DISCOVERING INNER RURAL AREAS, PERSPECTIVES AND LIMITS OF CONTINUOUS CENSUSES[1]

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1. Introduction

Italy's National Strategy for Inner Areas (SNAI) is an innovative policy for development and territorial cohesion to counteract marginalization and demographic decline within Inner Areas (IA) throughout the Country. The identification of the IA starts from a polycentric reading of the Italian territory, characterized by a network of municipalities or aggregations of municipalities (service offering centers) around which gravitate areas characterized by different levels of spatial marginality (Cohesion Policy Department, DPS, 2021).

IA are fragile territories and the main hypothesis that identifies their nature is the "distance" from essential services. IA, in this conception, is not necessarily synonymous of "weak area". Rather, it identifies a characteristic of these areas, related to the considered aspects (schools, health and rail transport services). While the distance from basic services represents a limit for the territories, their marginality can become a strong point, an important environmental value that could be exploited for economic purposes. In the IA, the agricultural, pastoral and forestry sectors play a central role as opportunities for economic growth and for the value of care and environmental prevention (Lucatelli and Storti, 2019). For example, agricultural soil management is essential in areas with high levels of landslide risk and hydrogeological disruption; pastoralism contributes to the vitality of mountain giving a contribution to maintaining biodiversity and fighting soil degradation.

In this context, the grown of IA is connected to the agricultural multifunctionality, in terms of non-agricultural activities and diversification of production, with the aim of diversifying income and avoiding risk factors. The complexity of multifunctionality determines a considerable difficulty of measurement.

[1] Authors contributions: Antonella Bianchino the revision of the whole article; Daniela Fusco paragraphs 1, 2, 4, appendix table 2 and References; Paola Giordano paragraph 3, related subparagraphs, appendix table 1 and Summary.

The aim of the work is to represent the complexity of multifunctionality and synthesize, at a territorial level, the farms resilience respect to economic changes.

The study identifies useful indicators for the evaluation of these phenomena by exploiting the opportunity given by continuous censuses to allow trend analysis and analyze the weight of farms on tourism potential. The result provides a tool for monitoring IA with a view to assessment of the resilience of the territories.

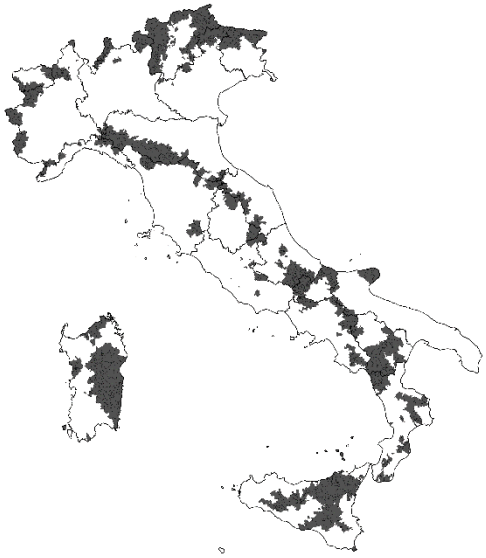
2. Agriculture and rural area development, Inner Areas and Rural Areas with development problems

Agricultural activities are very fragile and fragmented in IA. Farms surviving needs innovation and reorganization of the sector, based on cooperative models and shared business projects. Besides, it is functional to the construction of an integrated and organized offer of high-typical goods and services (specialties and integrated specialties) in synergy with tourism (Musotti, 2018).

In this context, the link between SNAI and rural development policies (National Strategy Plan for Rural areas -NSP) plays a key role. NSP is co-financed by the European Agricultural Fund for Rural Development (EAFRD) referred to in Reg. (EU) no. 1305/2013. Itis the tool through which the Ministry of Agricultural, Food and Forestry Policies aims to support and develop the potential of rural areas throughout the Italian territory. The EAFRD ensures the 17.7 per cent of the Strategies total financing at the national level, the 15 per cent of South Italy Strategies and 40 per cent of the North of the country, which is added to the SNAI funds who insist on those areas.

The integration between EAFRD and SNAI did not take place according to a unitary approach, but it refers to very varied implementation methods depending on the contexts. The intervention models and the choice of measures depend on the differences in regional practices and on the different perceptions of the Administrations about the needs of these areas. The identification of rural areas for NSP (2014-2020), is based on criteria connected to demographic, altitude profile, and agricultural area aspects. Classification includes A - urban poles, B - rural areas with specialized intensive agriculture, C - intermediate rural areas, D - rural areas with comprehensive development problems. D - Areas include mainly rural mountain areas, predominantly rural hill areas (South Italy) and significantly rural mountain areas (South Italy) and they account for about 30% of municipalities. In this study, we have made a comparison between IA ad D-Areas: Figure 1 shows the IA coincident with D Areas. There are 1,327 municipalities which could receive funds both for the Inner Areas and for NSP (D- Areas) Strategies.

Figure 1 – *Geographical connection between SNAI and NSP (D-Areas).*



Source: Our elaboration on SNAI and NPS data.

3. Multifunctional agriculture: concepts and measurement

We can say that agriculture is always multifunctional because of its peculiarities, as all the implications that agricultural activity has had on society and the environment (Finocchio, 2008).

Multifunctionality is the ability of the primary sector to produce secondary goods and services of various kinds, together with the production of products for human and animal consumption. This term implies an innovation of the organization of the enterprise and the production techniques (Henke, 2004).

The economic and agrarian literature has shown that agricultural incomes are historically lower and unstable than non-agricultural sectors (Henke and Salvion, 2013). A first action to fight the reduction of income from agricultural activity is precisely the diversification: a more diversified production system can allow territories to more easily intercept competitive advantage factors useful to get out of the crisis and set local development strategies for the future (Capello and Nijkamp, 2009). The complexity of the definition of multifunctionality leads to a considerable difficulty in measuring the phenomenon. Following the OECD (OECD, 2008) indication for the composite indicator construction, the definition should give the

reader a clear sense of what is being measured by the indicator. It should refer to the theoretical framework, linking various sub-groups and the underlying indicators.

For the definition of multifunctionality it is possible to identify five conceptual areas or pillars: 1) landscape protection, 2) diversification of activities, 3) environment, 4) food quality and 5) protection of the territory (Greco *et al.*, 2013).

The estimation of a complex phenomenon as multifunctionality, with the use of a synthetic index, summarizes the concept at the highest levels, leaving little space to the analysis of the individual facets, but represents a photograph of the phenomenon, useful for the evaluation of agricultural *ex post* policies.

4. Measurement of agricultural resilience, the proposed model

Place-based development policies, by applying a combination of endogenous and exogenous forces and by requiring an appropriate multilevel governance to manage forecasting conflict between these forces, need for a main role of well-being indicators within an effective monitoring and evaluating system (Barca and McCann, 2011). The traditional framework – by now more than 10 years old – has no clear distinction and linkages between inputs, outputs, outcomes/results and impacts.

In our approach, we decided to consider context indicators, on one hand, and input and outcomes indicators on the other. Context indicators are used to assess the economic and social conditions of a given context (national, regional, sub-regional), by examining changes of variables through time or comparing data across space, to detect weaknesses and strengths, alert policy-makers and steer policy. Context indicators do not necessarily refer to any policy, and do not need to comply with any requisite of "responsiveness to policy". The policy financial resources are inputs aimed at producing planned outputs. The impact is the direct effect of policy action.

4.1 The sources used

In this study, the identification of indicators is based on two main data sources: Agricultural Census 2020 (Statistical source) and IACS (Administrative source). Both sources are under EU regulations.

Agricultural Census 2020. The 7th Agricultural Census is the last traditional census, with a mixed-mode technique for data collection ad involving 1.7 million of holdings. Since final data are not yet available, we based our analysis on published questionnaire and Regulations, to select core variables for building up our indicators. Questionnaire includes all mandatory variables under EU Relevant legislation. It includes Regulation (EU) 2018/1874 on the data to be provided for 2020, under Regulation (EU) 2018/1091 of the European Parliament and of the Council on

integrated farm statistics and repealing Regulations (EC) No 1166/2008 and Regulation (EU) 1337/2011, as regards the list of variables and their description. Regulation (EU) 2018/1091 provides both a framework for European statistics at the level of agricultural holdings and for the integration of information on their structure with information on production methods, rural development measures, agro-environmental aspects and other related information. Moreover, questionnaire includes variables collected for national needs.

IACS. IACS is the National Agency for agricultural payments, and it is the owner of administrative archives for subsidies given to agricultural holdings. This administrative source has been used in the Agricultural Census to reduce statistic burden for respondents, so we considered also this source, for some variables, for building up indicators. IACS is under Common Agriculture Policy (CAP) payment Regulations as:

- Regulation (EU) 1307/2013, establishing rules for direct payments to farmers under support schemes within the framework of the common agricultural policy (i.e. payment for farmers observing agricultural practices beneficial for the climate and the environment, a voluntary payment for farmers in areas with natural constraints, a payment for young farmers commencing their agricultural activity).
- Regulation (EU) 1305/2013, on support for rural development by the European Agricultural Fund for Rural Development (EAFRD). This Regulation sets out the objectives to which rural development policy is to contribute and the relevant Union priorities for rural development. It outlines the strategic context for rural development policy and defines the measures to be adopted in order to implement rural development policy.
- Regulation (EU) 1306/2013, on the financing, management and monitoring of the common agricultural policy. This Regulation lays down the rules on the financing of expenditure under the Common Agricultural Policy (CAP), including expenditure on rural development.

4.2 Pillars and indicators proposed

In IA, the agricultural activities are very fragile and fragmented. Their survival depends on the construction of a new offer (diversification of activities) and of an integrated and organized high-typical goods and services (specialties and integrated specialties) offer, in synergy with tourism.

Agri-food production, although consisting of specialties, is in many cases a necessary, but not a sufficient development condition: so, it must be combined with other services, such as the entire cultural heritage of which a certain local system is provided, for the production of the so-called integrated specialties (Becattini and Zorini, 2003). Producing integrated specialties means producing, through the integration of more professions and more product areas, a cluster of goods and

services, rooted in a specific life experience, in a certain place, and identified through a combination of knowledge, specific values and institutions.

For these reasons, in this study we consider two pillars previously identified for the multifunctionality index (Greco *et al*., 2013): 1) Food quality and 2) Activity diversification. Besides, we added a third pillar: Rural Tourism support. Reasons for this choice are as follow.

Food quality: is the support for competitiveness, and consequently for the profitability of EU farmers. Consumer expectations meet the fulfilment of strict requirements in production standards, and the European community itself is pushing agricultural producers to ensure quality for the consumer (Appendix, Table 1a).

Activity diversification: it is the new agriculture trend, based on a different disarticulation of the productive factors and on the production of a more variegated output (Appendix, Table 1b).

Rural tourism support: tourism has the potential to contribute, directly or indirectly, to all the Agenda 2030 goals, mainly to the Goal 2-zero hunger. Tourism can spur agricultural productivity by promoting the production, use and sale of local production in tourist destinations and its full integration in the tourism value chain. In addition, agritourism, a growing tourism segment, can complement traditional agricultural activities. The resulting rise of income in local communities can lead to a more resilient agriculture while enhancing the value of the tourism experience (Appendix, Table 1c).

For Food Quality Pillar we chose indicators for typical productions and organic production, for livestock and cultivations. For Activity Diversification Pillar we dived Agritourism, Production of renewable energy and Contractual work from other gainful activities, because they are the main gainful activities for Italian farms. Finally, for Rural Tourism Support Pillar we considered some indicators used for Territory protection and Landscape protection. In addition, we considered young holders because they could enhance the sector competitiveness and the areas attractiveness. The EFA lands, considered in C.6 indicator, are Ecological Focus Area, area of land upon which you carry out agricultural practices that are beneficial for the climate and the environment. The main aim of an EFA is to improve biodiversity. Thanks' to the IACS archive data we can utilized some context indicators as input indicators. In fact, the administrative data gives the number of farms that benefit from CAP aids. Considering the objectives of the measures planned by European Regulations, other context indicators can be used as impact indicators. This proposed division is shown in Appendix Table 2a, 2b, and 2c.

5. Conclusion

The resilience of Inner Areas, to a certain point, depends on the agricultural sector. The construction of a new offer (diversification of activities) and the construction of an integrated and organized offer of high-typical goods and services (specialties and integrated specialties) in synergy with tourism is necessary for the sector development.

The Agricultural Census launched on January 7th (2021) represents the last decennial data collection: from 2023 onwards, the analysis will be conducted on an ongoing basis, through a complex system which integrates simplified, direct sample surveys and administrative data, so as to reflect the evolution of Italian rural reality. Thanks to the integration between administrative sources and sample surveys, the new censuses ensure the increase both in amount and in quality of data output, the reduction of the response burden for citizens and economic operators, and the decrease in overall costs. The innovations introduced will provide an up-to-date picture - an essential aspect to take into account when assessing and planning national and regional policies. The use of the Continuous Agricultural Census, combined with IACS data, will give the possibility of monitoring the development pillars chosen in this study (Food Quality, Activity Diversification and Rural Tourism Support) in terms of context, input and impact indicators.

The model proposed allows to calculate the indicators at a micro level with temporal continuity, ensuring the monitoring of inputs and outcomes at a geographical level useful for evaluating the farms resilience respect to economic changes in AI, although the actual unavailability of validated data doesn't permit the sharing of the results.

The limits of this approach are connected to the multisource processes. Particularly: specification error, discrepancies between the target statistical concept and the administrative concept used to measure it; frame and source errors, under coverage, over coverage, duplications and errors in the auxiliary variables are errors possible both in the frame and in the administrative source, time lag errors; selectivity error, units cancelled due to elaborations from the administrative data owner or are not transmitted for technical problems; model errors are those arising when a model is adopted in any stage of the statistical process, including in the estimation phase.

Appendix

Table 1 - Pillars and related context indicators.

Table 1a

Pillar	COD	Contest Indicators
Food Quality	A.1	Holdings under support of Art. 16, Measure 3 (food quality) (Reg. No 1305/2013)/Total holdings
	A.2	Holdings with grapes for PDO wines/Total holdings with vineyard
	A.3	UAA with grapes for PDO wines/Total UAA
	A.4	Holdings with grapes for PGI wines/Total holdings with vineyard
	A.5	UAA with grapes for PGI wines/Total UAA
	A.6	Holdings with animal housing*/Total holdings with livestock
	A.7	Average number of livestock in housing/Average number of livestock
	A.8	Holdings with Organic farming UAA/Total holdings with UAA
	A.9	Organic farming UAA/Total UAA
	A.10	Holdings under support of Art. 33, Measure 14 (Animal welfare) (Reg. No 1305/2013)/Total holdings with livestock
	A.11	Holdings with Organic farming livestock/Total holdings with livestock
	A.12	Heads of organic farming stock for every animal typology/Total heads of livestock for every animal typology

*Table 1a note: * Only for Dairy cows, Other bovine animals, Breeding sows, Other pigs, Laying hens.*

Table 1b

Pillar	COD	Contest Indicators
Activity Diversification	B.1	Holdings with Production of renewable energy/Total holdings
	B.2	Holdings with other gainful activities (ref. Art. 19) (Reg. No 1305/2013), except points B.3 and B.4/Total holdings
	B.3	Holdings with Contractual work (using production means of the agricultural holding) /Total holdings
	B.4	Holdings with Agritourisms/Total holdings
	B.5	Holdings participating in other environmental certification schemes (Reg. UE 1307/2013 Art. 43 point a)/Holdings with arable lands
	B.6	Arable land UAA according to Art. 43 scheme/Total UAA

Table 1c

Pillar	COD	Contest Indicators
Rural Tourism Support	C.1	Holdings under support of Art. 21, Measures 8.1-8.5 (Reg. No 1305/2013) (Investments in forest area development and improvement of the viability of forests)/Total holdings
	C.2	Holdings with Wooded area/Total holdings
	C.3	Total Wooded area/Total area
	C.4	Holdings with Short rotation coppices /Total holdings
	C.5	Short rotation coppices area/Total area
	C.6	Holdings with EFA/Total holdings
	C.7	Holdings with Permanent grassland no longer used for production purposes and eligible for the payments/Total holdings with UAA
	C.8	Permanent grassland no longer used for production purposes and eligible for the payments/Total UAA
	C.9	Permanent crops area/Total UAA
	C.10	Holdings with Fallow land/Total holdings with UAA
	C.11	Fallow land area (Reg. No 1306/2013)/Total UAA
	C.12	Holding under support of Art. 19 Measures 6.1 and 6.3 (Reg. 1305/2013) and Art. 50 (Reg. 1307/2013) (Business start-up support for young farmers)/Total holdings
	C.13	Number of holders with no more than 40 years of age/Total number of holders

Table 2 - Input and impact indicators for Food Quality pillar

Table 2a

Pillar	Input COD	Input indicators	COD	Outcome Indicators
Food Quality	I.1	Holdings under support of Art. 16, Measure 3 (food quality) /Total holdings	A.2	Holdings with grapes for PDO wines/Total holdings with vineyard
			A.3	UAA with grapes for PDO wines/Total UAA
			A.4	Holdings with grapes for PGI wines/Total holdings with vineyard
			A.5	UAA with grapes for PGI wines/Total UAA
	I.2	Holdings under support of Art. 29, Measure 11 (Organic farming) /Total holdings	A.8	Holdings with Organic farming UAA/Total holdings with UAA
			A.9	Organic farming UAA/Total UAA
	I.3	Holdings under support of Art. 33, Measure 14 (Animal welfare) /Total holdings with livestock	A.11	Holdings with Organic farming livestock/Total holdings with livestock

			A.12	Heads of organic farming stock for every animal typology/Total heads of livestock for every animal typology

Table 2b

Pillar	Input COD	Input indicators	COD	Outcome Indicators
Activity Diversification	I.4	Holdings under support of Art. 19, Measures 6.2 and 6.4 (non-agricultural activities in rural areas)/Total holdings	B.1	Holdings with Production of renewable energy/Total holdings
			B.2	Holdings with other gainful activities (ref. Art. 19), except points B.3 and B.4/Total holdings
			B.3	Holdings with Contractual work (using production means of the agricultural holding) /Total holdings
			B.4	Holdings with Agritourisms/Total holdings
	I.5	Holdings participating in other environmental certification schemes (Reg. UE 1307/2013 Art. 43 point a)/Holdings with arable lands	B.5	Holdings with arable land according to Art. 43 scheme/Total holdings
			B.6	Arable land UAA according to Art. 43 scheme/Total UAA

Table 2c

Pillar	Input COD	Input indicators	COD	Outcome Indicators
Rural Tourism Support	I.6	Holdings under support of Art. 21, Measures 8.1-8.5 (Investments in forest area development and improvement of the viability of forests)/Total holdings	C.2	Holdings with Wooded area/Total holdings
		Holdings with Wooded area/Total holdings	C.3	Total Wooded area/Total area
			C.4	Holdings with Short rotation coppices /Total holdings
			C.5	Short rotation coppices area/Total area
	I.7	Holdings participating in other environmental certification schemes (Reg. UE 1307/2013 Art. 43 points b and c)/Total holdings	C.6	Holdigs with efa/Total holdings
			C.7	Holdings with Permanent grassland no longer used for production purposes and eligible for the payments/Total holdings with UAA
			C.8	Permanent grassland no longer used for production purposes and eligible for the payments/Total UAA
			C.10	Holdings with Fallow land/Total holdings with UAA

I.8	Holding under support of Art. 19 Meas. 6.1 and 6.3 (Reg. 1305/2013) and Art. 50 (Reg. 1307/2013)/Total holdings	C.13	Number of holders with no more than 40 years of age/Total number of holders

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SUMMARY

The National Strategy for Inner Areas (SNAI) represents an innovative national policy of territorial development and cohesion and a decisive priority for development for the socio-economic recovery of the country and the Inner Areas. In these areas, the agricultural sector plays a central role, as an economic opportunity and for the value of care and protection of the environment. SNAI is strictly linked to NSP Policies. In this study, we have made a merge between Inner Areas (IA) and D-Areas of NSP: 1,327 municipalities could receive funds both for the Inner Areas and for NSP (D Areas - rural areas with comprehensive development problems.) strategies.

The new economic and financial context requires the diversification of production system. For the Agricultural sector diversification means multifunctionality, in terms of production of secondary goods and services of various kinds, together with the production of goods for human and animal consumption, to diversifying income and avoiding risk factors.

The aim of this study is to represent the definitional complexity of multifunctionality and synthesize it in such a way as to express, at the territorial level, the resilience of farms.

For this goal, we define a theorical model starting from the identification of available data sources (Agricultural census 2020 and IACS) the identification of three Pillars, starting from a previous work (Greco *et al*., 2013), in which five conceptual areas or domains (pillars) were considered: 1) landscape protection, 2) diversification of activities, 3) environment, 4) food quality and 5) land protection. To measure the multifunctionality of IA, we focus on domains two and four. The first, because it expresses a different disarticulation in the productive factors and in the production of a more varied output, the second because it allows to bring out specificity the development of rural tourism. Besides, we added a new pillar, Rural tourism support, as spur for the agricultural productivity by promoting the production, use and sale of local production in tourist destinations and its full integration in the tourism value chain. The study identifies a set of 31 indicators useful for the computation of these phenomena, keeping in mind the opportunity given by the continuous Agriculture census (from 2023) data source, to allow the analysis of trends and analyzes the weight of farms on tourism potential. Thanks to the presence of a unique code, the integration with the administrative data added new important variable at the census results. The outcome provides a tool for the monitoring of Inner Areas with a view to assessment of the resilience of territories.

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