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The sustainability of small dairy farms in six regions of France. The roles of resources and local institutions

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Abstract of the paper

A survey of more than 150 small dairy farms and local economic, professional and political stakeholders was conducted in six regions of France. It revealed five types of farm strategy in relation to the farm's size, agricultural diversification, importance of direct selling, and farm and household incomes.

A "resource-based" approach shows that the sustainability of small farms is linked to economic, social and human resources. In this way the study shows the important part played by the household's income and the farmer's integration in the social fabric. This approach is complemented by an institutional approach: The sustainability of a small farm depends on local economic, professional and political institutions and an important role is played by the territorial context. Local representations can be formalised in different development processes and concern both the possible future of the dairy sector and the types of farm that are in a position to be competitive, and in this way contribute to the selection of dairy farms.

This study shows that small dairy farms are not doomed to disappear. The mobilisation of the farm household's internal resources combined with the positive impacts of the "local dairy surroundings" can offset in part, but successfully, the dairy sector's permanent restructuring.

Key words: Small dairy farms, sustainability, resources, territorial institutions

JEL codes :

Q12
Q 18
R 10
R58

Introduction

The dairy sector is continuing to undergo major restructuring in Europe (Perrot *et al.*, 2007). In France, the milk quota per farm was 253,000 kilos in 2007 for a total of 92,821 undertakings (Office de l'élevage, 2008) and the trend is one of a steady 4% per annum decline in the number of suppliers over the past twelve years. The dairy farm classes below 200,000 litres are continuing to disappear, accounting for only 40.7% of the dairy farms in 2007 versus 58% in 2000. Yet we see that a still relatively large number of small dairy farms are holding their own, even ensuring viable futures. So, 14.1% of the dairy farms in France had quotas of less than 100,000 litres in 2007, whereas the viability threshold was considered to be 300,000 litres per farm (Office de l'élevage, 2008).

Just how far can this restructuring go? In 2005, the mean references were already above 700,000 litres per farm in Denmark and the United Kingdom (Perrot *et al.*, 2007). In the United States, more than 50% of milk production occurs on farms with more than 500 dairy cows and many more-than-1000 milk cow farms have been set up since 1998. A USDA (United States Department of Agriculture) study of these farms' economic performances shows that they are competitive, even in a scenario in which they would have to finance their effluents' management (Mac Donald *et al.*, 2007). It appears that the day when decreasing yields will limit the optimal size of dairy farms is being pushed back all the time.

The aim of this article is to study the conditions under which these small dairy farms can persist. The results presented herein come from research into the *analysis of the social, economic, and spatial functions of small and medium-sized dairy farms*¹ in Europe. To analyse this persistence, we started by hypothesising that some of these farms were supported by economic, social and territorial dynamics conducive to their persistence and reproducibility, reasoning that their still significant presence in such a context could not be due solely to the fact that the sector's restructuring was not yet complete.

To check this hypothesis, we carried out surveys in 2006 and 2007 of small dairy farms in six small regions of France marked by contrasting conditions². In addition, we interviewed the main players in the farmers' socio-professional and economic environment (milk processors, chamber of agriculture, local and regional elected officials, milk inspectors, and so on) in each region.

This work revealed the existence of five groups of dairy farm with different characteristics. To qualify these differences, we made use of the 'activity system' concept, which makes it possible to situate the dairy operations of a farm as part of the whole range of the household's activities (Section 1). This work showed that the strategies employed by the dairy farmers whom we met and the degree of each farm's persistence depended on two major types of factor, namely, their physical, socio-professional, human, and economic resources (Section 2);

¹ This research was conducted under the programme on the state of play and futures of dairy regions in France and Europe "Dynamique et devenir des territoires laitiers en France et en Europe" coordinated by FESIA and with the financial support of CNIEL, Crédit Agricole, Groupama, and SEPRONA.

² Plaine de la Scarpe (Nord), Bresse (Ain), piedmont and mountain areas of Béarn and Bigorre (Pyrénées), Châtaigneraie (Cantal), Mortainais and Parc des Marais (La Manche), and Ségala (Aveyron) (*département* name in parentheses).

and the specific rationales of the various institutions involved, be they local, national, territorial, or sectoral (Section 3).

1 MATERIALS AND METHODS

1.1. The farm as an element in an activity system

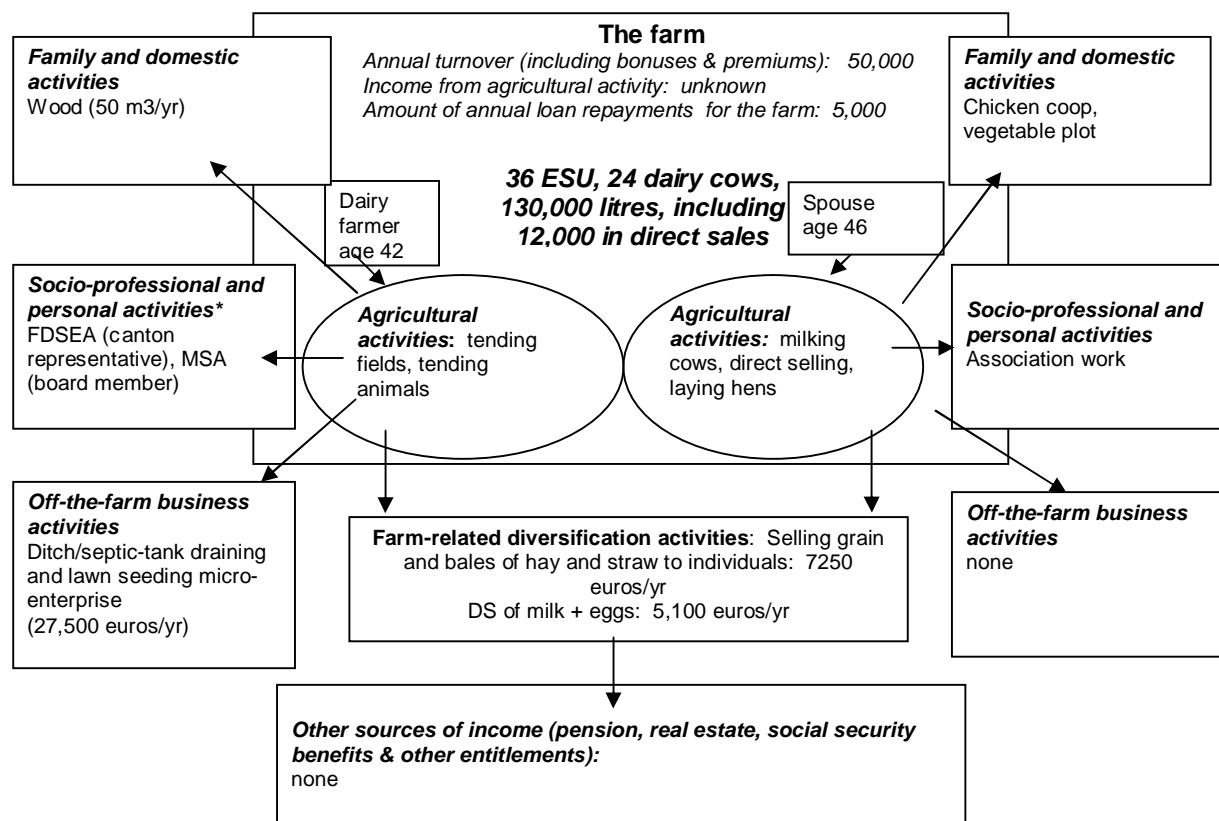
The conventional tools of farm performance analysis enable one to grasp only a fraction of the rationales put into play, to the extent that they often contain hypotheses that are seldom explicitated. The main one is that the farm's purpose is to provide the family with enough income to live on. Now, some farms remain too small in comparison with modern agricultural standards and are unable to generate sufficient income (Meert *et al.*, 2005). It is also common knowledge that the reasons for carrying out an agricultural activity can be highly diverse and by no means boil down to that of making a living (Laurent *et al.*, 1998). It is thus necessary to explore two other tracks, first by placing the farm within a larger system of activities and income without making any initial hypothesis as to the role that the agricultural activity plays in this system, and second by looking at the entire household's activities, rather than those of the farmer only. These are the goals of research that is based on analysis of the systems of activities of households that are engaged in one or more agricultural activities.

The notion of an "activity system" can be defined as "the set of all of the household's activities, each of which has its own role to play in the functioning and development of the whole. These activities are linked to each other by either functional ties or their connections in time" (Mundler *et al.*, 2007). The study of a system of activities looks at the whole first before analysing each activity as a subsystem.

In considering the farm one of the elements of a broader system of activities, activity system analysis (ASA) enables one to tackle the basic unit of the agricultural undertaking from a richer perspective than those offered by the usual technical and economic approaches, for it inserts the agricultural household's reasoning in both their family and asset-management strategies and the framework of constraints and opportunities offered by their economic, social, and territorial environments. This approach to studying farms ties in with the one used by CIRAD's researchers in various contexts (Paul *et al.*, 1994; Dugué, 2004) by stressing the interdependence of the activities that are carried out by the various members of the household. This approach differs, on the other hand, from Van der Ploeg's (1993) proposed "farming styles" approach, which focuses more on the values that determine farming families' choices and the specific forms that their work takes ("practices") on the farm.

An activity system can be depicted formally as follows:

Diagram 1. Example of an activity system



* Trade unions and federations, associations, personal interests, and social activities.

The “activity system approach” gets one to look at the intersections of three major areas: work, personal life and social activities, and family and domestic life (Curie *et al.*, 1990). From the methodological standpoint, this approach calls for direct surveys of households involved in dairying. This is the only way to observe the real world and practices of these households (Parsons, 1949). The survey form used in all six areas included some 100 closed questions and an interviewer’s guide to cover the more qualitative aspects of the farm’s history, the household’s plans and projects, and the household’s representations of its system of activities and dairying’s place in this system. The data were processed by SPHINX + 2 and SPAD in succession. After eliminating some non-significant variables and computing new variables (ratios, degree of diversification, degree of social integration, etc.), we selected 75 variables and performed two statistical analyses on them: factorial analysis of multiple correspondences and ascending hierarchical classification. As for the qualitative dimensions, the surveys pointed out the various elements of the system of activities, ranging from the economic elements to the roles that the household’s various activities could play in the system’s general balance. Information about each household member’s (both farm and non-farm) business activities was collected. Socio-professional and personal activities, including union and association engagement, were analysed mainly in terms of the social networks in which the members of the household participated. Family and domestic life was analysed through the system of activities’ history and the functions that domestic production (for self-consumption) and the ownership of land and other real estate could have on the system of activities as a whole.

1.2. What do we deem a small farm?

The concept of the 'small farm' itself is fuzzy and varies with the country. In France, an official definition of a small farm was given by the Conseil Supérieur d'Orientation et de Coordination de l'Economie Agricole et Alimentaire (French Higher Council of Guidance and Coordination of the Agricultural and Food Economy) in 2002 based on two criteria, namely, a maximum turnover of 40,000 euros per annual work unit (AWU) and a maximum of 12,000 euros in aid under the first pillar of the CAP per year (CSO, 2002). For the research related here, the cut-off for considering a dairy farm to be 'small' was an economic size criterion, *i.e.*, it had to be below 40 ESU (European Size Units). This is the equivalent of a standard gross margin of €48,000. However, we quickly realised that it would be difficult to pick out farms based on this criterion. The cut-off of 150,000 litres of milk was then chosen as enabling us to explain the size of farm concerned by the research project more easily when dealing with farmers, extension workers, and local elected officials. Of the 155 farms that we investigated, twelve were just slightly over these two criteria.

The following table enables us to compare our survey sample with the entire dairy-farming population in France

Table 1. Structural comparison of surveyed farms and the French average (source: our surveys and Ehrel, 2007)

	Quota (milk collection and DS)	UAA	Economic size	Number of AWUs	Number of dairy cows	Yield per cow	Quota per AWU
Our sample (2006-2007)	113,000 l	38 ha	33 ESU	1.39	22	5,700 l	82,000 l
French mean (2005)	249,000 l	86 ha	54 ESU	1.9	41	6,095 l	131,000 l

As we can see, the 155 farms in our survey population were markedly smaller than the average for France. In terms of their activity systems, 57% of the spouses had jobs outside the farm and 7% of the farmers themselves were engaged in several business activities. In addition, 53% had a diversification activity (direct selling, processing of products, farm accommodations, etc.). This activity could have marginal economic importance (this was the case of the rural holiday homes, for example) but could also be the heart of the activity system (for example, when it involved milk processing and direct retailing).

The households were asked to gauge their self-consumption levels for vegetables, fruit, milk, eggs, poultry, pork, mutton, beef, and firewood. These levels surpassed 50% for milk (95%), firewood (74%), eggs (70%), poultry (64%), and vegetables (55%). Based on a household food budget estimate made by the Assembly of French Chambers of Trade and Industry, the mean value of this self-consumption is about 1,200 euros per household and per year. These figures are consistent with those published by INSEE, which assesses self-consumption by farmers at 600 euros per consumption unit (Bellamy, Plateau, 2007).

Last point to raise here: Seventy-two percent of the households owned their dwellings and 74% were not making mortgage or other repayments on their dwellings. Moreover, eighteen (of the forty-three) farmers who did not own their dwellings paid no rent either (they lived on their parents' farms).

2 THE INTERNAL DETERMINANTS OF THE FARM'S PERSISTENCE: THE ACTIVITY SYSTEM'S RESOURCES

In a conventional micro-economic approach to farm operations, one basically refers to physical production factors (land, equipment, and buildings), and financial and human production factors. Now, as the authors who take a resource-based view have shown, this approach is not sufficient; other types of asset must be added to it (Wernerfelt, 1984; Barney, 1991; Gafsi, 2006). These assets, which are also called "strategic resources", are specific to each household and "hard to imitate, replace, and trade" (Arregle, 1996). Seen from this perspective, Pretty and Hine (2002) break them down into natural, socio-professional, human, physical, and financial assets.

Drawing upon this classification (given the nature of agricultural activity, we combined physical and natural assets into one category), we distributed the information gleaned by our surveys as follows:

Table 2. Indicators used in our survey to characterise the farm's resources.

Physical assets	Socio-professional assets	Human assets	Economic assets
<ul style="list-style-type: none"> - acreage of the farm - dispersal and fragmentation of plots, - livestock, herd size, and milk production, - type of building, milking equipment, 	<ul style="list-style-type: none"> - responsibilities of the dairy farmer and his/her spouse; - degree of relations with extension workers, - inclusion in dairy inspection scheme and/or membership in management centre - further training, - existence of mutual assistance, cooperatives, and/or GAEC; - social activities: associations, elected positions 	<ul style="list-style-type: none"> - age of the dairy farmer; - agricultural and general education and training of the members of the household; - number of people in the labour pool, - holidays; - existence of plans for the future; - existence of a successor; declared persistence. 	<ul style="list-style-type: none"> - farm income and revenue from the members of the household's other activities; - degree of independence (purchases of fodder and feeds), - degree of self-production; - quality and/or specific development approach; - direct selling; - tax scheme governing the activities.

Processing all these data revealed five categories of households marked by very different sets of resources. Table 3 below presents the main structural characteristics of the farms belonging to each group.

Table 3. Major structural features of each group

	Total quota (litres)	Direct sales quota (litres) *	Production per dairy cow (L/yr)	Number of dairy cows	Age of the farmer	Number of AWUs	Number of ESUs	Size (ha UAA)
Group 1 (60 farms)	141,000	2,100	6,300	26	43	1.32	41	48
Group 2 (21 farms)	63,000	41,000	4,700	15	46	1.83	24	26
Group 3 (26 farms)	111,000	6,400	5,800	20	49	1.41	38	43.5
Group 4 (33 farms)	123,000	0	5,700	23	46	1.32	29	33

Group 5 (15 farms)	52,000	0	4,300	13	50	1.14	16	19
Mean (155 farms)	113,000	11,000	5,700	22	46	1.39	33	38

* Mean calculated for all of the farms in each group, regardless of whether they had a direct sales quota.

An initial analysis produced two very different groups that were both characterised by very strong persistence.

The first group (Group 1) consisted of households that started the small-scale conventional modernisation of their farms, *i.e.*, specialisation, good mastery of techniques, determined search for autonomy, contribution of the spouse's income during the capitalisation phase, and use of government loans. This group was characterised by good performance made possible by modern facilities (loose housing, milking room) and good cooperation with technical and advisory bodies. It was also characterised by strong persistence and a positive outlook regarding the future: The tone of the interviews was optimistic and most of the households in this group asserted that they wanted to step up milk production.

The second group (Group 2) was composed of households that based their strategies on diversifying the farm's activities³ (processing, direct sales, tourist intake, etc.), the well-thought-out and targeted use of government loans, a certain degree of independence, and turning toward more sustainable agricultural choices (farm products and organic farming). This group had a clear-cut profile: small farms using a large amount of labour. Like the households in Group 1, these farmers tended to be rather optimistic and had plans to develop their operations.

Table 4 below shows these two groups' most significant resources.

Table 4. Two groups characterised by a set of resources conducive to their persistence

	Group 1 Specialised modernists in growth phase	Group 2 Small farms diversified in processing and direct sales
Physical assets	UAA and livestock above the survey population's average and recent, functional buildings (loose housing, milking room).	Rather weak in terms of facilities (stanchion stable system, hand milking) but factors conducive to marketing their products (tourist area or periurban location)
Socio-professional assets	High sociability, good cooperation with advisory bodies, labour pool enabling them to find replacements, take holidays, etc.	Targeted contacts with extension workers, variable integration in local associations.
Human assets	Young, well-trained farmers; spouses with training in fields other than agriculture. Good abilities to adapt and make plans.	Large labour pool, taste for and skills in selling, hospitality work, and processing activities. Good ability to adapt and make plans.
Economic assets	Specialisation in dairying and focus on quality. Milk delivered to industry (no direct sales); spouse works off the farm. Major use of national and European support.	Great diversification of activities on the farm (processing, direct sales, and tourist accommodations). No external income. Have signed sustainable agriculture and territorial farming contracts, derive benefits from local territorial development incentives. Strong self-consumption.

³ 100% of the farms in this group sold their produce directly and 2/3 of their output was sold via this channel. They also did processing on the farm (17 of the 21 farms) and engaged in other activities such as opening their doors to tourists and educational activities (6 of the 21 farms).

The two groups that we have just presented together already accounted for more than half (52% of the households) of our survey population. The remaining 48% of the households were distributed among three groups in which the persistence of their dairy operations (and in some cases their farm activities as a whole) seemed much more uncertain.

First we have a group of households (Group 3) whose farms seemed to be declining. Although these households had relatively large facilities, they were characterised by pessimistic attitudes and low incomes that were complemented by a strong level of self-consumption. These households, whose members are older than the households in the first two groups, believed that their farms would end with them, *i.e.*, when they died.

Next there is a group of households (Group 4) that seemed to be at the *ö*tipping pointö, to the extent that they were characterised by overall fewer resources and weak integration in the advisory networks but the desire (at least for some of them) to step up their milk production. As we shall see in the next section, these households' plans were often thwarted by local strategies and representations of the profession that tended to bank on strengthening farms that had already reached better levels of productivity.

Finally, we have a small group of households (Group 5) that had not yet modernised their farms. These households had very small structures and managed small (13 cows on average) herds with low outputs (52,000 litres/year on average). These households, which were often composed of an unmarried farmer, had few ties with development bodies, little technical expertise, and very mediocre installations. A third of these farmers held down other jobs. Moreover, this is the only group for which the non-farm income was on average higher than the farm income. Despite a situation that the surveyors deemed difficult, these households were optimistic as to their futures, even though half of them believed that their farms would not outlive them.

Table 5 below shows the most significant resources for each of these three groups.

Table 5. Three groups characterised by a set of resources making their persistence more uncertain

	Group 3 Declining farms?	Group 4 Mid-sized farms at the <i>ö</i>tipping pointö	Group 5 Non-modernised small farms
Physical assets	Extensive UAA and herds (same as Group 1) but less functional facilities. Low productivity.	Smaller UAA and herds than Groups 1 and 3 but good productivity. High heterogeneity in level of equipment and facilities.	Very small UAA, very small herds. Stanchion stabling, hand milking, under-equipped.
Socio-professional assets	Little mutual assistance, distant relations with advisory bodies.	Local mutual assistance, weak contacts with extension workers, subscribes to milk inspections.	No contacts with advisory bodies, but good local integration and mutual assistance.
Human assets	Older households, low levels of (agricultural and non-agricultural) training. Not very adaptive, lack of plans for the future.	Average age, low level of agricultural training for the farmer; variable adaptiveness and ability to make plans.	Older than average farmer, often single, without training.
Economic assets	Specialisation in dairying, milk delivered to industry and/or direct sales (but little	Specialisation in dairying, milk delivered to industry, no direct sales. Spouse works off the	Little access to state aid, no diversification on the farm but external activities and social

	processing, little innovation); spouse works off the farm. Moderate access to national and European aid; low incomes.	farm. Moderate access to national and European state aid, low farm income. High self-consumption.	security benefits (parents' pensions). Family property (land and buildings). High self-consumption.
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In these last three groups, the farms' expansion and sometimes survival depend on the importance of outside income sources, a low level of indebtedness, home ownership, and a high level of self-consumption. We see a mixture of modern and more traditional practices. Even though overall the situations appeared difficult (in terms of agricultural output or social isolation), a part of these households (Groups 4 and 5) expressed the desire to continue producing milk.

All in all, our results seem to confirm the known effects of the sector's restructuring: Whilst some of the households that we interviewed were managing thanks to their adaptability and multiple activities, others appeared to be in more dire straits, even doomed to disappear.

Yet this pattern does not apply uniformly across all the territories that we investigated⁴. On the contrary, major differences were ascertained. So, although the survey area was not taken as a variable in building the typology, the massive presence of households belonging to certain groups in certain areas forced us to reconsider the local dimensions of the dairy industry's restructuring.

3 TERRITORY AND THE DAIRY INDUSTRY'S RESTRUCTURING: THE WEIGHT OF LOCAL INSTITUTIONS.

We saw in the previous section the strategies and resources that some households are mobilising to cope with changes in the dairy sector. The differences that we saw between survey areas lead us to believe that local institutions can play a role in the emergence of these resources or guidance in these strategies' implementation.

We use the concept of institution as understood in historical institutionalism, where the institution is defined as 'the formal or informal procedures, routines, norms and conventions embedded in the organizational structure of the polity or political economy' (Hall & Taylor, 1996, p. 6). Seen from this perspective, one must analyse each economic operator's behaviour within a historical and social context, for it is shaped by this context and cannot be interpreted without referring to it. Unlike work focussing on the major organising institutions that operate on the scale of the country, we shall stress the local dimension of institutions, to the extent that the history of agriculture, the paths of its development, and its norms, standards and organisations remain in part specific to a given territory. Consequently, our approach belongs to the 'community economics' approach (Pecqueur & Zimmermann, 2004), where the hypothesis that the territory, as a social and institutional construct, must be taken into account in studying productive configurations, lies at the heart of the analysis. This school of research has revealed, amongst other things, the role that a system of common rules and representations resulting from a compromise rather than assumed unity can play (in a territory) (Gilly & Lung, 2004).

⁴ We must reiterate that our surveys were carried out in six highly differentiated 'dairy' regions: flat open country and mountain areas, rural and periurban areas, areas with and without AOC (PDO) products, and so on.

The institutions that we studied can be organised around four rationales (Mundler *et al.*, 2008) that we shall illustrate. Table 6 below then shows the consequences that each of these major lines of thinking can be seen to have on the persistence of small dairy farms.

1. The economic rationale of the sector's players on the national and European level. These are the national and European support policies for farmers, as well as, in part, those of the major undertakings lower down in the chain, that is, the institutions where the standard products' prices and volumes and support policies are set.

2. Regulatory and standardisation rationales governing market access or access to state aid. These are environmental and animal welfare standards, plus the many market access standards (quality and traceability standards and specifications set by the various players in the food industry). These regulatory rationales differ from the rationales of the first category to the extent that the persistence of production is not determined by competitiveness. The steadily increasing regulatory requirements are a decisive factor in the economic environment of agriculture and one that has been reinforced by the latest CAP reform (cross-compliance). The standards to which the interviewed households referred and which are the epitome of subjects of compromise (Thévenot, 1995) were often constructed in reaction to the over-industrialisation of agriculture. However, in the final analysis they affect farmers whose cultural references and practices seem quite remote from this context. They prove to be much more powerful farm selection factors than the market.

3. The local sectoral players' economic and social rationales. The areas that we studied were chosen in an attempt to take account of the diversity of geographic contexts (flat open country versus mountains, rural versus periurban locations), density, and/or specialisation in dairying. Marked territorial differences were seen amongst the various local sectoral players from the viewpoints of both their representations of a farm's viability and their guidance and advisory practices. These differences were seen concretely in an implicit selection of 'illegitimate farms'. This selection was manifested by access to aid (for example, start-up or modernisation aid), the allocation of milk quotas, participation in the collective tools, support for diversification activities, and so on. Moreover, some of the territories had organised to increase the value of their products through quality labels (AOC, PGI, etc.), for which the terms of reference were also farm selection factors.

4. Territorial rationales. The issue of territory is at the heart of our hypothesis, to the extent that the local authorities often have more at stake in keeping small dairy farms alive than the sectoral organisations do. The weight of local and especially regional policies must be taken into consideration. The regional authorities in three of the six areas surveyed are conducting policies aimed explicitly at offsetting the handicaps that such small farmers encounter. Moreover, activity system analysis spurs interest in the vitality of the non-agricultural job market. Let us remember that 57% of the farmers' spouses (both husbands and wives) had jobs off the farm. The proportion of these off-the-farm jobs and types of job held down reflect certain features of the local markets.

Table 6: Institutions' rationales and their dairy farm selection function.

	Areas in which these rationales were discerned	Consequences of access to resources for small farms
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1. The economic rationales of the national and European sectoral players	- amount of CAP first pillar aid	Small amount of first pillar aid (10,100 euros on average compared with a national average of 24,500 euros), less dependence on aid.
	- large dairy plantsø milk collection policies	Worries in some areas about the continuation of collecting from small farms. The increase in the milk tankersø size prevents their entering certain farms with old dairy barns.
	- milk price negotiations	Farms poorly represented in the negotiating bodies. Flexibility allowed by combination of activities.
2. Regulatory and standardisation rationales	- upgrading buildings to comply with standards	Achieved by only 24% of the farms. Under way for another 28% ⁵ . The relevant supervisory authorities believe that this ability to comply with standards will be the main selective factor for these farms.
	- milk quality standards	Difficulty producing Quality A milk due to facilities (42% of the farms practice stanchion stabling; milking into jugs or with the help of a pipeline for 62%).
	- animal welfare standards	Penalise farms that have kept their stanchion stabling systems.
	- health standards for on-the-farm processing	Require costly investments when direct sales concern only a small number of litres.
3. The local sectoral playersø economic and labour-related rationales.	- granting of aid for starting up and/or modernising and/or additional quotas	Huge differences between areas according to the type of farm that the local trade organisations consider viable.
	- allocation of direct sales quotas	Huge differences in representations of direct salesø potential for growth. These differences are reflected in the percentage of dairy farms with direct sales quotas: from 1 to 21%, depending on the <i>département</i> .
	- choice of mechanisation in agricultural equipment cooperatives	Increase in the equipmentø size, requiring larger tractors (which the small farms do not have).
	- existence of a quality label and elements of the terms of reference for this label	The AOC and PGI specifications include rules (percentage of grass in the rations, breeds, etc.) that give an advantage to or penalise specific production schemes.
4. Territorial rationales	- existence of regional aid and the nature of this aid	More favourable conditions for small farms in regions with policies that focus on reducing their handicaps or promoting the diversification of farm activities.
	- local job market	Determines the type of activity system. A great many jobs in the human services sector for farmersø wives in certain areas.
	- real estate market (land & buildings)	Partly corrects the inequalities in income to the extent that property values (mainly of real estate) have risen sharply (regardless of the farmø size).

⁵ In France, this upgrading is supported by agricultural pollution control programmes (PMPOA). The first wave of these programmes was intended only for farms with more than 80 livestock units (80 LU). The smallest farms were thus ineligible for the state aid granted under this first programme.

4 CONCLUSIONS

This research confirms the relevance of applying activity system analysis to farms. Two-thirds of the interviewed households had income derived from non-agricultural activities, and this income was sometimes higher than that of the farm income. The search for independence, the diversification of activities on the farms, building their farm buildings themselves, growing their own food, producing their own firewood, and even owning their dwellings likewise play a part in balancing these households' budgets. So, small dairy farms do have some leeway. This leeway is based on both the households' own resources and the local contexts, which may or may not allow them to cash in on these resources. We were thus able to discern two 'sustainable models' of small dairy farm management, *i.e.*, either taking the track of conventional modernisation backed up by additional revenue from the spouses' non-agricultural earnings, especially in the capitalisation phase, or playing the game (when circumstances are right) of agricultural development based on direct sales and diversification, which is highly labour intensive and apparently less dependent on non-agricultural income.

The other situations are more problematic, often with small and mid-sized facilities and elderly farmers who have little training and tend to remain on the sidelines of trade networks. Our analysis shows that the resources that can be used to build a satisfactory activity system for the households are distributed very unevenly over the groups that our survey identified. In terms of their agricultural activities, some of the households are distinguished by the fact that they offset their rather low financial resources with practical skills ensuring a certain degree of autonomy, *e.g.*, building their installations themselves, maintaining and repairing their tractors and machinery themselves, and so on. These skills, which can be considered part of these households' cultural assets (Blasius & Friedrichs, 2002); continue to be mobilised and explain in part these households' decent economic results. However, the value of these skills appears to be declining more and more, as agricultural activities today call increasingly for managerial skills, writing and bookkeeping abilities, and computer literacy. Indeed, some of the dairy farmers in our survey expressed both their lack of understanding of what they felt to be in part unnecessary administrative red tape and their discouragement due to the complexity of the answers that they were required to give.

While the households have considerable resources and innate qualities, this research confirms that these resources may be expressed to variable degrees, and even develop in line with the thinking of the institutions that make up the households' social, economic, and political environments. While the choices and ways of managing a dairy farm are highly influenced by public policies and market signals, trade standards, which are often more local, also play a major role.

To come back to just one example, that of local quota allocation policies, our surveys showed that the inevitability of the dairy sector's restructuring is seen differently according to the institution. In areas where the focus is on bolstering the farms that are considered the best equipped to cope with the coming changes, the small dairy farms do not get additional quotas, which effectively hobbles their growth. This situation is often accompanied by more difficult access to start-up aid, modernisation aid, and even technical assistance. In places where, on the contrary, the focus is on facilitating attempts to make up lags, keeping the largest possible number of farms operational, and offsetting handicaps, these same small farms are much better integrated in the local trade networks and are much more often beneficiaries of support policies. The situation becomes even more complicated when various organisations co-exist

in the same area without sharing the same vision of the future of agriculture or farms' functions.

Conceptions of agricultural production are often subtended by locally shared representations of both the type of farm that is competitive and the very future of the dairy sector. These conceptions of production are embodied and formalised in local decisions that are seldom taken for the purpose of selecting farms, but always contribute to their selection 'collaterally'. These representations usually underestimate the diversity of activity systems in place. In so doing, they fail to take account of the factors that are outside the dairy economy but help to guide the households' choices in connection with this activity. The implicit diagnoses made by part of the sector's officials and planners consider only the production system's competitiveness.

Can we thus conclude that individual choices and/or territorial dynamics can offset the effects of the dairy sector's permanent restructuring? The mechanisms at work show that they do so in part, and this is borne out by the different developments that have marked our survey areas in the past few years. The fact that the overwhelming majority of our survey households want to believe in the futures of their farms, at least for themselves (that is, until they retire), shows that the analysis of the conditions under which their systems of activities operate is crucial for agricultural and rural development. At the same time, everything cannot be pinned on local particularities. Developments in agricultural production and activity systems (for example, the differences between flat open country and mountainous regions) relate to groundswells that are situated on another scale.

We must doubtless expect the concentration of dairy production in France and Europe to continue. Indeed, the scheduled phasing out of milk quotas in the context of a more open market, rising fossil fuel prices, increasingly stringent environmental standards and restrictions, and a sizeable decrease in milk production could strike certain areas more specifically, and especially small dairy farms (Chatellier, 2007). In an overall rather pessimistic context, the favourable factors that we have highlighted could nevertheless be activated in the future if companies, agricultural development bodies, and local and regional authorities wage appropriate territorial policies. Such a boost could even result from a possible reorientation of national aid under new proposals from the European Commission following its 'health check' of the Common Agricultural Policy.

Glossary

UAA: Agricultural area in use, utilised agricultural area
AWU: Annual Work Unit
AOC: *Appellation d'Origine Contrôlée* (see PDO)
ATO: Agricultural Trade Organisation
CAD: *Contrat d'Agriculture Durable* = Sustainable Agriculture Contract
CAP: Common Agricultural Policy
CIRAD: *Centre de coopération internationale en recherche agronomique pour le développement* (French Centre of International Cooperation in Agricultural Research for Development)
CNIEL: *Centre National Interprofessionnel de l'Economie Laitière* (National Dairy Economy Interbranch Centre)
CTE: *Contrat Territorial d'Exploitation* (Territorial Farm Contract)
CUMA: *Coopérative pour l'Utilisation du Matériel Agricole* (agricultural machinery cooperative)
DC: Dairy cow
DS: Direct selling
ESU: European Size Unit
FDSEA: *Fédération Départementale des Syndicats d'Exploitations Agricoles* (Département-wide Federation of Farm Unions)
FESIA: *Fédération des Ecoles Supérieures d'Ingénieurs en Agriculture* (Federation of Agricultural Engineering Schools)
GAEC: *Groupement Agricole d'Exploitation en Commun* (joint farming arrangement)
INSEE: French National Institute of Statistics and Economic Analysis
LU: Livestock Unit
MSA: *Mutualité Sociale Agricole* (Agricultural social mutual insurance fund)
PDO: Protected Designation of Origin
PGI: Protected Geographical Indication
PMPOA: *Programme de Maîtrise des Pollutions d'Origine Agricole* (Agricultural Pollution Control Programme)
SEPROMA: *Syndicat professionnel des semenciers de maïs* (Seed maize growers' union)
SGM: Standard Gross Margin

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