Privatisation of agricultural advisory services and consequences for the dairy farmers in the Mantaro Valley, Peru

Faure, G.[1], Huamanyauri, M.K.[2], Salazar, I.[2], Gómez, C.[2], de Nys, E.[3], Dulcire, M.[1]

[1]CIRAD, UMR Innovation
[2]Universidad Nacional Agraria La Molina (UNALM)
[3]World Bank, Depart. Latin America and Caribbean Region

Abstract
The private sector's presence in agricultural advisory services worldwide has been on the increase for over three decades. This trend has also been observed in the Mantaro Valley (Peru), in a context of dairy family farming. The objective of the communication is to analyse the modalities of advisory services privatization and assess the consequences of this privatization for the farmers and their livestock systems. Data were collected through input suppliers, different types of advisers and producers interviews. The activity of private advisers is most often associated with the sale of livestock inputs, which, while facilitating access to technical support for almost all producers, does not take the overall producer needs into account. This study shows the importance of improved coordination of advisory activities between public and private actors for an efficient agricultural advisory system, a condition that encourages a sustainable farming system approach.

Keywords: agricultural advice – dairy sector – family farming– Peru – private advisory services – sustainability.

1. Introduction: the withdrawal of the public agricultural advisory services

The withdrawal of the State since the 1980s is at the core of discussions on reforms of agricultural advisory services the world over (Berdegué, 2002; Faure et al., 2011). This withdrawal can take different forms, as notes Rivera (2000): (i) the decentralisation of publicly funded services to the regional level; (ii) the transfer of State-provided services to private companies; (iii) the commercialisation of services by public institutions with the State and producers sharing the costs; and (iv) full privatisation. Given this diversity of situations arising from the withdrawal of publically funded agricultural advisory services, privatisation is seen by most international organisations as a remedy or improvement. The privatisation of advisory services could be seen as a means of transferring costs to the final beneficiaries. Thus Anderson and Feder (2004) assume that an advisory system can be improved in countries which have difficulties in funding public services when it is based on a decentralised organisation and private providers. Private sector entities, including suppliers of inputs and agricultural equipment, are increasingly providing advisory services in order to promote their business activities. However, few studies have focused on the relevance of their strategies and advisory practices. Mirani et al. (2007) in Pakistan, Klerkx and Jansen (2010) in Netherlands, or Goulet (2011) in France show that quality advisory services can be provided if investments are made in human resources to train advisers. Hence, some private advisory systems, based on commercial relationships between customers and suppliers, have been proven to work in the case of intensive agriculture in industrialised countries (Kidd et al., 2000).

However, several studies also point to the risks of privatisation (Kidd et al., 2000; Labarthe, 2005; Klerkx et al., 2006), such as: the limited dissemination of complex innovations; lower consideration of environmental issues or of the complexity of the production system; specialisation in advisory topics to improve the marketing of services; preference for technology transfers with little training of producers; risk

of discontinuity in service provision due to changes in funding mechanisms; reduction in exchanges of information between farmers, who do not want to share their 'purchased' knowledge; and, finally, the exclusion generated by the inability of some farmers to purchase advisory services. In general, it is accepted that the majority of farmers, and not just those in developing countries, cannot afford the cost of these services by themselves (Klerkx et al., 2006; Labarthe et al., 2013). When we accept the role of these private services and the producers' difficulties in paying for them, the debate turns to possible funding alternatives. Indeed, it is possible to combine the provision of an advisory service by a private and/or public provider with private and/or public funding (Birner et al., 2009). This public-private partnership (Christoplos, 2010) can be an opportunity to impart more flexibility to the system of advisory services.

Setting up an effective advisory private sector thus requires a rethinking of the State's role and of the relationship between public and private providers. Some authors (Anderson and Feder, 2004; Kidd et al., 2000) believe that the State should continue to play a role in disadvantaged areas and for poor farmers. Others point out that the transition towards a privatised system is not straightforward (Rivera and Zijp, 2002), and requires: a clarification of the roles of each institution, economic opportunities for funding advisory services, service providers with the right skills, and farmers able to articulate clear demands. Finally, privatisation implies that the State develops new functions to guarantee a coherent system of support by ensuring that public interests are safeguarded and by regulating relationships between actors (Labarthe, 2005; Klerkx et al., 2009). To this end, public policies must encourage the qualitative development of advisory services towards 'innovative networks' fostering the interactions between various rural actors (farmers, suppliers, advisers, industrialists, politicians, researchers, etc.) in order to produce both knowledge and learning useful for actions (Dulcire, 2014). However, not all governments have the necessary financial and human resources – or even the political will – to do so. To limit these risks, advisory services were once again strengthened with public funds funding public and/or private advisory services in some Latin American countries during the first decade of the 21st century (Aguirre, 2012). But Peru was not one of them (ibid.). However, if the consequences of the gradual withdrawal of the State from agricultural advisory services in developing countries and the concomitant rise of the private services have been studied in some conditions, they need to be detailed especially for small farmers to facilitate the comparison for a learning approach. Research undertaken between 2010 and 2012 by the National Agrarian University of La Molina and the Centre for International Cooperation in Agronomic Research for Development (CIRAD) was aimed at strengthening smallholder dairy farmers in the Peruvian Andean region of the Mantaro Valley by especially improving the advisory services. The geographical area is particularly relevant for this study because most producers are small and the private sector is playing an increasing role in advisory services, mainly based on a combination of providing advice and selling inputs.

The objective of the communication is to analyse the modalities of advisory services privatization and assess the consequences of this privatization for the farmers and their livestock systems. We analysed the impacts on the coverage of services for the various dairy farmers, the adaptation and relevance of the content of the advice, the funding mechanisms, and the modes of coordination between actors. In our case we want to analyse to which extent that privatization lead to small farmers' exclusion and influence the type of farming system regarding the use of external inputs. The results of this work can be useful not only for local stakeholders as for policymakers at the national level to help improve the system, but also for research in other regions by enriching the analysis of the consequences of the privatisation of agricultural advisory services for small producers.

2. Methodology of the study

2.1 Choice of the study area

Family farming in the Mantaro Valley, located at more than 3000 meters above sea level, is characterised by dairy farming that forms part of various organised supply chains and three types of farm management:

artisanal and family, small business, and industrial. Cortijo et al. (2010) also characterise dairy farms according to herd size: small with 3 cows or fewer, medium with between 4 and 10 cows, and large with between 11 and 100 cows. Milk is a strategic product for small local producers because of market stability and the diversity of marketing opportunities at attractive prices. These livestock farming systems are based on irrigated fodder plots and cows in stables. Farmers purchase inputs for their pastures (seed, fertilizer) and their livestock (feed concentrates, veterinary products) to improve their herd's milk production. Concepción province, one of the nine provinces that make up the department[1] of Junin, was chosen for this study because it is the province with the highest milk production in the valley. This department has 4500 cattle farms, with Concepción province alone having 1300, which produce 30% of the milk of the department (Dirección Regional de Agricultura de Junín, 2011).

2.2 Interviews with the actors

For this study, we decided to identify and compare the various public and private support and advisory services that were available to dairy producers in an effort to better understand these activities in the province. In a first stage, the different advisory services (public institutions, NGOs, dairies, commercial firms selling inputs) active in Concepción province were identified. Then, 35 semi-structured interviews (consisting of closed and open questions) were conducted with each supplier's manager and one or more technician (s) of its team in order to characterise the supplier's history, its area of intervention, the themes addressed by its advisory service, its activities, the funding mechanisms, the relations between the producers and the other actors, as well as their own representations of their own services.

In a second stage, a sample of 40 dairy farmers was constructed, keeping in mind that the requirement of services may vary depending on herd size (number of cows: 3 or fewer, 4 to 10, 11 to 20, 21 and 30, more than 30). These farmers were interviewed in order to typify their production systems, including the consumption of inputs, public or private technical support, and the evolution of these advisory services over the past decade in terms of the topics raised by advisers, the quality of the farmers' relationship with the advisers, the cost of the intervention, and the farmers' perception of the quality of services received. Finally, these data were processed to analyse the current state of Mantaro' advisory services as regards the services received by farmers according to the size of their herds: the services provided depending on the type of service provider, the quality of these services as detected by the farmers, the cost and funding of these services, the relationships between service providers and coordinating mechanisms (Huamanyauri, 2013).

To confirm the results, we triangulated these results with other studies conducted with the participation of some of this article's authors: the characterisation of production systems (Laporte et al., 2008); analysis of dairy farms and their relationships with processors (Cortijo et al., 2010); and analysis of the dairy sector in the Mantaro Valley (Gamboa, 2012). Finally, a workshop was organised in late 2012 with several actors from the valley's dairy sector (producers, technicians, service providers, dairy companies, commercial firms) to present the results, hold discussions and undertake group activities. This workshop allowed us to share, validate and refine these results. It also served to elaborate policy recommendations, with the participation of the actors, for improving the advisory system in the valley.

3. The privatisation of agricultural advisory services

The public agricultural extension system was established in Peru in 1942. It was reformed in the late 1980s, which allowed new actors, including private companies, to diversify their offerings. The advisory system in the Mantaro Valley has evolved rapidly since 2005, when the Peruvian government reduced the

[1] A department is an administrative division in Peru with its own regional government. Each department is divided into provinces, which are themselves sub-divided into districts.

resources made available to the Agricultural Agencies[2] (AA) and transferred the advisory mandate to regional governments. At the same time, the market for inputs in the valley got a boost with the arrival of several commercial companies, which began promoting their products through dealers and technicians. Dairy product companies also began to provide advice to their milk suppliers. In addition, the NGOs left Concepción province to work with farmers in more disadvantaged areas at higher altitudes.

3.1 The gradual State withdrawal

Peru's Agricultural Agencies have played an historic role in disseminating technologies designed to increase agricultural productivity and production. Following budget cuts in the context of decentralisation, their role has now changed. They are now attempting, without much experience, to play a coordinating role between the different actors and institutions, by pushing for rural development and, especially, by strengthening agricultural production chains. On behalf of Peru's Ministry of Agriculture, Gutiérrez (2007) proposes a different approach, one with a redefined role of Agricultural Agencies for bolstering the capacity of regional and municipal governments to manage rural territories. Other public bodies and universities are disseminating agricultural information in the Mantaro Valley, thus supporting the development of innovation at farming systems level. Three public research institutes and two local universities have developed, in parallel to their main activities and through classroom training, practices to support farmers so that scientific knowledge about livestock rearing can be disseminated to them: genetic improvement, animal health, animal nutrition, management of pastures with improved varieties, etc. For this purpose, these institutions use their technicians, or students in the case of universities, or occasionally private contractors. In such a context, one can say that the State is certainly still present in the agricultural sector but in a limited way (Huamanyauri, 2013).

The most important point is that this decentralisation has encouraged in this department the development of projects to support farmers, funded by the Regional Government of Junin department. But the short-term nature of such projects leads to the temporary recruitment of technicians and advisers, who have limited professional experience since new assistants are hired for each new project. Such a discontinuity in service provision is in line with the risks of privatization mentioned above. Among these projects, the PROGALE project (genetic improvement program and technical assistance for milk production) has hired 11 technicians who worked in 2012 with 250 dairy producers (6%) from various provinces of the department, including Concepción. However, the objectives of these regional projects are the same as those of the Agricultural Agency in the past. These projects focus solely on technical issues to increase productivity and production with advice on livestock farming and then on pasture management, animal feeding and herd management (infrastructure, hygiene) and animal health. To this end, the projects rely mainly on two tools: (i) training workshops based on a conference; and (ii) individual technical assistance based on an intervention programme developed each week on the basis of phone calls from producers. Since producers express little interest in the workshops, considering them too 'academic' and without any direct relevance to their farming conditions and practices, they are motivated to participate through access to individual services (technical assistance, insemination, on-the-spot sales of medicines at affordable prices, etc.).

3.2 The rise of different categories of private advisory service providers

In this context, several types of actors have taken advantage of the reduction in public assistance to offer technical support to the producers. These actors are private companies, NGOs and producer organisations. In the Mantaro Valley, NGOs are currently focusing their work on the highlands because the poverty there attracts international funding. Furthermore, the few producer organisations in the region are not very strong; they had been created by the Ministry of Agriculture to facilitate relations between

[2] An Agricultural Agency is an entity of the Ministry of Agriculture in each department, providing agricultural advisory services.

producers and advisers. The most important and visible development in the valley is that of private advisory activities by commercial firms and individual technicians.

3.2.1 The growing role of commercial firms with embedding advisors

The commercial firms, selling medicines, feed concentrates and pasture seeds, provide information on the use of these inputs when the producer buys them. The largest firm in terms of sales volume began to arrive in the area in the 2000s, setting up their local headquarters in the main town, Huancayo, and often opening shops in the villages. The quality of information provided to the farmers depends on the level of training of the vendors or embedded advisors (Klerkx and Jansen, 2010), their time availability to provide information and their capacities to organize additional training for farmers through agreements with universities and companies selling these inputs. Of the seven commercial firms present, five employ technicians who go to the field for organizing conferences for farmers and providing individual technical assistance, thus providing quality services for farmers. For example, Fertisol employs three people for product sales. They carry out field visits in Concepción district and between them provided services to 500 producers in 2012, 38% of the province's farmers. Even if the advice is oriented to the promotion of their products, competition exists between commercial firms and the quality of advice is a way to attract farmers and earn their loyalty.

3.2.2 The emergence of specialized advisors

There also exist private "specialized advisors" (Klerkx and Jansen, 2010) in the study area. They work neither for the public sector nor for commercial firms. We identified four categories: veterinarians, livestock or agricultural engineers, agricultural technicians, and others (students, farmers). Those in the last category, called 'empirical technicians', trained themselves by observing and working. All the private advisers have their own clients and undertake other activities (teaching, occasional participation in projects, production). Veterinarians and engineers usually specialize in artificial insemination and reproduction, while agricultural technicians concentrate on animal health.

All these providers sell inputs to cover their advisory costs and earn extra income, which leads to competition between sellers of inputs, including commercial firms. The advisers provide information on the use of these inputs and guidance in their area of specialty. Producers avail these services because they appreciate the proximity with the adviser, trust him, and believe that the information he provides is of high quality, or even believe that prices of inputs or conditions of sale are more attractive than those available from commercial firms. Some of these providers offer a range of well-defined services. For example, a veterinarian from Concepción has 120 registered customers (9% of livestock farmers in the province). He maintains close relationships with producers owning between 20 and 30 cows and has a programme of regular visits with 50 of them (two visits to each producer every month) and advises other producers over the phone. His most important interventions focus on animal health (emergencies and sale of medicines) and insemination. The veterinarian covers his costs by selling medicines, undertaking special interventions (insemination, surgery) or through monthly subscription in the case of an intervention programme (50 to 150 Sols[3] per month depending on herd size).

3.2.3 The hesitant interventions by dairy companies

Private companies often invest in setting up advisory services in order to ensure the loyalty of producers in supplying them with raw agricultural products of good quality as mentioned by Namdar-Irani and Sotomayor (2011) in the case of Chile for different type of value chains. In the Mantaro Valley, two types of dairy firms have the capabilities to develop these activities (Laporte et al., 2009; Cortijo et al., 2010): Gloria and Nestlé, two large companies present across Peru; and medium-sized family dairies (2000-3000

[3] One Sol (S) = 0.35 US$ in 2013.

litres/day). Gloria is the only dairy company in the valley that employs a full-time technician to help producers. He organises meetings in communities on various topics and offers individual advice. He provided assistance to about 400 producers in the department in 2012, including in Concepción province. As in the case of PROGALE, producers appreciate individual advice more than they do the meetings, even though those organised by Gloria are more closely tied to producer practices.

Family dairy processors do not have the means to employ advisers to support the producers, but take various steps to ensure milk supply. For example, one of them engages veterinarians to provide training and finances part of this service. Another took advantage of the presence of an agronomist in the family to organise training workshops for farmers, disseminate information on pasture seeds, etc. A third received funding (2008-2010) from an international project to hire an adviser to help set up a producer organisation and conduct training. According to the producers interviewed, such support is valuable but does not sufficiently take the context of small farms into account. For example, how to improve the hygiene of the herd when there is no access to potable water? Moreover, for them this kind of support does not fulfil the need for individual technical assistance.

Consequently, while dairy companies do undertake advisory activities, their investments in this field remain limited. Except in the case of Gloria, the number of producers served by these companies is not significant (7% of farmers in Concepción province) and advisory activities are usually not regular.

4. Consequences of the partial privatisation of agricultural advisory services

The partial privatisation of agricultural advisory activities has had a significant impact. More producers than ever are now being advised due to the increased number of providers and the competition between them. The advice though is still only focused on technical aspects since the advisers' activities are financed by the sale of inputs.

4.1 More farmers access to advisory services

This partial privatisation of technical advisory services in the valley has attracted attention because it has not resulted in the exclusion of producers, as mentioned in the literature (Cristovao et al., 2012), at least not within the valley. While Fernandez-Baca and Bojorquez (1994) reported that in 1990 about half of the respondents there could contact a private technician when their animals fell ill, the reality now is different: almost all producers (93% of respondents) have access to customised technical assistance, i.e., specific to their own herd. This assistance is provided mainly by commercial firms or private individuals, and only in part by PROGALE or Gloria technicians. This support is free, which largely explains its success. In addition, 38% of farmers have participated in classroom training organised by public institutions, the PROGALE project or the Gloria company. Gamboa (2012) confirmed these figures too.

This widespread availability and choice of technical assistance is linked, no doubt, to the rise of the private sector but the advent of wireless telephony is also a major contributing factor. Thus, 73% of producers use their mobile phones to call for assistance or when their animals have health problems. PROGALE technicians organise and schedule their visits over the phone. Gloria's technical adviser undertakes three types of visits: scheduled in advance by the company; requested by a producer; and whenever there is problem with the quality of the milk delivered.

It must be noted that both public institutions (PROGALE), as well as private entities (Gloria), focus their efforts on the largest producers because of their production potential (Table 1), which creates a *de facto* inequality in access to advisory services. On the other hand, commercial firms and individual advisers work with all producers, provide advice on the use of inputs, and finance their services through their sales. In such a system, no producer is neglected since the primary goal of the technicians' intervention is to get the producer to use inputs. However, we have already noted that the number of producers supported by each adviser varies widely.

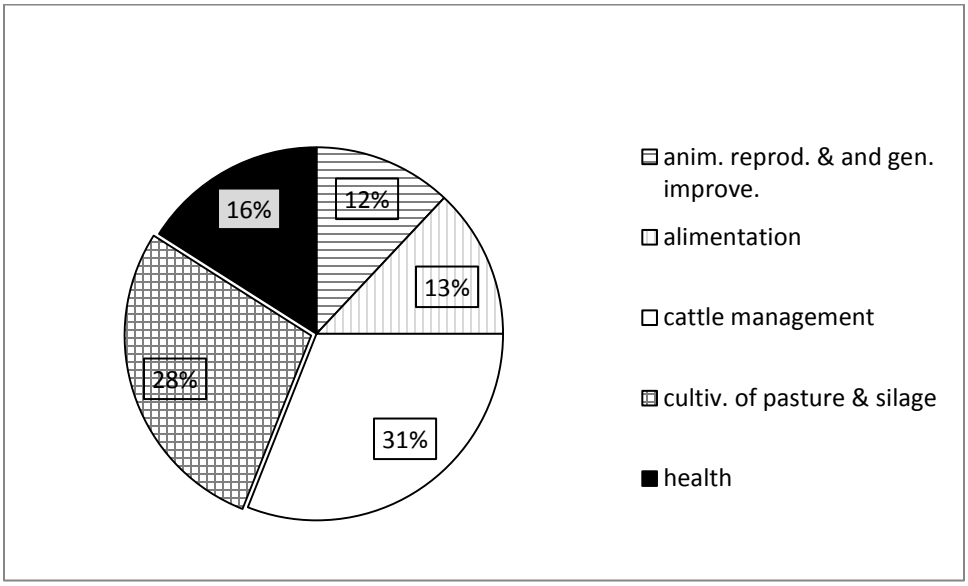
Table 1: Percentage of milk producers, according to herd size, who receive training and technical assistance, for different types of advisory entities

Cattle numbers	1 to 3 (n=12)	4 to10 (n=12)	11 to 20 (n=10)	21 to 30 (n=4)	> 30 (n=4)
Public institutions' trainings	0	33	60	50	50
PROGALE and Gloria's technical assistance	0	33	40	100	50
Individual technical assistance	100	83	100	100	50
Commercial firms' technical assistance	100	92	90	100	100

4.2 An ever more technical advice nature which do not address all the farmers' demands

Advice is provided only on technical issues, based on the elements and principles of the Green Revolution (genetic improvement, animal health, animal nutrition, intensification of pastures, etc.). Landini (2012) calls this orientation in Latin America 'persistence of diffusionism' because such type of advice assume that the main constraints are related to technical issues and farmers are ignorant about new solutions. Public institutions, just like the private ones, continue to focus on this 'technocratic' approach in their training programmes, without adapting them to the diversity of farms or the abilities and needs of the farmers (Figure 1). They are unable to propose alternative models not only due to time constraints (number of families monitored per technician) but also to the lack of their own training in this domain.

Figure 1: Distribution of training programmes according to technical topics (%)



This is especially true in the case of the private sector, where the advice most often focuses on the increased use of vitamins, control of parasites and mastitis by recourse to medicines, artificial insemination, and the use of improved pasture seeds. Service providers are taking advantage of the positive interaction between (i) the offer focusing on these themes, which promote the use of chemical inputs, external feed for animals and medicines, and (ii) the demand by producers for specialised agricultural advisory services with quick responses to short term problems or emergencies such as preventing diseases. But there is an issue with other farmers' demands and the supply of advice. In other words, advisory services do not address some important questions that producers ask, such as on managing interactions between cropping systems and livestock rearing; on managing fodder plots to respond to changing needs of the herd during the year; on improving the economic and financial

performance of farms; or on food security for the family (Bienz and Le Gal, 2012). Of the three major components of agricultural advice identified by Röling and Groot (1998) – technology transfer, advisory process, and supporting learning – the only one that is found in the Mantaro Valley is the first. Such an approach has limitations because it does not foster learning by the producers, does not take all their needs into account, and ignores the local actors' capacity to innovate (Scoones and Thompson, 2009).

4.3 Advisory services funded by the sale of inputs and generating an increase in production costs

Since the agricultural advisory services of the public institutions used to be free and funded fully by the public sector, the sharp decline in direct funding by the State has had an immediate impact on them, as is evident by the situation of the region's Agricultural Agency. This has led to the launch of agricultural advisory projects by the regional government in Junin department. An example is the ongoing PROGALE project, but its ups and downs have resulted in a lack of continuity in its activities. The 'Innovation and Competitiveness for Peruvian Agriculture' project (INCAGRO), funded by the World Bank (2008-2010), helped to test a new competitive funding mechanism for agricultural research and extension in response to requests of local actors to facilitate diversification in the provision of advisory services. However, INCAGRO has funded only one project in the Mantaro Valley[4], and the State did not continue with this mechanism when this project ended.

The private advisory services are funded by the sale of supplies (medicines, animal feed, seeds, fertilizer) or through the purchase of milk (case of Gloria and other companies that provide services). To ensure the sale of inputs, and especially to gain the loyalty of producers, the supplier must ensure that he provides quality service, with quality being assessed on the resolution of the producer's problem. However the funding mechanism naturally orients the advice the supplier dispenses according to his product offerings. In consequence the farmers buy ever more inputs. Klerkx and Jansen (2010) have formulated that such a risk of privatisation has been noted in the literature. As a producer of the Mantaro Valley says, 'Everything can be solved with vitamins and injections.' Only a few producers (7%) pay cash to individual advisers to benefit from technical assistance through regular farm visits without systematic purchases of inputs. Such an advice could be perceived as more independent and less input oriented. Moreover, for many of these agents, this level of activity is not sufficient to make a living and they have to engage in other activities (consultancy, agricultural production, etc.).

As a consequence the farmer production costs increased. Cortijo et al. (2010) estimated that the cost of fodder and concentrates purchased, as well as measures to ensure animal health and reproduction represent 38% of production costs for dairy farms, to 50% if the fertilizer for pastures is also included. These costs represent between 1000 and 1400 Sols/cow/year. Gamboa (2012) arrived at similar values. These figures show that the size of the inputs market can reach between 15-20 million Sols/year in the Mantaro Valley.

4.4 Strong competition between advisers, and needs for training

The partial privatisation of technical assistance has led to competition between service providers in Peru, as in other countries (Labarthe, 2005). But the offers of public and private sectors do not differ much, neither in their topics (on agricultural practices), nor on the advisory methods used (mainly top-down). When looking for technical advice producers can take advantage of this variety of offers to select the one that suits them best. Insemination is a good illustration of this competition since veterinarians, private inseminators and public institutions offer the same service at very wide range of prices, from 15 to 600 Sols/cow. However, this competition does not ensure that the producers are provided with sufficiently pertinent or complete information by the advisers to allow them to make an optimal choice. Using once again the example of insemination, very few producers have access to a quality service that allows them

[4] A dairy was financed in this way in the valley, which facilitated the creation of a producer organisation to improve relations between the producers and the dairy companies.

to choose a relevant race and insemination strategy to improve their livestock herds. In addition, strong competition creates problems for qualified advisers when they have to deal with 'empirical advisers' who lack proper training and offer cheap services to attract customers, but without any guarantee of quality.
Advisers need to access new information to maintain their skills: continuing education is essential to them, but no system currently exists to this end. Universities sometimes offer classes on topics related to dairy production, which many advisers ask to participate in. But there are no courses offered to improve their methods of dispensing advice: organising a workshop, encouraging interaction, generating own knowledge through a combination of local and academic knowledge, etc. When the advisers encounter difficulties, some of them contact colleagues in their personal network to obtain information and support about poorly-known issues. Others organise 'informal' get-togethers with colleagues to share experiences and knowhow. Such advisors networks are observed in other countries, for example in England when advisors need to access knowledge regarding complex issues not addressed by the formal innovation system (Klerkx and al., 2013). However the main sources of information (posters, documents, etc.) and of training (conferences or individual exchanges), for advisers as well as for veterinarians, are the manufacturers of inputs, supplying the valley's commercial firms. This trend does not guarantee that the information provided is impartial and further pushes the advisory approach towards the promotion and sale of inputs.

4.5 The lack of public policies to support the changes in the advisory system

In the classification proposed by Rivera (2000), the State relied on two approaches to address the state withdrawal from advisory services: privatisation and decentralisation. In Peru, privatisation creates competition between private providers, which can be positive for producers but also between private and public providers which tends to translate into a waste of resources. In this sense there is a lack of strategy from the State to address the privatization of advisory services because the task division between the public sector and the private sector is not clear and because the rules for a free market are not put in place to monitor the competition among private actors.

In the Peruvian case, decentralisation also has failed to encourage a significant increase in new advisory services because there is no significant transfers of public funds from the State to the local governments to address such issues and because there is a lack of coordination between service providers. Better coordination between local stakeholders is needed to promote sustainable rural development. The Agricultural Agencies have not been able to play an effective coordinating role due to a lack of clear mandate with advisors able to play such a new role. In some countries, producer organisations play an important role in coordinating service offers (Le Coq et al., 2010), but this is not the case in the Mantaro Valley because of their previously related weaknesses. The advisors addressed this concern at the last workshop of 2012, in the context of the tensions observed between service providers. There are no clear cut solutions to overcome this lack of coordination but the actors with the support of the State must designed what Birner et al. (2009) call the best fit.

5. Recommendations and conclusion

The withdrawal of the State, through decentralisation and the partial privatisation of agricultural extension, has resulted in the rise of commercial organisations and private advisers in the Mantaro Valley. Consequently the inputs sale funds most advisory activities and this limits the scope of advice to isolated technical aspects, thus ultimately increasing the overall production costs of the farmers. The literature on the impact of privatisation on small producers (Cristovao et al., 2012) states that privatisation tends to exclude producers from receiving agricultural advice in situations where they are unable to pay for the service, either directly or indirectly. Contrary to this literature, this study demonstrates that the producers in the Mantaro Valley have not suffered from any exclusion effects. Every producer has access to a technician, even though the advice they receive may not be pertinent to their real needs. However the

advice provision is sub-optimal due to a lack of clear tasks repartition between the public and private sector and and a lack of coordination mechanism. In this context, this study provides new evidence for analysing the privatisation of extension systems by highlighting a process that is little known by policymakers at the national level.

This study allows us to make five recommendations for operational purpose. First, a dialogue between farmers and their organisations, on the one hand, and with organizations, on the other, is essential in order to define jointly a development programme based on the actual needs expressed, and which take the real capacities of the region's human resources into account. Such a dialogue can facilitate coordination between service providers, for example with the creation of a platform for exchanges between actors, which could be more effective than the creation of a body to coordinate activities of rural development actors because of the inherent risk of bureaucratisation.

Second, public advisory services should, on the one hand, develop activities in areas where they will not compete with the private sector, such as overall farm management, economic management, environmental impacts, irrigation practices, market access, etc., and, on the other, facilitate a systemic coordination between the agricultural sector's various actors. However, such an extension of responsibilities requires stable public actors, with a new profile, i.e. with a broker role, able to rely on a systemic approach with a global vision of development and capable of supporting interactive facilitation processes by not limiting themselves to just technology transfers.

Third, it is necessary to support the private sector to build capacity of its technicians, with access to training that is independent of input-selling multinationals. In addition, it is important to implement processes to assess the quality of the services of the private providers in order to limit competition from the unqualified among them, e.g. with advisors certification systems. Quality control of the inputs sold should also be improved by strengthening and enforcing national laws.

Fourth, the strengthening of producer organisations appears to be an essential condition for developing a dairy sector with effective relationships between producers, dairy processors and service providers. Such innovative organisational learning would allow producer organisations to play an important role in the provision of technical assistance by negotiating with the private and public sectors for the support methods necessary for their members and/or by promoting a form of 'de campesino a campesino' advice.

Fifth, the State has to respond to the rise of the private sector by developing a learning and training programme for both public and private advisers. New rules are also needed to support the privatization by better defining the role of the private and public sector. Such rules could be adapted through a platform to test new methods of funding advisory services, including those with a combination of private and public resources. To introduce more transparency an information system may also be created that is accessible by producers and their organisations on the use of chemical inputs, on the quality of service providers, or on other topics that hold no interest for the private sector such as farmers' innovation.

In conclusion, the privatisation of agricultural advisory services through increased sale of inputs can benefit small farmers towards a sustainable development only if the State is able to implement and manage monitoring mechanisms to promote effective and systemic advisory services and those that complement the private sector's offerings and to strengthen the capacity of producer organisations to defend the interests of their members. Otherwise the privatisation of these advisory activities could encourage only excessive consumption of inputs, with its associated environmental consequences and increased economic risks for small farmers.

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