7. Agriculture and its policies as a constituent element of rurality: some cases in Italy

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1. Introduction

Until the 60s of the last century, the meaning of the term "rural" was essentially identified with that of "countryside" and, ultimately, with that of "agriculture". In other words, rurality was declined as "agrarian rurality" (Sotte, 2013). Up until that time, therefore, "rural" was identified, on the one hand, as something opposed to "urban"; on the other hand, instead, the "rural" was identified as "the territory in which the role of agriculture was prevalent in the socio-economic context, if not even exclusive".

However, already in the 70s, the close connection between "rural" and "agriculture" began to weaken, with a reduction in the weight of agriculture (in terms of added value and employment) even in areas that had until then been called "rural". In those years, some of these areas have experienced an important growth in industry and services in the context of a model that Sotte (2013) defined as "industrial rurality". In the Italian case this model was based on the well-known industrial districts. In those years, therefore, the phenomenon of rurality can no longer be explained through the dualism between city-countryside (and / or industry-agriculture) referred to above. However, it is precisely in this period that a new dualism emerges within the "not strictly urban areas": "areas of success" versus "areas that fail to trigger development processes". Even agriculture is involved in these phenomena, with the establishment of new specialized forms of agriculture based on high use of capital in the "favourite" areas, or with the abandonment of farms in areas that are, however, "less dynamic" in terms of economic development.

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It is in this new framework that the "rurality" begins to be largely attributed to the density of the population, rather than to the weight of agriculture in the economy (OECD, 1994).

In the current phase the new sense of "rurality" – the one that Sotte (2013) defines as "post-industrial rurality" - is strongly connected to the functions that the society asks to carry out to the areas in question: protection of environmental, landscape and cultural resources, recreational functions, production of quality food, etc., and to the interest shown for them by social groups of non-agricultural origin.

In this new framework, the problem is to define the new role of agriculture in a rurality that gets redefined on a territorial basis, within socio-economic territorial systems in which economic functions are closely integrated with the ecological and cultural ones.

It is also clear that since the systems in question are extremely different from each other (in terms of environmental and cultural resources, human and social capital, production mixes and production models, etc.), the role of agriculture in such systems tends to differ profoundly depending on their diversity.

In this context, the question that rises concerns the possibility of identifying, within these ongoing reorganization processes, common guidelines that can help predict the new role of agriculture in the "modern" rurality.

According to what has been highlighted so far, the reorganization processes affecting agriculture in the new rurality necessarily concern:

- the relationship models of the sector with natural resources (soil, water, etc.) to which agriculture is linked;
- the types of relationships between agriculture and other economic sectors within and outside the reference territorial systems (chains, districts, etc.);
- the relational mechanisms through which the agricultural sector is linked to the needs expressed by consumers and citizens.

2. Aim and approach

The first purpose of this work is to describe how agriculture represents a constituent element of the "new" rurality, and a driver of change in the development of rural areas, by means of three types of reorganization processes that are characterizing agriculture itself in the Italian context:

1. Type 1 – Agriculture redefines its productive and economic role in the management of natural resources,
2. Type 2 - Agriculture redefines its role in the relationships with other internal and external entrepreneurial actors and in the value chains,
3. Type 2 - Agriculture reinvents its business models (BMs) by involving consumers and users in co-decision processes.

The second objective is to briefly evaluate if the agricultural policies are congruent with these processes.

The methodological approach followed to seize these objectives is based on case studies (in a broad sense), taken from the literature and focused on the Italian context, which illustrate models of reorganization of agricultural activity based on these three directions.

The first type of reorganization process of the agricultural activity (Type 1) is illustrated by referring to the case-study topic of the adoption of No-tillage farming (NT) techniques. NT is the basic requirement of Conservation Agriculture (CA), an agronomic system that offers new solutions for a more sustainable use of soil in agriculture, with specific regard to the containment of degradation processes linked to mechanical disturbance and overexploitation of land. NT techniques are spreading also in Italy, determining a reorganization both of the productive structure of the holdings and of their modalities to cooperate reciprocally to adapt the technique itself to local conditions.

The second type of reorganization process of the agricultural activity (Type 2) concerns the new types of inter-company networks that go beyond traditional forms of horizontal aggregation (cooperatives, consortia) and vertical ones (chains, value chains). This type is illustrated by means of the case-study topic of the Network Contracts (NCs), a

"light" tool introduced in Italy as industrial policy to facilitate cooperation among firms belonging to different economic sectors along in a certain value chain. In Italy, the definition of the legal construct of the NCs is nowadays leading to the spread of new types of interaction between companies, especially in the agri-food sector, causing changes in the organizational dynamics of the sector itself.

The third type of reorganization process of the agricultural activity (Type 3) concerns the new BMs based on co-production (i.e. on consumer-producer interactions in the development of the production phase) made possible by the use of new Information and Communication Technologies (ICT). This type is illustrated by means of a recent paper focusing on three case-studies of agricultural holdings experimenting ICT-based innovation in a remote rural region of Italy. The current spread of digital infrastructures (i.e. broadband) (also supported by EU structural funds such as EAFRD and ERDF) is enhancing the development of new forms of business that offer new chances of competitiveness also to the agricultural activities practiced in the less dynamic rural areas.

3. Results and Discussion

In order to describe the first type of reorganization process (Type 1), we can recall the case-study topic of the worldwide increasing adoption of NT and, more specifically, a research exercise carried out in the Italian context on this theme.

NT is a farming technique aiming at minimizing soil disturbance associated with the cultivation of arable crops. This technique, together with the practices of continuous soil "green" cover and of crop rotation, represents one of the elements of the so-called CA, a paradigm of sustainable agriculture that is spreading worldwide also under the auspices of FAO (2014).

Modalities of adoption of NT can vary depending on whether it represents an incremental innovation within the ordinary management of the farm, or an element of an alternative farming paradigm (the CA) on which farms are setting up new organizational models.

Factors influencing the adoption of NT, widely studied in the literature, concern the characteristics of the natural environment, the structural features of the holdings (e.g. size) and, also, the presence of knowledge spill overs that are largely the result of spatial networks between farmers and other stakeholders.

A dedicated research (Marandola *et al.*, 2019) examines the spread of NT in Italy also with the aim to collect useful elements for addressing new policy efforts to increase sustainability in agriculture.

In summary, according to this work, the diffusion of NT practices in Italy can be ascribed to two different dynamics: on the one side, to a cost-saving oriented incremental innovation process started up mainly by large-size holdings in the framework of a conventional paradigm of agriculture; on the other hand, instead, to the attempt by several holding of trying a comprehensive reorganization of the way of doing agriculture based on cognitive and relational values and on an increased environmental sensitivity toward soil conservation.

Several authors have explored the role of social mechanisms in the generation of the specific knowledge connected to CA and in its spread. Change in tillage and cropping practices requires cooperation between farm and non-farm knowledge (Chougenour and Chamala, 2000), and the spread of CA is often the result of specific social networks (Chougenour, 2003). The adoption of soil conservation practices requires a growth of social capital (Cramb, 2005). Actors promoting CA, often in projects in developing Countries, must consider the specific perception of farmers (Nyanga *et al.*, 2011) and the gap existing between farm and non-farm culture (Moore *et al.* 2013). The role of social networks seems significant in the "transition" to the full membership to CA (D'souza and Mishra 2016). Finally, literature emphasizes the importance of (social and environmental) context specificities (Anderson and Dsouza 2014), and the difficulties to find general determinants (education, profitability, etc.) to explain the adoption of CA (Knowler and Bradshaw, 2007). However, cooperation among farmers and other actors plays a key role to promote the necessary mind-set and to adapt CA principles to specific environments.

In their work, Marandola *et al.* (2019) describe how the spatial distribution of agricultural holdings practising NT in Italy can allow to identify possible networking processes rising among farms. These processes can be somehow described by how agricultural holdings practising NT tend to cluster within the different municipalities. In the mentioned work, the existence of significant clusters of similarly-behaving municipalities (i.e. clusters of municipalities with similar number of holdings practising NT techniques) have been obtained by means of some spatial statistics tools as the one that rely on the well-known concept of global and local spatial autocorrelation.

In order to describe the second type of reorganization process (Type 2), we can quote the example of the new types of inter-company networks of interest to agriculture. This topic is well illustrated by a research work carried out in the Italian context on the specific theme of the NCs existing in the agri-food sector (Ievoli *et al.*, 2019a).

NCs have been recently introduced as industrial policy in Italy to promote competitiveness and innovation among small companies. The work by Ievoli *et al.* (2019a) investigates the structure and the characteristics of NCs operating in the Italian agri-food system. Data from Italian Business Register have been extracted and analysed using appropriate statistical tools, in particular local Moran spatial autocorrelation indexes, with the aim to highlight any possible phenomenon of geographical proximity among the different contracts.

The results of the work stress the significant role played by agri-food companies in the NCs acknowledged in Italy, especially the ones established among a reduced number of companies. NCs involving agri-food companies are mostly characterised by local spatial correlation patterns and by horizontal aggregation among agricultural holdings, rather than by vertical structures along the food value chain.

The same results, also show that several NCs involving agri-food companies can also express, more complex processes of re-organization and innovation of the food value chain.

Apart from a limited number of cases, the overwhelming majority of the agri-food NCs established in Italy is made of a very limited number of

companies. The aggregative factors linked to economies of scale and to the enhancement in market power appear to have had a weak influence in the establishment of the NCs studied by Ievoli *et al.* (2019a). Secondly it should be noted that, from a territorial point of view, the very large part of the examined aggregations assumes a province dimension or - at most - involves two provinces, thus demonstrating the inability of the tool to provide, or to make perceive, effective solutions to reduce transactional risks. As showed by the work, the setup of the analysed networks is, indeed, strongly influenced by spatial proximity, which evidently offers the guarantees of a closer social control to which, therefore, the important localized thickenings found by the work are evidently related.

From a sectoral point of view, the NCs analysed by the work are in a large majority agricultural contracts, starting with those involving the largest number of companies. In other words, between the determinants of aggregation, the sectoral character seems to prevail, leading to the development of networks above all in a horizontal rather than vertical sense. This does not mean that the vertical NCs in the agri-food sector does not exist, but that the horizontal networks continue to show a prevalence of agricultural activities (arable crops, arboriculture, livestock) on which significant links with the food industry, with tourism and other activities in the sector of services are built. These types of NCs would seem to reflect broader processes of strategic reorganization of the agri-food system, which in some cases envisages goals related to innovation.

From a territorial point of view, the research also shows how there are geographical areas in which a significant spatial autocorrelation is observed. This means that a significant part of the identified localized thickenings of the NCs phenomenon can be interpreted as spill over effects of the aggregative phenomenon (Ievoli *et al.*, 2017). The empirical analysis carried out by Ievoli *et al.* (2019a) so far does not allow to establish whether the NC tool has promoted aggregation among companies to some extent, or if has been simply a tool for strengthening and systematizing pre-existing "weaker" linkages and relationships among companies.

In order to describe the third type of reorganization process (Type 3), we can consider as representative the theme of the new BMs based on co-production triggered by the use of new Information and Communication Technologies (ICT). This type can be illustrated by means of a very recent research work by Ievoli *et al.* (2019b) focusing on firms experimenting innovation based on ICT in a remote rural region of Italy. The work deals with the role of ICT and of the related infrastructures to induce social innovations for sustainable rural development, in particular focusing on farms and on new rural enterprises.

The ICT, as well known, can completely transform the potential relationships between the enterprise and the external context and within the enterprise itself. In other words, the ICT allow to completely reorganize the physical and geographical dimensions of the firms/farms. For example, the control of the internal processes can be carried on remotely, as well as the boundaries of the firm can be shifted encompassing new suppliers and customers, and so on.

This remodelling process leads to radical changes in proximity dimensions (Boschma, 2005). In other words, ICT involves a radical change of the cognitive, organizational and even social nature of the firm/farm. These changes are not easy, especially for the traditional farm, in marginal areas.

In particular, the work by Ievoli *et al.* (2019b) examines the role of social innovation to create a new demand for products, services and organisational models for farms and rural enterprises, promoting further innovation. To target these objectives, the paper analyses some case studies of new BMs based on ICT innovation in Molise region (Italy). The analysis focuses on a group of new-established agricultural enterprises and investigates how these are shaped by the use of ICT in their organisational processes and in their interactions with other economic and institutional actors.

Results suggest that ICT can be very useful to address some of the main problems and needs affecting remote and inner rural areas (access to high value segment of food market, information deliveries about attractiveness of landscape and countryside for foreigners, investors and tourists and the

creation of new stable relation with consumers/citizens in the urban areas).

The results also show the significant influence that "reshaped" (by means of ICT) proximity dimensions (cognitive, institutional, social, geographical and organizational) have on the characteristic elements of BMs (value creation, supply chain, customer interfaces, financial model). In short, ICT can play a significant role in enhancing cognitive proximity, encouraging co-production processes with actors outside the rural context (e.g. consumers able to pay more for products and service from rural areas).

The ICT may favour the creation of new networks among local economic actors, remodelling the organizational proximity. Lastly ICT can also redesign spatial proximity on collective action basis.

In summary the three case-studies, taken from the literature and focused on the Italian context, allow us to depict some (proto)types of models of reorganization of the agricultural activity based on three directions: environmental sustainability (Type 1), organization and cooperation (Type 2), co-production with consumers (Type 3).

According to Marandola *et al.* (2019) (case study 1), the adoption of NT in Italy seems to suggest the will and/or the necessity of part of the holdings to proceed to a more comprehensive reorganization of the way of doing agriculture, to adhere to a new farming paradigm, that it can be likened to the CA, with all the socio-economic and environmental implications that this entails. Thus, for the aforementioned authors, the existence of clusters of NT holdings suggests the existence in Italy of (formal and in-formal) networks devoted at adapting NT practices to the local context and to share information and know-how among farmers interacting with the local tacit knowledge. This represents evidently a reorganization model that agricultural holdings are experiencing nowadays in Italy and that concerns both enhanced agronomy and new relationships among entrepreneurs and other actors (i.e. advisors and policy makers) for a new approach to the management of a natural resource such as soil.

According to Ievoli et al. (2019a) (case study 2) in the Italian agri-food sector, the use of the NC contributes to develop and/or reinforce forms of coordination and collaboration in the agricultural field, strongly characterized in the territorial sense, in tune with the traditional Italian agri-food model. From this point of view, the influence of the tool of NC on the development of the Italian agri-food model depends significantly on the interactions that the NC can have with other policies, starting with the agricultural ones, already planned in the territory. For instance, business networks are considered as eligible beneficiaries in various calls for proposals of the Rural Development Programmes (RDPs) funded by EAFRD (i.e. Measure 16 - Cooperation). In this case, the selection criteria envisaged by these specific support measure can represent a significant incentive for companies to adopt the tool of NC.

Analyses carried out by the third case-study out confirm the importance of investments in human capital, especially where public policies are investing in infrastructures to facilitate access to new ICT technologies. The relevance of cognitive and organizational proximity in the analysed BMs brings the attention to the centrality of knowledge and skills of the economic and institutional actors that participate or interact with the described BMs.

The use of ICT, even in internal areas, is a response to the consumers' growing demand of new services that could conveyed by digital technologies, which are in continuous evolution. A second lesson concerns the ICT connection infrastructures – also the ones provided by the market — that must be related with the development of production in rural areas. About this, the relevance of new forms of entrepreneurship in agriculture, based on environmental and social values, needs to be adequately supported, e.g. encouraging farmers and entrepreneurs to overcome cultural limits related to ICT, as highlighted by the cases study. This last issue requires further studies, in order to provide appropriate policy-makers instruments to set up more effective European programmes, addressed to both infrastructural and soft skills developments.

The on-going processes of innovation, in particular the ones based on ICT, to be transferred to the remote rural areas must be supported by

public training and advisory actions; these latter, moreover, should have considerable flexibility to be able to effectively affect the different conditions. A too homogeneous spread of knowledge could lead to certain lock-in phenomena, due to an excessive cognitive proximity. The risk is the loss of the ability of producing novelties or to be too creative. It is a present risk, for example, in the precision farming implementation process or in the spreading of conservative agriculture (Marandola *et al.*, 2019).

4. Conclusions

The current sense of "rurality" is strongly connected to the functions that society asks to rural areas to be delivered: protection of environmental, landscape and cultural resources, recreational functions, production of quality food, etc., and to the interest shown for them by social groups of non-agricultural origin.

In this new framework, agriculture gets the role of driver of development within rural areas, intended as socio-economic territorial systems in which economic functions are closely integrated with the ecological and cultural ones.

Such driving function is leaded by the ongoing reorganization processes that are characterizing agriculture itself in the "modern" rurality.

These reorganization processes basically concern three directions:

- the relationship models between agriculture and natural resources (soil, water, etc.);
- the types of relationships between agriculture and other economic sectors within and outside the reference territorial systems (chains, districts, etc.);
- the relational mechanisms through which the agricultural sector is linked to the needs expressed by consumers and citizens.

The three case studies considered in this work, taken from the literature and focused on the Italian context, help to identify three (proto)types of models of reorganization of the agricultural activity based on these three mentioned directions: environmental sustainability (Type 1), organization

and cooperation (Type 2), co-production with consumers (Type 3), and to evaluate if the agricultural policies are congruent with these processes.

In the first case study, agriculture redefines its productive and economic role in the management of natural resources by adopting new cultivation techniques that can enhance the conservation of natural resources such as soil. The case highlights how NT techniques are currently spreading in Italy, in part as an incremental innovation within a cost-reduction strategy, in part as a step of a more comprehensive reorganization process aimed at adhering to a new farming paradigm having stronger environmental implications for soil management, as requested by the current CAP (Common agricultural policy). The CAP is increasingly paying attention to environmental sustainability, ensuring payments for farmers who voluntary decide to undertake environmental reinforced commitments. This is the case of Italy where some regional RDPs envisage dedicated payments to support farmers in the adoption of NT techniques to conserve agricultural soils. In this sense, agricultural policy seems to be coherent with the reorganization model type 1 and relevant to its development.

In the second case study agriculture redefines its role in the relationship with other internal and external entrepreneurial actors and in the value chains. In Italy the tool of the NCs is contributing to develop and/or reinforce forms of coordination and collaboration in the agricultural sector. Even if the majority of the NCs involving agri-food companies in Italy are mostly characterised by local spatial correlation patterns and by horizontal aggregation among agricultural holdings, rather than by vertical structures along the food value chain, some of them can express more complex processes of re-organization and innovation of the food value chain, redefining the role of agriculture in the relationships with other internal and external entrepreneurial actors. In this case, attention payed to NCs by RDP measure in support of cooperation (Measure 16) shows how agricultural policies are partly trying to accompany this process.

In the third case study agriculture becomes the incubator of new BMs that, by means of the ICT, allow both external actors to participate in the

production processes and in the management of resources related to agriculture, and to the internal actors to experiment new models of involvement of customers. ICT can play a significant role in enhancing cognitive proximity, encouraging co-production processes with actors outside the rural context (e.g. consumers able to pay more for products and service from rural areas). In this case, policies are asked to support processes of innovation based on the new relational mechanisms between agriculture-consumers –citizens by ensuring adequate training and advice to farmers in relation to the use of ICT and, also, adequate infrastructural coverage (broadband) in rural areas. This latter aspect seems to be particularly targeted by current RDPs in Italy.

List of abbreviations

BMs: Business Models;
CA: Conservation Agriculture;
CAP: Common Agricultural Policy;
EAFRD: European Agricultural Fund for Rural Development;
ERDF: European Regional Development Fund;
EU: European Union;
FAO: Food and Agriculture Organization;
ICT: Information and Communication Technologies;
NCs: Network Contracts;
NT: No-Tillage;
OECD: Organisation for Economic Co-operation and Development;
RDPs: Rural Development Programme.

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