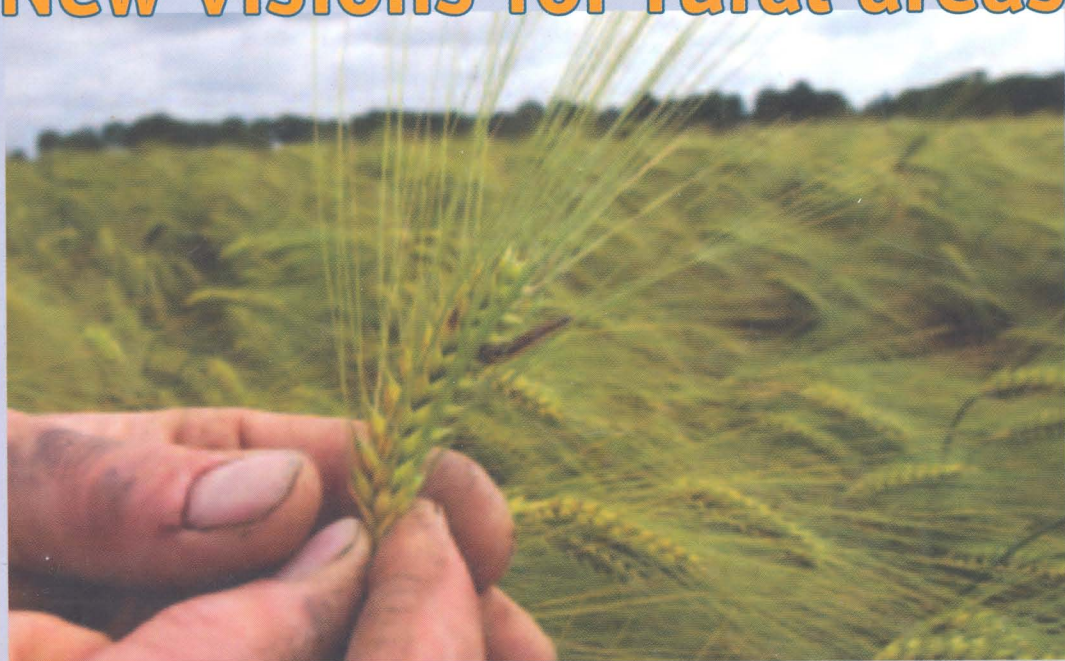
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Changing European farming systems for a better future

New visions for rural areas



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Network analysis of farming and non-farming activities for sustainable development

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Abstract

The aim of our work was to establish a methodology to analyse the relationships between the different economic activities in the territories where there are strong ties between agriculture, tourism, the landscape and traditions as well as to analyse the impact that rural development policies may have on the local economic system. The study has shown how the ability of a territory to trigger mechanisms of development by enhancing the typical features derives from the ability to create a system on the part of all the economic and social-institutional players. Regarding development policies, these considerations underscore the need to overcome a limited sectoral vision and to envision a wide-reaching system to be achieved by implementing territorial measures aimed at reinforcing local synergies.

Keywords: rural tourism, sustainable development, input output analysis

Objectives

Integrated territorial policies have attributed growing importance to local plans for development. Consequently, it is very important to ascertain the possible impact of policies being implemented to enhance the value of local specificities on the entire economic system of the territories involved. The aim of our work was to establish a methodology to analyse the relationships between the different economic activities in the territories where there are strong ties between agriculture, tourism, the landscape and traditions as well as to analyse the impact that rural development policies may have on the local economic system.

Areas studied

The study was conducted in three Italian areas: the Etna Park in Sicily, the Mountain Community of Val Pellice in the northern Cozie Alps, neighbouring with France, and the area of Bassa Valdelsa in Tuscany. These three zones differ geographically, social-institutionally and economically. However, they are all characterized by the fact that they are agricultural regions where agriculture is both a productive activity as well as the foundation of the social texture. The areas in question also share a marked potential for tourism.

Methods

An analysis of the official statistics made it possible to define the areas studied according to the degree of development and the economic structure. Interviews conducted with key informants made it possible to identify the weak points of the systems which formed the object of the study as well as the sectors which drive development. Based on the indications obtained, various measures were considered to enhance local resources. The application of an input output model allowed assessment of the effects that these measures could have on the local economic system. For this purpose, we calculated the production multiplier type I $(I-A)^{-1}$

and type II $(I-A-cv)^{-1}$, where I is the identity matrix, A is the matrix of technical coefficients, c is the vector of coefficients of the propensity to consume and v is the vector of the added value coefficients. The type I multiplier assesses the direct and indirect impact of demand on the local economic system, while the type II multiplier makes it possible to identify the effect induced by introducing demand in the model; this is a function of the income of those who participate in the productive process. For the three areas, calculations began with the input output tables which were produced by the Regional Institute for Economic Planning in Tuscany (IRPET); they refer to the year 2001 and are made up of 30 sectors. This calculation required the solution of two types of problems. Firstly, the lack of local tables and secondly, the lack of sufficiently detailed tables. In the case of the Etna Park and Val Pellice, it was a matter of solving the first type of problem since the tables available were the regional ones (Sicily and Piedmont). Consequently, it was necessary to assess the matrix of technical coefficients relating to the two areas being studied. For this purpose, the FLQ formula, put forth by Flegg (Flegg *et al.*, 2000) was applied. This formula was chosen because recent studies have shown that it is capable of providing a satisfactory assessment of regional multipliers (Bonfiglio *et al.*, 2004; Thomo, 2004; Bonfiglio, 2005). The formula estimates the location coefficient as a function of three variables: (i) the relative size of the sector which produces the final resources j; (ii) the relative size of the sector supplying inputs i; (iii) the relative size of the region.

$$FLQ_{i,j} = \frac{RE_i / NE_i}{RE_j / NE_j} \times \lambda^* \quad (1)$$

where: RE_i and RE_j respectively indicate the workers employed in the local firms in the area studied based on the sector supplying the input and on the sector which produces the final resources. NE_i and NE_j respectively indicate the workers employed in the local firms of the region based on the sector supplying the input and on the sector which produces the final resources. λ^* is derived from the following formula:

$$\lambda^* = \left[\log_2 \left(1 + \frac{TRE}{TNE} \right) \right]^\delta \quad (2)$$

where: TRE and TNE are respectively the workers of all the local firms in the area studied and in the region.

δ is a coefficient greater or equal to 0 and inferior to 1. In our case, we assumed that δ is equal to 0.0878, based on the results of Thomo (2004) and Bonfiglio (2005). These results demonstrate that with this value the multipliers obtained are very close to those which would have been obtained if the input output tables had been constructed by means of direct investigation. When the location coefficients (FLQ_{ij}) are inferior to 1, the technical coefficients for the area being studied are reduced, compared to the regional coefficients, by multiplying the latter by the relative location coefficients. In case the location coefficients are greater or equal to 1, the technical coefficients for the area studied are equal to the regional ones. In the case of Tuscany, it was not necessary to estimate the local technical coefficients since the table available was the table pertaining to the local system which formed the object of the study. In this case, our calculations involved introducing the agro-tourist sector in the matrix (sector which drives the local system). The cost structure and the organization of work in this sector differs from the "restaurant and hotel" sectors within which it was incorporated. For this purpose, a direct investigation was conducted with a representative sample of agro-tourist firms

in the area in order to: (i) describe the costs incurred by the agricultural entrepreneurs for the purchase of intermediate goods; (ii) define the final value of production; (iii) verify the number of workers employed in the agro-tourist sector. Lastly, a direct investigation was conducted to assess the average tourist spending. This was based on presences in the three areas under study and on the distribution into the sectors of the input output matrixes which were used. For the Etna Park and Val Pellice, the investigation involved all the tourists while in the case of Bassa Valdelsa, the interviews were limited only to the guests of the agro-tourist facilities.

Results

The Etna Park is a marginal area. It is characterized by low wages, low levels of education and by a high rate of unemployment. Agriculture plays an essential role from the economic, social and landscape point of view. Typical productions of value are found in the area; these are agriculture and local crafts. Combined with the natural resources, they are the strong points of the local system. Development of this system cannot be based on a single process but rather on an agglomeration of processes and on environmental sustainability. Local products must be linked to the natural, social and cultural context within which they are produced (Becattini *et al.*, 2003). Therefore, local development is dependent upon the local territory since consumer appreciation of the product is linked directly to the experience of a stay in the area. For this reason, tourism seems to represent a privileged vector which makes possible to promote and attach value to the local supply, thus having a direct bearing on development of the system. Tourist arrivals in the year 2003 were 84,130 while the presences were 252,492. This is mainly summer tourism which peaks during the month of August (Statistics Office of the Tourist Board in Catania). Average tourist spending per presence is equal to 74.17 € of which, 78% (57.89 €) was spent within the park. Tourist spending within the park in the year 2003 produced an overall income of 18,508,334.66 €, thus activating 347 workers.

As to the distribution of work, approximately $\frac{1}{3}$ of the workers are employed in the hotel and restaurant sector, $\frac{1}{4}$ in the agricultural sector; $\frac{1}{6}$ in the commercial sector and 5% in the agro-industrial sector. Especially noteworthy is the relationship between tourism and agriculture. This is confirmed by the high number of workers employed in the agricultural sector as a result of tourist demand. This ratio certainly is a distinctive feature of local tourism which underscores the importance of tourism in developing agriculture within the park's territory. Synergies between tourism and the territory, as identified in the survey, could be strengthened by promoting a type of tourism which is closely linked to the natural environment, the culture and the typical local products. This can be achieved by reinforcing both the association between tourism and local resources and by increasing tourist flow. In order to assess the impact that a policy targeted at promoting tourism tied to endogenous resources might have on the local economic system, we assumed an increase in presences during the low season months which then reach an average level during the month of May. As to the spending vector, and taking into account considerations which emerged during meetings with local experts and representatives of the local institutions, we assumed a 10% increase in the "agricultural" and "agro-industrial" sectors. The increase in the per capita spending would be 0.50 € per day; that is to say, 1.50 € for the entire duration of one's stay in the area. The results of the simulation conducted with the input output models show an increase in income and employment equal to 21%. The sectors most involved are agriculture and agro-industry. In the agricultural sector, income went from 897,076.67 € to 1,100,065.19 € while employed workers rose from 87 to 107. In the food industry, income rose from 1,319,702.82 € to 1,602,917.33 €; employed workers increased from 16 to 20.

In Val Pellice the main problem has to do with depopulation related to the industrial crisis. On the other hand, the territory's strong features are to be identified in the natural resources and in the historical cultural heritage; more specifically, the "valdese" culture which is a strong tourist attraction. The main weakness of the local tourist system has to do with a lack of coordination as well as the lack of an adequate organization of the territory's different tourist products. Official arrivals in the year 2003 were 20,504 for a total of 83,982 presences which were concentrated in the summer period (data obtained from the Province of Turin). Average spending per presence is 53.08 €, 80% of which (42.43 €) occurred within the valley. Overall tourist spending in Val Pellice in the year 2003 was estimated to be equal to 2,807,197.13 €. This produced an income of 2,822,656.33 € and employed 54 workers. As to the distribution of employment which was created through tourist spending, more than half of the work force is employed in hotels and restaurants (31 workers), 12% in the commercial sector and another 12% in the agro-industrial sector. If one compares the average spending in the valley for each presence to spending estimated by the Federazione Italiana Pubblici Esercizi, in 2002 on a national level (equal to 63 € for the Italian tourists and 83 € for foreign tourists), one can conclude that spending is relatively low in Val Pellice. This data would seem to confirm the main limit of the tourist system which emerged during interviews with sectoral experts. It is the result of a lack of coordination and of an adequate organization of the territory's products. This limits the visibility of the offer for tourists and thus reduces the level of spending. Consequently, the need arises to make it easier to enjoy the goods and services available in the territory. Information must be gathered and the offer organized so as to provide the tourist with a range of options. This would create new spending opportunities for the tourist which in turn would increase the impact of tourism on the valley's economy while not modifying the tourist flow. The input output model was applied to estimate the impact on the local system of measures aimed at improving the organization of the tourist offer. Based on the results which emerged during research and on the remarks made by the local operators, daily per capita spending within the valley was increased up to 50 €. Sectors involved in an increased demand were "agriculture", "food industry", "wood industry and wood products" and "transportation, storage and telecommunications" which include tourist assistance activities such as guides and escorts. Spending in these sectors was increased by 63% compared to spending as found by the direct survey. The impact on employment within the valley was estimated as equal to 63 workers which corresponds to an increase of 16%, compared to the current situation; the impact on income was estimated to be 3,310,184.96 € with an increase of 18%.

The Bassa Valdelsa is characterized by its tourist vocation. The data was obtained from the Province of Florence and pertains to the year 2002. They indicate the number of tourist presences as equal to 411,333. The ratio between presences and the resident population is among the highest in the province. The tourists who, in the year 2002, stayed in agro-tourist facilities represent 15% of the total. The data provided by the Official Registry on Agro-tourism in Tuscany reveal a continuous increase in the number of firms in the area. This increase underscores the growing interest in agro-tourism both on the part of tourists and local operators. The results of the input output multiplier indicate that for agro-tourism the income and employment multiplier is greater than the multiplier for the "hotel and restaurant" sectors. An important feature is also the strong multiplying component of the agro-tourist sector which remains within the local economic system. This is proof of the strong relationships between this sector and local economy. As to tourist spending, it was estimated to be equal to 61.43 € for the presences; 79% of this (46.73 €) was spent within the area. The overall impact of spending on local economy, on the part of tourists lodged in the agro-tourist facilities in 2002, in terms of income was 4,313,382.93 € with 101 workers employed. Besides agro-tourism, the sectors most involved were commerce and restaurants where the tourist directly expresses his or her requests, as well as agriculture. In this case, the effect on the added value and on employment partly depends upon spending made in

the sector and partly on spending in agro-tourist enterprises which provide refreshment facilities and which are defined by strong ties to agriculture. A comparison was made of the average daily spending per capita to the estimates of the Tourist Study Centre which conducted a survey of the entire province of Florence during 2001. It was found that spending in our study area was markedly lower than spending on the part of tourists who vacationed in other rural areas of the Province. In particular, in the Chianti region, a neighbouring area with characteristics similar to the area we studied, the average spending per presence was calculated to be 98.29 €. According to these data it is reasonable to speculate that in Bassa Valdelsa an increase in the impact of tourism on local economy might be derived from an increase in average tourist spending per presence. This could be achieved by expanding the territory's range of goods and services in the sectors of food and wine, local crafts and local initiatives. The results of the simulation conducted on the input output model for the reference area, based on tourist daily per capita spending in the Chianti area show an impact on the economic system which is more than double the current one; this is both in terms of added value (891,9331.37 €) and in terms of employment (213 workers).

Conclusions

The study has shown how the ability of a local system to trigger mechanisms of development by enhancing the territory's typical features does not depend on agriculture alone. It derives from the ability to create a system on the part of all the economic and social-institutional players. If synergies are created between institutions, farmers, artisans, restaurateurs, businesses and organizers of traditional and cultural events, the intrinsic value of the production in rural areas might be able to emerge even if its quality is not yet sufficiently appreciated by the consumers. In this kind of context, the costs and benefits of production are shared by agricultural producers and the rest of the community. Therefore, we can no longer speak only of agriculture; rather we must speak of a rural territory. Regarding development policies, these considerations underscore the need to overcome a limited sectoral vision and to envision a wide-reaching system to be achieved by implementing territorial measures aimed at reinforcing local synergies. In light of this, it would seem opportune that the political and financial commitments on the part of the European institutions be used for the territories and for the promotion of rural development on the whole rather than for sectoral policies aimed only at sustaining agriculture.

References

- Becattini, G. and L. Omodei Zorini, 2003. Local identities and globalisation. In: L. Omodei Zorini and A. Cristovao (editors). Proceedings of the Fifth IFSA European Symposium, 8-11 april 2002, Firenze, ARSIA, Firenze.
- Bonfiglio, A., 2005. Can non-survey methods substitute for survey-base models? A performance analysis of indirect techniques of estimating I-O coefficients and multipliers, Quaderno di ricerca n. 230, Dipartimento di Economia, Università Politecnica delle Marche, Ancona.
- Bonfiglio, A. and F. Chelli, 2004. An Impact Analysis of SAPARD in Rural Areas by Alternative Methods of Regionalization, Quaderno di ricerca n. 218, Dipartimento di Economia, Università Politecnica delle Marche, Ancona.
- Flegg, A.T. and C.D. Webber, 2000. Regional size, regional specialization and the FLQ formula. *Reg Stud.* 34, 563-569.
- Thomo, T., 2004. New developments in the use of location quotients to estimate regional input output coefficients and multipliers. *Reg Stud.* 38, 43-54.