

111 EAAE-IAAE Seminar "Small Farms: decline or persistence"

University of Kent, Canterbury, UK

26th-27th June 2009

Transformations of agricultural extension services in the EU: Towards a lack of adequate knowledge for small-scale farms

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Abstract of the paper

This paper examines the consequences of the transformations of extension services for small-scale farms. It presents the results of investigations embedded in regulation theory, which combine a comparative institutional analysis, statistical data processing (national agricultural census) and direct surveys. We describe the transformations in the EU and show that they make it more difficult for small farms to access extension services and to benefit from “front-office” support (i.e. direct advice from extensionists). Finally, we emphasize that due to the modification of the knowledge production regime, these small farms may also suffer new specific adverse effects resulting from the re-organization of the “back-office” R&D activities of these extension services (i.e. knowledge base updating, database building, scientific experiments, etc.).

Keywords: Agricultural extension services, Small-scale farms, Institutional Analysis, Europe, Knowledge

JEL codes : Q16, Q12, B52, P51, D83

INTRODUCTION

As European agriculture is characterized by a wide structural heterogeneity, the dimensional threshold that defines the notion of a "small-scale farm" varies from one country to the next. In this article we focus on the smallest farms in the Eurofarm European database. We therefore reserve the term "small-scale farm" mainly for those with fewer than 8 economic size units (ESU) when data in terms of this classification are available.

In Europe the attention paid to small-scale farms under structural policies gradually declined with the success of modernization policies. Many countries nevertheless consider that this process is not complete, and that specific measures need to be developed to accompany the development of small-size farms. Moreover, with the CAP reform of 1985, the Cork Conference of 1998 and the Salzburg Declaration (EC, 2003-a), the importance of agriculture for maintaining the rural economic and social fabric has repeatedly been reaffirmed, in debates on rural development and those on the multifunctionality of agricultural activity. From this perspective, small farms take on a new importance, for even though their contribution to agricultural production is weak, in terms of volume, in many European countries they correspond to a significant proportion of the family farm population (Laurent, 2005; Renting *et al.*, 2008) and play a specific part in the ecology of landscapes.

At the same time, the technical and normative content of agricultural policies has increased, primarily as a result of environmental and sanitary regulations. These norms raise new technical problems for farmers and generate new needs for advice. For example, in the case of wheat, the level of mycotoxins acceptable in the agri-food industry is now strictly regulated (EC, 2000), but how can cereals be grown that contain no mycotoxins produced by fungi, when regulations limit the use of fungicides? Faced with this new type of problem, European farms of all sizes need technical support to find solutions suited to their production systems. It was moreover in this perspective that the CAP (EC, 2003-b) reintroduced, back into community intervention, reflection on extension services that until then had been considered as a matter of national subsidiarity. That is also why many studies have recently been undertaken to assess the effects of privatization of large national agricultural extension services on the productive and environmental performance of farms. Most of them however overlook the question of small-scale farms. Yet extensive empirical evidence shows that these farms suffer on account of this type of reorganization, even though the mechanisms producing such discrimination are not always clearly identified.

The aim of this paper is to shed light on this problem. In the first part we consider the reasons for which the question of small farms is usually overlooked in economic analyses of the evolution of extension services. We then show, in the second part, that the question of target publics has gradually been pushed aside as national extension services have been privatized. The third part explains that the institutional reorganization accompanying this privatization has nevertheless transformed the conditions of small farms' access to front-office support (i.e. advice directly from extensionists, in face-to-face interaction). Finally, in Part 4 we show that this reorganization has also altered the way in which small farms are taken into account in back-office activities (R&D, research literature surveys, construction of databases, and experimentation), which no longer guarantee to the same extent that appropriate, validated knowledge can be produced for these farms.

1. EMPIRICAL EVIDENCE. THE INVISIBILITY OF SMALL FARMS IN THE ECONOMIC ANALYSIS OF EXTENSION SERVICES

Most analyses of the reorganization of extension services in Europe overlook the question of small-scale farms. These farms are often excluded from the studies of agricultural economists, who claim that they are exclusively recreational or for own consumption. In some cases that is true. However, direct observation of these farms, via a survey (Laurent & Rémy, 1998; Laurent *et al.*, 1998), shows that the situation is more complex, and that a significant proportion of these farms provide rural households with income from the sale of their products. For instance, if we consider Type 13 of farming, "Specialist cereals, oilseed and protein crops", which rarely corresponds to recreational farming, we see that the proportion of agricultural holdings with fewer than 8 ESU remains large in almost all EU countries (cf Map in annex 1).

In other words, some small farms are still stakeholders in the productive dynamics of agriculture. The functions assigned to them in agricultural and rural development policies (buffer role in situations of economic crisis, additional income for rural households, etc.) can be fulfilled only if they can practice this productive activity in the right conditions and carry on selling their produce.

Other analysts do not specifically take small farms into account. They posit that the technical functioning of farms can be considered as "non scale-dependent". In the most recent studies, in which the effect of extension services within an agricultural production function is modelled, size is taken into account only as a continuous variable determining the levels of investment in extension services, among other inputs of the productive function (Dinar *et al.*, 2007). The effects of thresholds or steps in access to extension services, as well as the differences of forms of learning to which they contribute for different groups of farms, are not taken into account. Finally, the very question of the target publics of extension services is overlooked, and market regulation is expected to provide an optimum allocation of information to producers.

The question of extension services to small farmers consequently remains a blind spot in agricultural economics. Few data and analyses exist on these farmers' demand for and access to such services. It would not be a problem if, on the whole, the mechanisms of access to agricultural extension services were the same for all farms. However, research that takes the characteristics of the beneficiaries of these services into account shows that this is not so. Small farms' access to extension services is weak even when their productive functions are affirmed. Moreover, this situation seems to be worsening.

In the most recent general agricultural census, in 2000, in the Rhône-Alpes region of France which had a total of 52,600 agricultural holdings, a set of questions was added to the standard questionnaire¹, to evaluate the number of farms that had regular contact with extension services². The database thus constituted is a very rare example of an exhaustive census of farms' access to extension services. It enables us to link the structural characteristics of these farms to the different types of source of technical support. Results of other studies (Laurent &

¹ The basic questionnaire corresponds to the Eurostat/Eurofarm questionnaire with, in addition, national and regional questions.

² The data collected are statements on extension services. Farmers were asked whether they had had at least three contacts (face-to-face or by phone) during the preceding 12 months with an extensionist and, if so, with what type of extensionist (chamber of agriculture, cooperative, etc.).

Mundler, 2005; Mundler *et al.*, 2006) show that a very large proportion of small-scale farms have no regular contact with any kind of extension service whatsoever. This includes the offer of extension services by development agencies (mainly chambers of agriculture) which is free-of-charge or almost.

Figure 1 shows that for the "Specialist cereals, oilseed and protein crops" and "General field cropping" types of farming, where most small farms have a productive purpose (and are concerned by problems such as mycotoxin (Dufлот, 2004)), access to free advice from chambers of agriculture is still extremely limited.

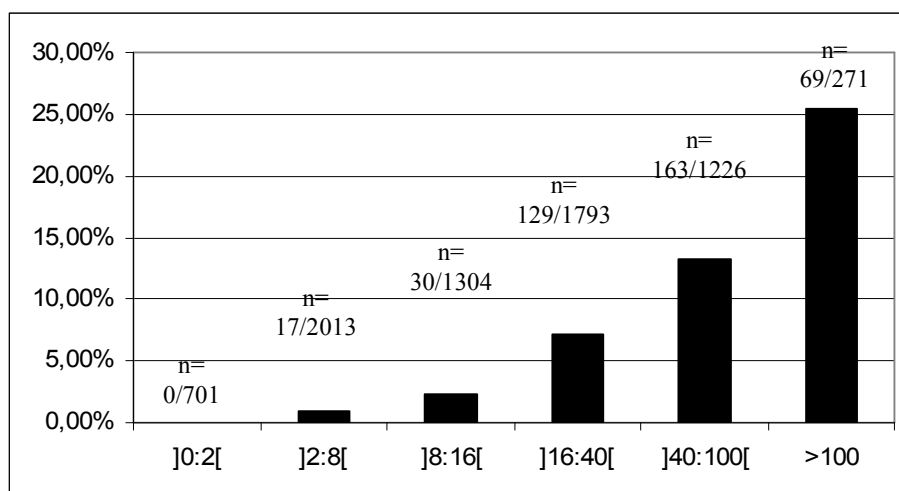


Figure 1. Proportion of farms declaring in 2000 that they benefit from regular contact with an extensionist from a development organization (percentage of farms of each class of economic size), for the total population of agricultural holdings, in two farm types: "Specialist cereals, oilseed and protein crops" and "General field cropping", Rhône-Alpes region, France (Source: Agricultural census 2000, special processing INRA-SAD).

Data provided by the regional agro-environmental programme set up in Italy by the Tuscany region (Regione Toscana, 2002-2006) show that not only do small farms have less access than others to extension services, but also that this situation can worsen. They indicate the evolution of the distribution of agricultural holdings which apply for subsidized extension services. We see that, in relative terms, this demand remains constant or increases for average or large-scale farms. The number of farms officially requiring extension services is decreasing less than the total number of farms. On the other hand, for the smallest farms the opposite tendency appears: the number of farms requesting advice is declining steeply whereas the total number of farms is decreasing slowly or is increasing in certain size-groups (Figure 2).

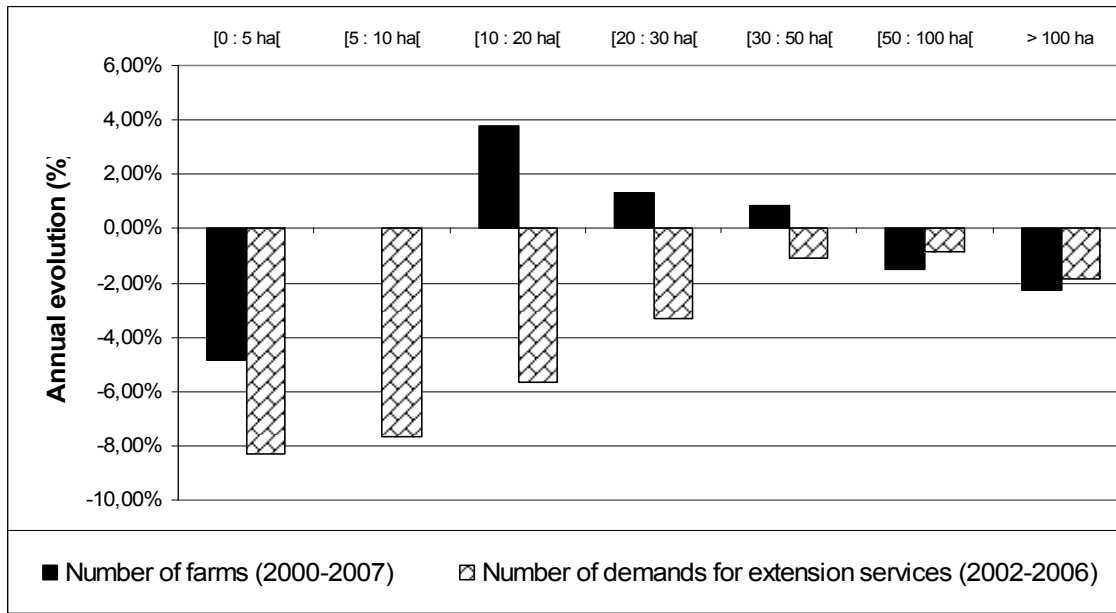


Figure 2: Comparison between the annual evolution of the number of farms in Tuscany and the evolution of the demand for subsidized extension services

Source: (*Eurofarm/Regione Toscana 2002-2006*). Additional methodological note in Annex 1.

In these two examples, a significant proportion of small farms with productive functions need agricultural advice, especially to cope with new sanitary and environmental constraints. Yet they no longer have any easily measurable direct contact with existing extension services³.

This finding may be deemed to be of little interest if we posit that the difficulties of access to advice may be offset by a diffusion of available knowledge and information, from the biggest farms, which have easy access to extension services, to the smallest ones. It has in fact been shown (Darré 1986) that, in the circulation of information, relations with neighbours and other colleagues, such as requests for general sources of information (farming reviews, specialized radio or TV programmes, etc.) are a reality. But for many technical problems, these forms of access to knowledge clearly cannot replace professional extension services.

For many technical problems, the solutions envisaged and their implementation often depend on the size of the agricultural holding. A typical example is the struggle against the concentration of mycotoxins in cereals. Research has shown agricultural practices⁴ to be a determining factor in explaining risk levels and devising solutions (Massé and *al.*, 2002). But the changes to agricultural practices that are recommended as solutions require investments in machinery (management of crop residues), expenditures on operating costs (varieties, phytosanitary products) or quantities of work that small farms cannot always afford. Hence, these solutions cannot be transposed and the diffusion of related knowledge has little interest for small farms. This example is no exception. In general, in both crop and livestock farming, we find that for a large number of problems the technical solutions that farmers can implement depend on the size of their farm and the quantity of work carried out on it.

³ The number of individual contacts between a farmer and an extensionist can be measured more easily than relations such as farmers' occasional participation in collective information meetings.

⁴ For instance: choice of varieties, working the land, choice of crop rotation, etc.

It is therefore necessary to analyse more precisely the mechanisms through which current changes to extension services can accentuate small farms' difficulties in obtaining access to appropriate knowledge. But for that purpose we need to mobilize theoretical knowledge that takes into account information which seems decisive for understanding these mechanisms, for extension services are a resource that can be described in different ways.

While extension services are considered as simply an exchange of information that can be equated to goods, the cost of such services for a farmer can be seen as a material investment. Micro-economic models can thus be built to describe the modalities of allocation of such goods. These models are based on calculations of maximization of utility functions describing the supply and demand in agricultural extension services. The disparities of access to extension services can then be imputed to constraints on market regulation or interpreted as the result of an insufficient capacity to invest in time or capital (Carney, 1995). Yet such conceptual frameworks are based on the analysis of standardized situations where knowledge is exchanged through market relations. They have a low heuristic value for understanding concrete situations where extension services are delivered which mostly do not match this model (Hanson and Just, 2001).

Many empirical analyses show that knowledge is co-constructed in relations between service providers and beneficiaries (Gadrey, 1994), according to modalities which are institutionalized in the form of operating rules.

When advice is considered not simply as an exchange of goods but as a lever for knowledge production, investment in this service must be analysed as an intangible investment that can be defined as *"a detour via the production of knowledge which is lastingly embedded in objects, people and organizations"* (Epingard, 2001). The forms of organization stemming from this process are not simply intended to meet the objectives of economic efficiency. They bring into play asymmetries of power and conflicts of interest. The ways in which the modalities of creation and distribution of knowledge are institutionalized can then be a source of disparities between farmers, for they express compromises which regulate conflicts, and are a stable reflection of power struggles (Théret, 2000). That is why access to this knowledge, and to extension services, is an issue which cannot be analysed without taking into account the recent history of agricultural policy.

2. HISTORICAL MILESTONES. TAKING INTO ACCOUNT SMALL FARMS IN AGRICULTURAL POLICIES OR EXTENSION PROGRAMMES

2.1 Post-WWII modernization policies

After the Second World War, national systems of agricultural extension services were set up in all European countries. These systems, which replaced more traditional ways of circulating knowledge in rural areas (demonstration farms, agricultural fairs), were organized differently in the various countries. However, since the strategic nature of food safety was foremost in all states' policies after the war, this technical support was financed to a large extent by public funds and/or by a system of additional taxes on the sales of farm produce or on land.

The emergence of these extension service systems was rooted in a more global dynamic where the terms of new development models for national agricultures, aimed at their modernization, were negotiated. These negotiations involved representatives of farmers' unions and representatives of the state, as well as other actors in some cases. They covered all

the dimensions of agricultural development that contribute to regulation of the sector, including the management of structural inequalities, the stabilization of markets, and access to basic resources for production: land, capital, labour, and technical knowledge. The resulting compromises were institutionalized in regulations and laws that led to structured national agricultural extension services.

Depending on the country, the compromises that were reached differed, and were strongly marked by the social characteristics of each national agricultural system and local balances of power. In particular, the weight of small farmers differed from one context to the next. Even if the history of European national agricultural policies is strewn with examples of programmes targeted at small farms, the modalities of this insertion were widely heterogeneous. Hence, the rules of redistribution of funds for extension services, fed by fiscal or parafiscal taxes, were usually institutionalized in commissions on which ministries of agriculture and producers' unions were represented. But small farmers in the different countries did not have the same opportunities to make themselves heard and to have their interests recognized.

In the Netherlands, for instance, there existed a plurality of farmers' unions, which allowed small farms significant representation on the commission steering the extension system. This was concretized by the establishment of a specific extension service for adjusting and intensifying the production systems of small farms (Labarthe 2006a). In France, on the other hand, where the dominant farmers' unions defended the interests of farms of all sizes, some small farmers were deliberately excluded from agricultural extension services. Either they failed to adhere to the modernization project based on the defence of family farming with two agricultural working units (pluri-active farmers, part-time farmers, farmers who refused to expand), or the heads of the extension services considered that for reasons relating to size or competencies, they could not attain this model (Van der Ban, 1984; Rémy, 1987).

Apart from these disparities, what is worth noting is that small farms were unambiguously considered as part of the agricultural sector, even if local power relations were unfavourable to the defence of their interests. Their inclusion in agricultural extension services was a subject of heated debate and profound political disagreement, but also a legitimate issue for agricultural economists and policy-makers.

By comparison, the contemporary period seems to be marked by a paradox that needs to be elucidated: the newly recognized importance of small farms, on the one hand, and the decline of debate on the question of target publics of extension services, evidenced both in the scientific literature and in the state's disengagement in this respect.

2.2 Disengagement of the state despite the rise of new issues related to small agricultural holdings

In Europe we are currently witnessing a disengagement of member states from the funding, implementation and programming of agricultural extension on a national scale. This disengagement has very different forms in the various countries (Laurent *et al.*, 2006; Labarthe, 2006) but is a general tendency, and everywhere new forms of contractualization of relations between the state, farmers' unions and extensionists are prevailing (Rivera and Zijp, 2002). It is difficult to measure precisely the impact of these trends on the access to extension services for small farms. Their effects on the definition of the target publics of extension services in new technical support procedures can nevertheless be observed. It is impossible to

account in detail for the diversity of the most recent institutional changes to extension services, but these have often been radical, especially in Eastern Europe, and have been described in other studies (see, in particular, Laurent *et al.*, 2006; Labarthe, 2006a). Based on a set of studies in eight countries (cf. Table in Annex1) it is nevertheless possible to identify two main trajectories of state disengagement, and to analyse the consequences in terms of definition of target publics.

- The first trajectory concerns countries in which a form of joint management and co-funding of extension services existed, between the ministry of agriculture and professional agricultural organizations, during the agricultural modernization period (e.g. France, the Netherlands, Germany, Denmark and the UK). In these countries, where the modernization of farms is often considered to be complete, the state's disengagement and the reduction of funding through parafiscal taxes has been attended by a drastic decline of debate on the target publics of extension services. Moreover, many joint commissions on the programming of agricultural extension services, such as the *Association Nationale de Développement Agricole* (ANDA) in France, and the *Landbouwschap* in the Netherlands, have simply disappeared. Yet it was in these bodies that farmers' unions were able to express themselves, and that the interests of various types of farmers came into contact.

Professional organizations still play a coordinating role in agricultural extension services, but most of these are concerned with particular products and focus on certain categories of farm which produce large volumes for the sector. On the other hand, the heavier emphasis placed on environmental concerns leads to a policy of contractualized funding for extension services, on the basis of project validation by the ministries in charge of agriculture, food quality, and/or the environment. The definition of target publics is however contingent on the specific objectives of each project.

The second trajectory concerns the Southern European countries in particular (Spain, Italy, Greece). It is characterized by various forms of decentralization of extension services, where the regions manage and fund these services (often with the help of structural funds of the CAP – CAP). In these countries, the structure and modernization of farms are still subjects of debate, in contexts often marked by the presence of both small rural farms and large specialized farming enterprises (Italy, Greece), or macrofundia-minifundia (south of Spain). Yet these countries have not been spared the wave of commercialization of extension services and individual billing of farmers. This tendency can adversely affect small farms by concentrating the offer on the most solvable ones with regard to the demands of profitability of a commercialized extension service supply.

Overall, a distinct tendency has existed in the past fifteen years towards state disengagement from agricultural extension programmes and the deconstruction of loci of debate on the target public of such services. These loci of debate were places where the voices could be heard of farmers' unions, which took into account all aspects of the development of farms (production, income, social protection, etc.), as well as all types of farmers and certain farmers' unions specifically representing small-scale farms, as in the Netherlands and Germany.

This trend has gone hand-in-hand with a relative loss of identity of small farms. Whereas in the sixties they were unambiguously considered as a part of the agricultural sector, and their role was discussed in modernization policies, in several countries that is not the case today. Since they now fall under social and rural policies, they are no longer within the scope of extension services. Yet some of these farms are still productive. Lacking proactive

professional representation, they are increasingly invisible, both in debates and in statistics (FADN – the Farm Accountancy Data Network).

It was in this context that the European Commission first included extension services as a tool to accompany the CAP (EC 2003). It thus became mandatory for the member states to provide an Agricultural Advisory System (AAS) to ensure that farmers could obtain the information they required to implement the principles of eco-conditionality. While the content of advice produced by the national AAS is set in this way, its modes of organization and the determination of its target publics is referred to national subsidiarity. The AAS were therefore designed not to support the modernization of farms, but as an additional guarantee to ensure that farms complied with the environmental, sanitary and animal well-being standards constituting eco-conditionality. Moreover, the regulation allows member states to subsidize access to extension services by proposing that the main target public be the farms receiving the most direct funding (over 15,000 euros). Hence, it is a minimum threshold for subsidies that is prescribed, and not a maximum one aiming at compensating for inequalities in terms of intangible investments.

Since the state has started to disengage, the loci of debate on the constitution of the target publics of extension services have been eroded to a considerable extent. This erosion has undermined access to services for small-scale farms. The state's disengagement has not simply been a matter of costs and reduction of public expenditures; it has also corresponded to a doctrine based on standard economic theories and the hypothesis of optimum efficiency of markets to regulate the extension service offer, assumed then to be demand-driven and closer to farmers' expectations (Knutson, 1986). But when it comes to services, the demand is not independent of the supply. Consequently, as we will see, the disappearance of loci in which farmers' unions can express themselves and coordinate extension services has not impacted only on the definition of the target publics of extension programmes. It has also had a direct influence on the actual content of knowledge that is co-constructed and proposed to a broader category of farmers.

3. THE VICIOUS CIRCLE OF SELECTION FOR ACCESS TO FRONT-OFFICE EXTENSION SERVICES

3.1. The extensionist and the service relationship

Few data enable us to evaluate farms' demand for and access to extension services, in relation to their structural characteristics (croplands, economic size, technico-economic orientation of production, etc.), especially since the question of access to services is absent from the large European agricultural statistics databases (EUROFARM, FADN). For example, the FADN does not enable us to identify expenditures for extension services, and supplies no data on small-scale farms in many countries. And even if such data did exist, to be fully exploitable it would have to be combined with indicators on the type of contact that farmers maintain with the extension services (number of meetings, type of service delivered, etc.).

Access to extension services is not only a matter of costs and level of expenditures. When farmers are confronted with problems for which there is no standardized solution and they turn to an extensionist, new knowledge is produced, in a process specific to intangible services (Gadrey, 1994). The theoretical and empirical results of research in various disciplines (sociology, ergonomics, economics, communication science) consistently show that extension services cannot be reduced to a simple transfer of information from

extensionists to farmers or between farmers (Wolf *et al.*, 2001). The knowledge that finally seems useful to mobilize in practice, after consultation between a farmer and an adviser, should rather be considered "*as an endogenous process within economic mechanisms that should be treated not as a rare resource to which access has to be gained, but as the result of a production process*" (Lemoigne, 1998).

The observation of relations between farmers and extensionists (Cerf & Maxime, 2006) on a micro scale shows that they correspond to a co-production of knowledge. These relations make it possible to contextualize and formalize the problem precisely, in order to choose knowledge (especially scientific references) corresponding to the precise situation of each farm, and to codify and evaluate the tacit knowledge that farmers have of their own production systems and their environment. In other words, intangible services such as advice are based on interactions between service providers and beneficiaries, that is, on "service relations" (Goffman, 1968). In our case, farmers play an active part in designing adequate forms of action. Their intervention determines the quality, validity and relevance of the knowledge that is co-produced to support technical changes for increasing the performance of their production system.

In such situations, the exclusion of small-scale farms from access to extension services cannot be compensated for by mechanisms of knowledge dissemination. The very production of that knowledge is indissoluble from the establishment of service relations between farmers and advisers. These findings reinforce the importance of micro-economic studies on small farms' access to advice, not in terms of "channels of information flows", but by analysing situations of co-production of knowledge institutionalised in extension services. As we will see, taking the particular characteristics of service relations into account makes it easier to grasp the implications of the reorganizations of extension services for small farms, and to interpret certain empirical findings that may seem paradoxical.

3.2. Interdependency of supply and demand of intangible service. Cumulative effects in the exclusion of small farms.

Particular properties of service relations can have cumulative effects in the dynamics of small farms' exclusion from extension services.

The emergence of new requests for advice, which results from interactions between extensionists and potential beneficiaries of extension services, may run counter to regulation by the market that implies a clearly formulated demand, independent of the offer. Studies undertaken from various theoretical angles emphasize this point, i.e. the interdependence between the supply and the demand in extension services. The idea is found in many models, whether they represent extension services as co-producing knowledge or as supplying information. In the case of a representation of advice as a vector of information, some Frisvold *et al.* (2000) have proposed a sequential model of interdependence of supply and demand in extension services⁵.

In representations of advice as a service relationship co-producing knowledge, Goffman (1968) noted that this relationship follows a cycle of reparation (observation/diagnosis/prescription/treatment). But the particularity of intangible services

⁵ The farmer's demand at visit t+1 depends on the stock of information that the extensionist has and transmits to him/her at visit t. The increase in the stock of the extensionist's information depends on the farmer's requests at time t, which orientates the extensionist's information searches between t and t+1.

such as advice is the joint action of the adviser and the farmer for each of these operations, including for the identification of problems at the origin of the demand. A farmer cannot always express his/her problems with precision, nor know that a recent technological breakthrough could help to overcome a problem that is so recurrent there seems to be no solution. Supply and demand are co-constructed in interpersonal interactions, especially when tacit knowledge is involved (Nonaka, 1994). Moreover, coordination authorities contribute to socializing and accumulating the fruits of this co-construction.

Consequently, even when extension services are free or subsidized, the absence of coordination authorities to link small farms' productive situations to the knowledge available at a given point in time, can make it even more difficult to express a demand (Laurent *et al.*, 2006). It is therefore impossible to directly interpret small farms' weak access to extension services – even when they are free – to a lack of interest or to the fact that the farms do not encounter the technical problems to which such services could provide solutions.

Due to the failure to take this phenomenon into account, in certain situations a vicious circle is triggered off: the growing marginalization of small farms in extension support programmes, partially a result of the disappearance of coordination bodies on which those farms were formerly represented, makes the emergence of a demand for advice increasingly difficult. Even when grants do exist, the farmers concerned do not know what type of demand to emphasize most. This attitude can be interpreted as a lack of need for advice and therefore lead to an even more drastic reduction of resources allocated to this target public.

Such phenomena have been observed in Spain and the UK (Laurent *et al.*, 2006). They also suggest the need to be cautious when analysing the results of subsidized programmes such as those run in Tuscany (Section 1, Figure 2) and, more generally, to look further than the interpretation of a weak demand for advice. This situation can be illustrated again by the problem of contamination of small farms' cereal crops by mycotoxins. Field research (Labarthe, 2006a) has shown that: (i) small farms were poorly informed of the very existence of this sanitary problem, whereas it was a leading topic in discussions between extensionists and farmers with bigger farms; (ii) consequently, requests for technical support from this group of farmers was almost non-existent; and finally (iii) in R&D systems supporting back-office extension services, no technical solution was discussed directly with small farmers, with a view to setting up trials to test solutions for fungal diseases, adapted to the constraints of their production systems.

4. TRANSFORMATION OF INVESTMENTS IN BACK-OFFICE SUPPORT CAN BE TO SMALL FARMS' DETRIMENT

Economic researches about extension privatization mostly compare the efficiency of public versus private extension at a micro level (Dinar and *al.*, 2007)? They focus on front-office resources and left back-offices changes in the dark. An original aspect of institutional analyses is that they show how profound changes related to the privatization of extension services concern above all these back-office activities. Our hypothesis is that these transformations can result in a lack of production of appropriate knowledge for small farms.

4.1 The back-office of agricultural extension services: cornerstone of extension services in the years of agricultural modernization

Some approaches (institutional economics, innovation studies) have highlighted the key role of back-office activities in the success of public extension services during the period of agricultural modernization (Labarthe 2009). They have shown that extension back-office activities act in different countries as a driving force between popularizers in the field, technicians and engineers at the experimental stations, and researchers in universities or higher agronomic institutes (Rölling, 1988). Back-office activities have thus facilitated real co-production of knowledge between these actors, embodied in various material media: joint management of experimental stations, numerous joint technical publications, and so on.

But this co-production has a high cost: agriculture has the characteristics of a heavy industry, due to its high levels of investment and operating costs. The validation of innovative agricultural techniques and practices requires costly experiments that someone has to be able to finance. For this reason, the post-WWII years witnessed a combination of large public investments and a mutualization of farmers' collective investments in experimentation, in many European countries. This was cemented by a system of joint management of the applied research institutes and experimental stations, by the state and farmers' unions.

4.2 The state's disengagement transforms back-office activities of extension services and undermines agricultural extension systems

The reorganization of agricultural extension services, related to the state's disengagement, resulted first in a change of extension service providers. For example, in regions of France, Germany and the Netherlands, three types of extensionists are now the leading players in extension service delivery to cereal production (Labarthe, 2006b): (i) firms and cooperatives that sell inputs for farmers (seeds, fertilizers, phytosanitary products); (ii) private consultants; and (iii) firms commercializing software for agronomic modelling, used to forecast the impact of agricultural practices and to help farmers to design an optimal technical itinerary.

The services (including back-office activities) of these various service providers are funded directly by farmers (Labarthe 2006a). In the case of input suppliers, the cost of services is integrated into the trading of material inputs and outputs with the farmers. In the second case, of private consultants, farmers are billed directly and individually for services. In the third case, the farmers pay for the software. But these new service providers not only transform the cost of services for farmers; they are also accompanied by the emergence of new profit strategies and new logics of service delivery. For suppliers of inputs, this logic is characterized by a segmentation of the service offer: the idea is to match the intensity of service relations proposed to farmers (number of visits, time spent by visit), as well as possible with the volumes of turnover obtained with them. For private consultants, in a context of fewer and fewer farms, profitability is based on a strategy of personalization of services to ensure the loyalty of a more limited segment of specialized and solvent farms. At the same time they limit all investments and staff costs which are not directly involved in face-to-face, billed interaction with the client. Finally, for the software firms, profitability depends on the contrary on their capacity to write a program which produces reliable forecasts while reducing the working time devoted to direct interactions with clients.

The new logics of private consultants are thus not only transforming the conditions of access to and delivery of service relations, but also profoundly modifying their back-office activities.

This can be illustrated by their investments in R&D for validating technical solutions to limit the concentration of mycotoxin in cereals. In the case of software firms, back-office activities consist essentially of scientific watch (based on the international databases of agronomic journals). But due to their small size, these firms cannot invest directly in experiments or research enabling them to link up pedoclimatic data, agricultural practices, and the risk of mycotoxins. Such experiments are carried out by the back-offices of input suppliers, which directly test the effectiveness of solutions for their clients. For that purpose they rely on the joint investments of the phytopharmaceutical industries which supply them with seeds, pesticides and fertilizers, and help them in implementing experimental protocols. Finally, the case of private consultants, which embody the purest form of commercialization of services, is more radical, for they carry out no local experimentation whatsoever. Knowledge (e.g. on a new problem such as mycotoxins) is renewed almost exclusively through the renewal of advisers' competencies (by ongoing training of their advisers, or recruitment of new young advisers, graduates of agricultural schools offering highly specialized qualifications).

In the final analysis, the reorganization of extension services induced by the state's disengagement has resulted in four major transformations of back-office activities (Labarthe 2009): i) fewer investments by extensionists in local experimentation and scientific watch; ii) greater dependence on highly sector-based investments; especially from industries upstream (phytopharmaceutical and seeds) or downstream (cereal trade), which finance a large number of tests, iii) less organized control in the form of feedback by farmers on applied research through agricultural extension services; iv) a shift from a logic of joint management and systematic funding to one of calls for projects that are resolutely more short-term and ad hoc. In turn, the applied research institutes behave increasingly as private firm commercializing their services in a highly segmented way, to different clients. This situation is very likely to be severely detrimental to the interests of small-scale farms. Deprived of easy access to advice, they have even less influence and impact on back-office support. And if back-offices end up being controlled by purely sectoral interests, there is little chance of relevant knowledge being produced for small-scale farms.

CONCLUSIONS

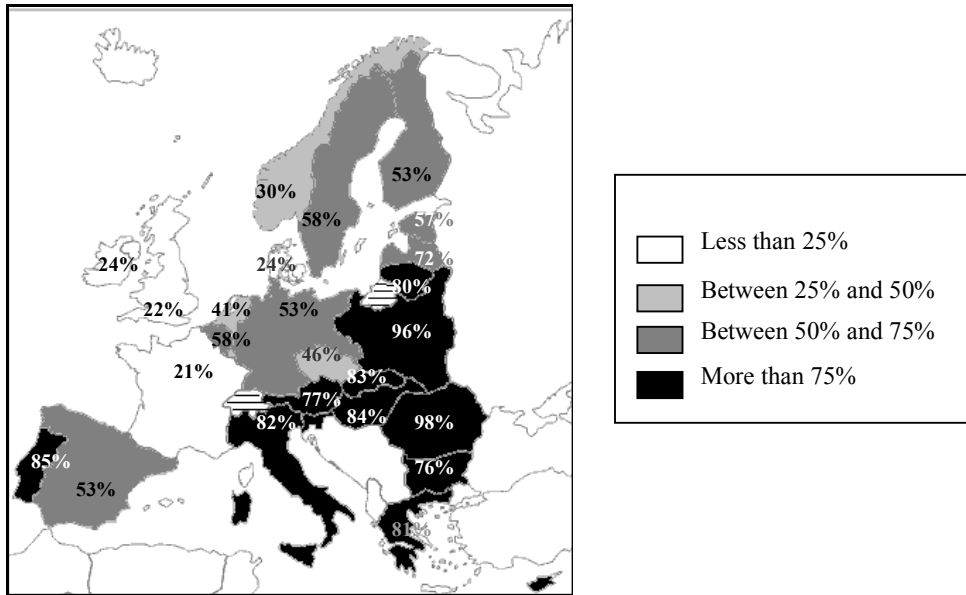
Because of the new content of rural policies (combining goals of social cohesion and of environment protection), the question of the reproduction of small-scale farms is back on the economics research agenda. At the same time, EU food safety regulations induce new problems for farmer, which appeal for technical solutions that may be scale dependant. Nevertheless, little attention is paid to the specific knowledge needs of small farms. In that respect we proposed to combine the outcomes of the regulationnist institutional economics framework with the interdisciplinary findings about the specificity of services, in order to assess the consequence of extension privatization in Europe on small-scale farms. Such a framework has produced three main results. First, privatization leads to a situation of invisibility of small farms as far as the definition of extension services target public is concerned. Second, the question of small farms' access to services can not be reduced to a short-term cost problem: their exclusion from front-office situations enabling a co-production of knowledge can also have long-term and cumulative effects. Third, these effects concern the very content of the knowledge accumulated thanks to extension back-office activities, which may become less and less relevant for small-scale farm due to an increase of its growing control by sector-based interests.

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ANNEX 1 Proportion of agricultural holdings with fewer than 8 ESU for the type of farming 13 ("Specialist cereals, oilseed and protein crops") in 2007 in the EU (source: Eurostat / Eurofarm)



ANNEX 2 Trajectories of withdrawal of the state from extension programs in Europe and consequences for the debate about the definition of the target of the services (Source: Laurent et al., 2006, Labarthe, 2006a, Vagnozzi and Aguglia, 2005⁶).

Trajectories	Funding	Implementation	Programming	Nature of debates on the publics targeted	Countries in which this policy is dominant
From a national logic towards devolution	National public	Creation of local centres	Ministry of agriculture	Duality between rural enterprises with farming activities and specialized farming	Greece
From co-management towards the delegation of services	From co-funding by the state and farmers' unions towards contractualization and billing	Chambers of agriculture	<i>Association Nationale de Développement Agricole (ANDA)</i> , the joint state/farmers' union organization, was dissolved and replaced by a special account at the ministry of agriculture	Reflection on the inclusion of farms formerly excluded from development actions tends to decrease	France
From decentralization towards delegation of services	From public regional funding towards contractualization and billing	Different forms of organization deprived of extension services	Replacement of a policy supporting extension supply through a devolved national fund; towards direct subsidies to farmers to help them finance their demand of extension; delegation of services funded by the provinces	Continue modernization in a situation of very wide structural heterogeneity	Certain regions in Italy (Tuscany), Spain (Estramadura) or Germany (Thuringe)
From delegation towards commercialization	From national public funding towards contractualization	Private company managed by the farmers' union	Contractualization of the objectives of the extension services missions delegated by the state to the extension service provider	Union strongly represented on farms. Few debates on the diversity of publics.	Denmark
From commercialization towards privatization	Direct billing of farmers for services	Private companies	None. State and profession hand over advisory activities to private consultants. Marginal residual funding of communication campaigns on environmental topics.	None. Debates focused on environmental topics or territories to protect.	Netherlands, UK, certain German Länder (Brandenburg).

⁶ Vagnozzi, A., Aguglia, L. The system of the Italian rural development services and the new European policies. 17th European Seminar on Education and Extension (ESEE). Izmir, Turkey. 30 August – 3 September 2005.

ANNEX 3

Methodological note, Figure 1:

- The primary data come from the French Agricultural Census for the Rhône-Alpes Region carried out in 2000 (56962 agricultural holdings in 2000). Results from various processings of these data were published in Laurent, Mundler 2005 (available on line) and Mundler *et al* 2006.
- Each value corresponds to the percentage of the number of farms in each class. For instance, 25,4% of farms larger than 100 ESU benefit from the services of an adviser.
- A farm is considered as benefiting from extension services when it has at least three contacts per year with an adviser (phone or direct interpersonal interaction).
- Development organization stands here for “co-managed” extension organizations, co-financed by the state and by farmers, i.e. chambers of agricultures, livestock extension (*établissement de l'élevage*), farmers' circles of extension (*groupements de vulgarisation agricole*)

Methodological note, Figure 2:

- The numbers of farms in Tuscany come from the Eurofarm data base (built from the National Agricultural Census and Farm Structure Surveys)(<http://epp.eurostat.ec.europa.eu/portal/page/portal/agriculture/data/database>)
- The numbers of farmers' demands for subsidized extension services come from a data base built by researchers of the faculty of agriculture of Pisa (Patrizia Proeitti and Gianluca Brunori). Results are published in yearly reports by Regione Toscana (2002, 2003, 2004, 2005, 2006).