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WHICH ORGANIZATIONAL MODELS STIMULATE HIGHER ACCESS TO AGRICULTURAL EXTENSION SERVICES? EMPIRICAL EVIDENCE FROM ITALY

JEL classification: Q16, Q18

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Abstract. *The growing complexity of agricultural extension services (AES) has stimulated the debate on which organizational model fits best with farmers' participation in extension programs. The paper aims, on the one hand, to analyse the access to agricultural extension services by farms working in regions with different organizational models; on the other hand, the paper tries to test the effectiveness of*

different organizational models in terms of greater utilisation of AES by farms.

The results show profound differences in access to AES in different organizational models and provide for a normative solution to stimulate organizational adjustments in the supply of AES.

Keywords: *Agricultural extension services, privatization, contractualisation*

1. Introduction

The theme of the paper is agricultural extension services, that is “*a set of agricultural organizations and/or persons, and the links and interaction between them engaged in such processes as the generation, transformation, transmission, storage, retrieval, diffusion and utilization of knowledge and information, with the purpose of working synergically to support decision-making, problem solving and innovation in a given country's agriculture*” (Röling, 1990). The aim of our paper is to verify which organizational model fits best with farmers' participation in extension programs supplied by Italian regions. Special attention will be devoted to marginal rural areas, where the multifunctional paradigm of agriculture is at stake: in these areas, it could be of interest to test the rates of adoption of services by farms with different models of governance. To this end, in the next paragraph we offer a brief theoretical note; then, following a summary of the methodological approach, we present the results of an empirical research carried out in Italy, concerning access to AES by farms situated in regions with different organizational models.

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2. Theoretical background

The setting up and evolution of the multifunctional paradigm of agriculture have called for a renewal in the supply and governance of agricultural extension services in enabling multifunctionality (Cukur *et al.*, 2013). A coherent adaptation of agricultural extension services to the new scenario should integrate economic, social and environmental aspects into the definition of strategies for knowledge transfer (Brunori *et al.* 2009). As a consequence, agricultural extension systems have been entrusted with a set of goals aimed at fostering the transition toward more sustainable and multifunctional agriculture (Anderson, 2007). On the institutional side, the evolution of extension has been sustained by a parallel development of agricultural policy during the last programming phase (2007/2013). The most important measures aiming at improving the supply of extension at farm level concern vocational training and information s, the use of advisory services and the establishment of rules for management, relief and advisory services (Ascione, Vagnozzi, 2011). As pointed out by the Standing Committee on Agricultural Research, this policy aims to empower human capital and farmers' attitudes towards innovation (EU SCAR 2012); therefore, pluralistic views of provision of extension supply have recently been established to stimulate higher rates of farmer participation in agricultural services (Anderson, 2007). Mixed models of extension have become dominant all over the world, with the prevalence of public presence in underdeveloped countries, as compared with developed economies (Johnson, 2002). As a matter of fact, in developed countries a marked trend towards an organizational model of extension services based on co-payments for services is taking place. For example, starting from a cost-recovery process, some northern-European countries have arrived at completely privatized extension systems (Laurent *et al.*, 2006). However, the success of privatized systems of extension depends on participatory multi-actor models: universities, public agencies, non-governmental associations, international agencies and other local stakeholders cooperate in order to promote more efficient systems of extension, thanks to processes of institutional innovation (Wolf, Zilberman, 2001). On the other hand, a total privatization of services could be discriminating for a relevant share of small-scale farmers (Laurent, Labarthe, 2009), or in developing countries. By recalling Schwartz's (1992) analysis, Foti *et al.* (2008) emphasize issues concerning the privatization of traditionally publicly provided agricultural extension services: will "fee for service" systems, necessarily lead to greater efficiency and equity? what are the implications for social aspects, income distribution and marketing, as regards access to the services by small farmers and the rural poor? Will farmers be willing to pay for the extension services? (p.96).

Against this background, Best Fit approaches are particularly useful in the analysis of a "good" supply of agricultural extension, which makes it possible to reach all types of potential beneficiaries of agricultural services (Birner *et al.*, 2009). As a matter of fact, the objective of avoiding "result paradox" (Benvenuti, 2000) could be reached by involving all types of farms, even small and marginal ones, and by considering their multifunctional role (Labarthe, 2005; Labarthe, Laurent, 2009). Therefore, an intense debate on which organizational model fits best with the necessity to foster farmers' greater participation in extension programs has been developing in recent years: do privatization and contractualisation lead to higher levels of participation? Is it necessary to maintain a minimum presence of the public sector, due to the "public" nature of some services? In this setting, provision and use of agricultural extension services could be strictly linked to the production of externalities: for example, positive externalities could arise in the case of free access to information and innovative practices from other actors, through informal hori-

zontal mechanisms of transmission and self instruction, above all within specific regions well-known as learning regions (Lundvall, 2006; Umali, Schwartz, 1994). Similarly, other examples of positive externalities are diffusion of good agricultural practices, practices of animal welfare and sustainable use of natural resources. Market failure linked to the presence of externalities (either positive or negative) may be reduced by public policy: it could happen in cases of provision of a complete public service, where the role of services takes on the nature of a public good. This is particularly true in certain rural areas, classified by the European rural policy as marginal, where both environmental and physical characteristics reduce the propensity to offer private services to farmers. However, as underlined in the literature, public intervention in economics could be ineffective and government failure may emerge (Stiglitz, 2000).

For this reason, other relevant research questions emerge: do progressive decentralization and privatization of AES really fit in with growing territorialisation of rural development policies? Is a good penetration of AES in rural marginal areas granted within a privatized system of services? Should a “core” public intervention be kept in these areas? In order to answer these questions, we present an analysis of the access to AES: the analysis makes reference to Italian farms located in different rural areas and in regions classified with different models of governance. The paper intends to match diversified levels of governance with different degrees of access to AES on the basis of different degrees of rurality.

3. Materials and method

By considering farmers as consumers of agricultural services (Charatsary *et al.*, 2011), the paper presents a comparison of access to AES on the basis of territorial characteristics and models of governance: models of governance have been defined in previous studies (La Rocca, 2012). Key aspects considered to define models of governance are: functions, actors, type of service. We make reference to this criterion to compare different Italian regions on the basis of different models of governance, more precisely, by comparing:

- a) regions with prevalently public structures of governance (Piedmont – northwestern Italy and Campania – southern Italy);
- b) regions with decentralized structures of governance (Umbria – central Italy);
- c) regions with private and NGO structures of governance and balanced participation (Lazio – central Italy);
- d) regions with pluralistic, privatized and participated models of governance (Veneto – north-eastern Italy).

In each region, we refer to rural areas, according to the classification in the national strategic plans, as:

- urban poles (A);
- areas with intensive agriculture (B);
- intermediate rural areas (C);
- marginal rural areas (D).

The underlying reasoning that in a region characterized by the prevalence of public governance, higher levels of access to services should be granted in marginal rural areas, where privatized systems of services are less involved. To test this hypothesis we have classified farms on the basis of degree of access to agricultural extension services: to this end, we have borrowed a previous

classification of Italian farms based on the propensity to make use of agricultural services (De Rosa *et al.*, 2013). This classification takes into account:

- a) farm's utilization of services and motivation;
- b) degree of satisfaction expressed by farmers about the utilization of services;
- c) motivations for not utilizing services.

Starting from this classification, we have obtained four relevant groups of farms:

- 1. farms with full use of AES (farms with regular access to AES in all possible sources: training, information and advising);
- 2. farms with partial use of AES (use of one or more services, with the exclusion of others);
- 3. farms without any voluntary use of AES (farms which do not consciously use services, due to their inadequacy or due to farmers' self-reliance);
- 4. farms with lack of access to AES (farm not using services due to informational asymmetries or to a set of unsustainable costs).

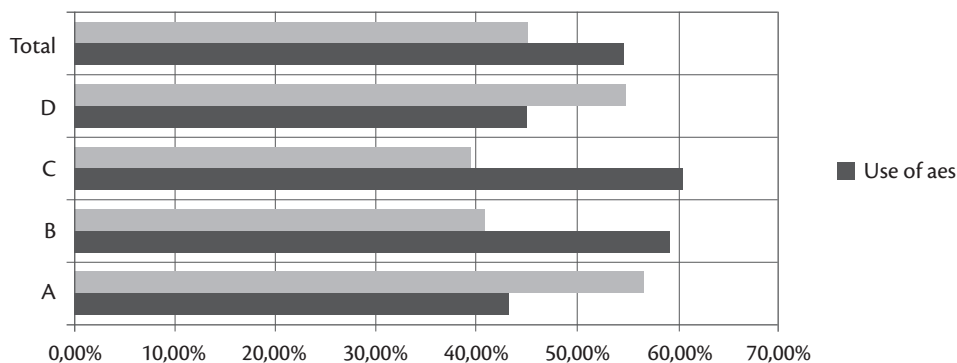
Differences among the two groups of farms not using services are attributable either to a farmer's choice or to a sort of difficulty in gaining access to agricultural advisory services. In the first case, either negative previous experiences or a total lack of interest have limited the potential demand of farmers for advisory services.

In the case of lack of access, there is a problem of informational asymmetry: many farmers are not aware of the opportunity of supporting their activity through advisory services. A further possible gap is due to different types of cost the farmer has to sustain to adopt the services (opportunity costs included). In the following paragraphs we present the results of our empirical tests, by elaborating on the possible link between organizational regional models of AES and their use by farms.

4. Results

Figure 1 depicts the aggregate situation concerning the use of AES in the entire sample. Slightly more than half make systematic use of agricultural services, while more than 40% do not use them. The share of farms using services rises in areas with intensive agriculture and in intermediate rural areas, while it falls in urban poles and marginal rural areas. In these latter areas the majority of farms do not utilise agricultural services. In order to get confirmation of connections between types of rural areas and access to services, a *chi-squared* test has been applied.

Fig. 1 - Use of agricultural services (% of farms per type of rural area)



A = urban poles; B=areas with intensive agriculture; C = intermediate rural areas; D = marginal rural areas.

The test illustrated a relationship between rural zones and access to services, underlining profound differences among the various rural areas designated by the national strategic plan. In this sense, innovation does not spread out in a linear and uniform way, as affirmed in some regional perspectives on diffusion of innovation (Hagerstrand, 1965). As stressed in *best fit* approaches, a contextualization of analysis should be preferred to linear models of innovation (Knickel *et al.*, 2009). To get more precise information linking models of governance, types of rural areas and access to agricultural services, it is necessary to compare regions characterized by different organizational models.

4.1. Results at regional level

Tables 1-4 show access to services in regions with different organizational models. From the tables some interesting differences emerge in marginal rural regions

In regions with prevalently public structures of governance, the situation is depicted in table 1 referring to farms in the north and south of Italy. In marginal rural areas, rates of full utilization are lower than the national average (33% vs. 36%), both in the north and south of Italy. In the south, partial use of services is evident, while in the north, the percentage of use is limited to full access: that means two thirds of the total have no access to AES in northern Italy.

Areas with intensive agriculture show the highest percentage of access to services, with higher percentages in the north than in the south.

Tab. 1 - Access to AES in regions with prevalently public structures of governance (% of farms per type of rural area)					
North (Piemonte)					
	A	B	C	D	Total
full utilisation	42,9	56,7	52,7	33,3	49,3
no voluntary use	6,0	9,4	6,8	19,3	9,1
partial use	6,0	2,4	3,4	0,0	3,1
difficulty in access	45,2	31,5	37,2	47,4	38,5
Total	100,0	100,0	100,0	100,0	100,0
South (Campania)					
	A	B	C	D	Total
full utilisation	38,6	39,2	40,0	33,9	38,1
no voluntary use	11,6	12,9	12,5	11,6	12,1
partial use	20,5	19,9	17,5	23,2	20,4
difficulty in access	29,3	28,1	30,0	31,3	29,4
Total	100,0	100,0	100,0	100,0	100,0

As concerns *regions with decentralized structures of governance*, table 2 shows the relative results. The region considered is characterized by the presence of only C and D rural areas: in marginal areas access to AES, either full or partial, involves a high percentages of farms (73,6%). Another relevant result is evident: the difficulty in access is practically absent: therefore, AES gets an effective system to spread out information to farmers. As a consequence, voluntary non-use affects few farms: 14% of farms in C areas and 26% in D areas.

Tab. 2 - Access to AES in regions with decentralized structures of governance (Umbria) (% of farms per type of rural area)					
	A	B	C	D	Total
full utilisation	0,0	0,0	37,2	32,4	36,1
no voluntary use	0,0	0,0	14,0	26,5	16,8
partial use	0,0	0,0	44,6	41,2	43,9
difficulty in access	0,0	0,0	4,1	0,0	3,2
Total	0,0	0,0	100,0	100,0	100,0

In the regions *with private or Ngo structures of governance and balanced participation*, presented in table 3, a high level of utilization of services emerges in marginal rural areas: only one quarter of farms do not use services either voluntarily or due difficulty in access; therefore, higher access with respect to the national average is found.

Tab. 3 - Access to AES in regions with private or Ngo structures of governance and balanced participation (Lazio) (% of farms per type of rural area)

	A	B	C	D	Total
full utilisation	54,8	44,0	38,7	35,9	41,8
no voluntary use	16,7	19,3	19,9	15,4	18,9
partial use	23,8	29,4	29,8	38,5	29,9
difficulty in access	4,8	7,3	11,6	10,3	9,4
Total	100,0	100,0	100,0	100,0	100,0

Finally, the highest percentage of full utilisation of AES (67,6%) has been found in *regions with pluralistic, privatized and participatory models of governance* (Table 4). More precisely, in marginal rural areas (D) more than 58% of farms gain access to all type of services, while in intermediate rural areas (C), the value rises to 75%. A relevant share of access is also registered in areas with intensive agriculture (67,4%) and in urban poles (58,3%).

Tab. 4 - Access to AES in regions with pluralistic, privatized and participatory models of governance (Veneto) (% of farms per type of rural area)

	A	B	C	D	Total
full utilisation	58,3	67,4	75,0	58,1	67,6
no voluntary use	33,3	8,2	3,3	6,5	8,9
partial use	0,0	0,3	3,3	3,2	0,9
difficulty in access	8,3	24,2	18,5	32,3	22,6
Total	100,0	100,0	100,0	100,0	100,0

5. Conclusions

Europe 2020 strategy draws up new scenarios where a renewed role for agricultural extension systems is foreseen, within a process of building a Knowledge-based Bio-Economy (Materia, 2012). The framework designed by the strategy Horizon 2020, moreover, points to the relevance of interactions between different operators working in systems of agricultural knowledge, through the establishment of new networks and new subjects, like operational groups (van Oost, 2013). As a consequence, institutional assets will have to be revised to introduce a more efficient system of knowledge governance. In this context, our paper has tried to link (public/private/mixed) systems of governance with the adoption of extension services by farms, with particular attention to farms located in marginal rural areas. The regional governance of extension activities is arranged through the involvement of a multiplicity of actors, with different objectives (Vagnozzi, 2009). For this reason, a comparison of regional organizational models has been put forward, with the aim of testing relative effectiveness.

On the whole, the results show a progressive reduction in the access to services in the case of farms located in marginal areas. In these areas multifunctional agriculture is relevant and a multifunctional role of agriculture should be the key concept in maintaining a public role for agricultural services: in fact, in these areas, we have emphasized the role of public goods taken on by extension services. As demonstrated in other studies (Celik, 2013), supporting a public

structure to fulfill specific territorial needs is a priority in some territorial contexts. However, this may not always be true, as in cases of government failure, well explained by Stiglitz (2000) and analyzed in other studies (Caggiano, 2014).

Our empirical evidence shows a high percentage of access in regions with pluralistic, privatized and participatory models of governance, even in marginal rural areas: penetration indicators are satisfactory. On the contrary, public governance does not always seem able to stimulate farms to utilize agricultural services. How can the contradiction of a reduced rate of access to services with public governance in rural marginal areas be accounted for? The low efficacy of public intervention in AES has been widely explained in the literature: for example, McElwee (2006) illustrates this point when he underlines the lack of advice to support farmers and to orient them towards farm diversification in rural areas. In these cases, *poor and inconsistent advice prevents many farmers from attempting to expand their business* (McElwee, 2005).

To give an explanation of public failures in agricultural services, Birner and Anderson (2007) underline the following critical points: informational asymmetries, capabilities, bureaucracy and political interests. These ties are strongly exacerbated by the small structure of the Italian agricultural sector and make it difficult to develop demand-driven approaches (Rivera, Alex, 2004; Chipeta, 2006).

On the supply side, however, it cannot be denied that the role of the public sector is still relevant: new challenges are related to environmental and multifunctional aspects of agricultural activity, which makes it urgent to revise the role of the public sector in agricultural services, above all in rural marginal areas. Three main aspects should be on the agenda for revitalising the public role (Anderson, 2008): structure of governance, management and capability, methods of extension.

Finally, other tools to reduce failures in extension services call for action concerning an institutional design (Birner and Anderson, 2007): as our empirical analysis confirms, decentralization and participation could be a good answer for making services more coherent with local needs and to foster higher levels of performance.

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