Factors favouring and hindering the development of organic farming in France:
A multilevel analysis

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1. Background and purpose

Organic farming covers just 3.5% of the utilised agricultural area (UAA) in France (2011 Agence Bio figures). Sales statistics show that a mere 2.3% of the French food market came from organic farming in 2008. The French government's Environment Forum ("Grenelle de l'Environnement") set as a target to triple the size of the organic farming area in five years. Yet if this is to happen, it is vital to gain a better understanding of the socio-economic factors that drive and hinder conversion to organic farming, whether farm factors (structure and practices) or market access factors.

The PEPP project is original in that it draws on three studies conducted at different levels, which bring complementary perspectives to the debate: the farm (Part 1), the municipality in which the farm is established (Part 2), and the sector (especially the downstream part) to which the farm belongs (Part 3). More precisely, the three parts were designed to:

1. Study the role of the farm and farmer's characteristics (such as farm size, farm performance before conversion, and farmer's age, level of education, concern about environmental issues, etc.) in the organic conversion decision using microdata taken from a survey of a sample of farmers – Part 1;

2. Study the importance of factors associated with location (information channels, distance to market, selling channel, local support policies, etc.) in the diffusion of organic farming based on municipal data – Part 2;

3. Ascertain the importance of the development of the organic sectors, especially the downstream link (organic producer-distributor chain), in the growth of organic farming based on case studies of two organic sectors – Part 3.

A relatively rich body of literature is available on the determinants of conversion to organic farming (see the review by Géniaux *et al.*, 2010, conducted for this project). It identifies different groups of factors that influence the conversion decision: farmers' motives; their socio-demographic characteristics; the structural characteristics of the farms; and the factors external to the farms such as market access and public policies. Nevertheless, the extent of the influence of these determinants depends on the study context: climatic context, political context, economic context and sectors considered. It is also of note that the studies are generally conducted on small samples, that many of them consider solely organic farms and not conventional farms, and that the explanatory variables used to explain the conversion decision are observed at the time of the survey, i.e. after conversion.

The main limitation of existing analyses of organic conversion determinants is therefore the availability of suitable data. Studies of this kind really call for the collection of data on organic and conventional farms, including information on the farmer (age, education and opinions), the farm (structure and earnings) and external factors (upstream market, downstream market and public policies). And where the purpose is to explain a conversion decision, it is important to measure all these characteristics and context elements at the time the decision was made, i.e. before conversion. The large amount of data required might

explain why there has been virtually no in-depth statistical study conducted to date using French farm microdata.

The PEPP project was set up to help remedy this situation. The data collected by the project's Part 1 surveys covers information on the characteristics of a large number of farms, both organic and conventional. The information collected comprises detailed bookkeeping data covering a number of years, including the period before conversion for the organic farms. Our study is therefore innovative in its identification of the importance of a certain number of determinants (in the organic conversion decision) measured prior to conversion for the organic farms, particularly the farms' economic performance. The effect of economic performance on the conversion decision is arguably ambiguous. On the one hand, a more successful farm might be expected to be more likely to convert for two reasons. First of all, the already-efficient farmer will probably find it easier to introduce the sort of complex technology required for organic farming on the farm. Secondly, the profitability of an already-successful conventional farm will probably be less affected by the drop in yields following conversion. On the other hand, however, the opportunity cost of conversion (in terms of the downturn in profitability) is most probably lower for a less profitable farm. In addition, the production of organic goods with higher added value may secure the farm's survival despite low profitability. The PEPP project's analyses shed new light on the linkage between economic performance and conversion decision.

These economic reasons behind a farmer's conversion to organic farming are overtaking ideological motives and form one of the facets of the "conventionalisation" of this production method, where organic stakeholders' structures and practices become more and more like the conventional sector. Another facet is the development of market channels for organic produce within the conventional sectors and the growing involvement of the classic players who dominate the agrifood industry and distribution. This is where the project's Part 2 and Part 3 analyses come in. Part 2 examines the spatial diffusion of organic farming, which is associated with the economic advantages secured by different locations. A unique nationwide database containing variables measured at different points in time serves to study the time-space dynamics of the diffusion of organic farming in France, and especially how they relate to market access.

The Part 3 work also sheds new light on the organic sector in France, especially on the expectations, fears and strategies of downstream players. The development of organic farming calls for farmers to convert to organic practices, but cannot happen without the development of a specific sector upstream and especially downstream of the agricultural production itself. The downstream organic sector was originally quite unstructured and based mainly on trust and interpersonal relations. In the 1990s, the sector grew. Its coordination became more industrial based on classic vertical, formal relations and new operators in the form of mixed operators (i.e. part organic, part conventional) came on board.

2. Methodology

2.1. Analysis of farmers' conversions to organic farming

The approach chosen for Part 1 (analysis of farmers' conversions to organic farming) consists of a statistical and econometric analysis of detailed data on a sample of French farms. These data were collected by a large-scale survey. The survey is original in a number of ways. First, it covers both conventional and organic farmers. Second, a large enough number of farms were surveyed to be able to identify statistical relations between determinants and conversion decision. Third, farmers were asked to provide information covering a number of years, which paints a clearer picture of the dynamics at work behind each farm's decisions. Fourth, bookkeeping data were collected to analyse economic motives. We use these survey data to identify the determinants of the conversion decision. Our approach is innovative in that we consider the determinants observed prior to conversion for the farmers who decided to convert, especially their level of performance. Performance here is captured by a set of indicators including farm operating surplus and profit.

The analytic framework is economic producer theory. We assume that the farmer decides to convert to organic farming if the expected utility of this choice is greater than the expected utility of not converting. Economists consider that the farmer's utility depends mainly on expected profit. In other words, the farmer will convert to organic farming if the profit s/he is likely to gain after conversion is greater than the profit s/he is likely to secure by remaining conventional. Expected profit depends on a set of farm-specific factors (size, production specialisation, soil type, etc.), but also on external factors (prices, public policies, demand, etc.). It is equally important to take account of the fact that the farmer's preferences (represented by his or her utility function) depend on personal characteristics such as age, level of education and concern about environmental issues. The farmer's decision to convert is then written in the form of a discrete choice model including a number of unknown parameters. Suitable econometric techniques are used to estimate these parameters and to measure the statistical influence of the different determinants.

We used the review of literature on organic conversion determinants (Géniaux *et al.*, 2010) to draw up the survey questionnaire. Farmers who set up organic farms from the outset were excluded from the survey, since the point was to identify the determinants of conversion from conventional farming to organic farming. Organic farmers were selected for the survey if they were converting or had completed conversion (certified organic farm) of all or part of their farm. 2005 was chosen as the earliest conversion year acceptable to produce a sample of fairly homogeneous farmers in terms of regulatory and economic environment. Two regions from Western France and two sectors were considered: farmers producing cow's milk were surveyed in Brittany and Pays de la Loire while farmers producing vegetables were surveyed in Brittany. A total of over 300 farmers were surveyed for the dairy sector. One-fourth were organic farmers and three-fourth were conventional farmers. Just under a hundred farmers were surveyed in the vegetable sector, with the same breakdown between organic and conventional farmers as in the dairy farm sample. Yet the poor quality of the data collected in

the vegetable sector compromised the use of econometric methods for the estimation of the organic conversion decision model.

A number of partners were rallied to conduct this survey: Cogedis-Fideor, Inter Bio Bretagne, Fédération Régionale des Agrobiologistes de Bretagne (FRAB), Coordination AgroBiologique des Pays de la Loire (CAB), and agricultural students from LEGTA in Le Rheu, from ESA in Angers and from IREO in Lesneven. The accounting company Cogedis-Fideor supplied the contact details of the conventional farmers and some organic farmers along with their bookkeeping data for a number of years. Regional organic farmers' unions (FRAB and CAB) provided the contact details of the other organic farmers (bookkeeping data on these farmers were collected during the survey). We designed the questionnaire in liaison with Inter Bio Bretagne, FRAB, CAB and Cogedis-Fideor. The survey took the form of face-to-face interviews conducted by students with farm heads on their farms.

2.2. Analysis of the spatial diffusion of organic farming

In Part 2 (analysis of the spatial diffusion of organic farming), an econometric model was estimated to explain the location of the certified organic farms. The purpose here was to test the hypothesis that some geographic areas are more attractive to organic farms since they make conversion more expedient, cheaper and less risky. The model was estimated for geographic areas rather than organic producers and operators for whom there was not enough detailed information (problems with identifiers and authorisations made it impossible to match data from different sources). We therefore aggregated the data at municipal level, the smallest scale possible. We considered that the farms in a given municipality, other things being equal, suffer or benefit from the same economic advantages or disadvantages due to the location of the municipality.

Because of the large number of municipalities without organic farms (over 70% of municipalities), we specified a probit model (modelling a discrete decision of a yes/no type) rather than a linear regression (modelling a continuous variable). This model's binary variable takes the value 1 if a municipality has at least one organic farm and 0 otherwise. We estimated the model for the whole of France and then separately for a number of regions that stand out based on the length of time they have had organic agriculture and production and marketing systems: Provence-Alpes-Côte d'Azur (PACA) (leading organic farming region in France), Pays de la Loire, Rhône-Alpes, Midi-Pyrénées, Brittany and Picardie (where organic farming is not very developed).

We used the data available from the French Rural Development Observatory (ODR) with the approval of the data supply bodies. The data used are comprehensive in that they cover the entire country, which means that they lend themselves to an analysis of the spatial dynamics of the diffusion of organic farming. The main source was the database of certified organic farming operators (updated in the third quarter of 2010; source: French National Origin and Quality Institute (INAO)), which gives the locations of the organic farms and downstream organic operators (processors and distributors) at municipal level. This database also identifies the date of the operator's first accreditation. We used this information to build an

indicator of the length of time that organic farmers had been established in each municipality. Other sources were used to build the explanatory variables: the database on organic conversion support recipients covering the entire period from the creation of this support in 1993 (source: French Agency for Services and Payment (ASP), the database on farmers subscribing to the French agricultural social security body (MSA), and different public geographic databases and data from agricultural censuses conducted from 2000 to 2010 (source: Agreste official aggregate data). We also used data published by Agence Bio (French Agency for the Development and Promotion of Organic Farming), aggregated at sub-regional and regional level [1], in particular for organic surface areas in 2001 and 2010.

We traced the organic conversion history of each municipality and its neighbouring municipalities in order to study diffusion of organic farming over time and over space. We introduced a coefficient measuring the concentration of area under organic farming in each region – the regional location quotient (LQ) – in order to assess whether diffusion mechanisms differed depending on the importance of organic farming in regions.

Many other variables were used to explain the location of organic farms: density and distance from the centre of the population catchment area, distances from towns, travel-to-work areas, variables defining the demographic and social composition of the population forming the potential "local" market, presence of quality labels other than organic farming, characteristics of the municipality's agricultural structures, presence of shared machinery cooperatives in the municipality, the "INAT" zoning (which refers to the classification of municipalities into less favoured areas (LFA) defined by the Common Agricultural Policy (CAP) for the allocation of the LFA payments), and environmental zoning areas.

2.3. Analysis of the downstream organic sector

In Part 3 (analysis of the downstream sector), we defined as a sector a group made up of the agents concerned by an agrifood product, from production to consumption, and the relations between them. The sector is therefore identified with respect to the characteristics of the agents involved in it: strategic behaviour, access to information and coordination of decisions.

Our analysis was based on a series of semi-directive interviews with stakeholders representative of the different levels of the fresh vegetable and cereals sectors in Brittany and Rhône-Alpes regions. The stakeholders interviewed were chosen in liaison with Inter Bio Bretagne in Brittany and Appui Bio in Rhône-Alpes. In Brittany, ten of the 20 players contacted were interviewed. In Rhône-Alpes, just three of the 12 contacted agreed to meet us. The stakeholders met included storage organisations, animal feed manufacturers, millers, a producer who sells directly to the market, producer groups and shipper-wholesalers.

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[1] Based on the European Union's Nomenclature of Territorial Units for Statistics (NUTS) (see http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/introduction), the regions referred to in this document are NUTS2 regions and the sub-regions are NUTS3 regions.

Each player was first asked about their strategy and growth (range, price and supply strategy) and then about their views of the sector (functions, structure, sources of inefficiency, intensity of competition and public regulation).

3. Main findings

3.1. Analysis of farmers' conversions to organic farming

The full set of analyses and findings can be consulted in the following deliverable: Latruffe *et al.* (2013).

A straightforward analysis of the answers to the survey questions shows that the main reasons for organic conversion by organic farmers in the dairy sector are ideological (environmental protection, farm independence, etc.). However, the group of conventional farmers considers that economic factors (increase capital gain, find a new niche, etc.) are the main drivers for conversion. The main obstacles for these farmers are technical (complicated technology, hard to manage weeds and pest, lack of advice or references, lack of manpower, too strenuous, etc.). The main conversion driver for conventional farmers in the vegetable sector is also found to be economic. Yet the main obstacle is economic as well (too risky, earnings too low, prices too low, inadequate subsidies, uncertainties over future subsidies, inadequate outlets, etc.). The organic vegetable farmers also give economic reasons as the main incentives for conversion, with ideological motives just behind in second place.

The results of the estimation of the conversion decision model for farmers in the dairy sector highlight the importance of certain determinants. In particular, conventional farming performance (i.e. before conversion for the organic farmers) plays a decisive role in the propensity to convert to organic farming: higher earnings (especially a better farm profit per hectare of utilised agricultural area) raise the probability of converting. This finding is consistent on the whole with farmers' opinions on the linkage between earnings and conversion decision. More respondent organic farmers feel that, "Good earnings made from conventional farming made it possible to take the risk to convert the farm."

However, our findings show that farms with a higher yield (of milk per dairy cow) are less likely to convert to organic farming. We also observe that the performance indicators for the year prior to conversion are stronger determinants than the average indicators for the three years before conversion. The performance indicator that emerges as the most relevant from among the different indicators tested to explain the conversion decision (farm profit and operating surplus by utilised agricultural area, total number of annual work units and number of livestock units) is farm profit per hectare of utilised agricultural area.

In addition to performance, the farmer's characteristics and opinions also play an important role in the conversion decision: having an agricultural qualification, being a member of a farmers' union, sharing the opinion that some agricultural production methods are

environmentally damaging and considering that there is a high health risk associated with the use of pesticides, all increase the farmer's propensity to convert to organic farming.

Some of the farmer's conventional production practices (i.e. prior to conversion for the organic farmers) also play a decisive role in the likelihood of converting to organic farming. The farms with less nitrate pressure and farms that contract agri-environmental schemes (AESs) are more likely to convert to organic farming. Last but not least, the availability of shared machinery cooperative or contract work services for organic production significantly increases the chances of conversion.

3.2. Analysis of the spatial diffusion of organic farming

The full set of analyses and findings can be consulted in the following deliverable: Allaire *et al.* (2013).

The econometric estimates show that municipalities in sub-regions with historically the largest organic farming area are the most likely to have organic farms today. This finding shows that organic farming was significantly concentrated at sub-regional level in the 2000s. Yet when regional concentration is high, a diffusion effect may replace the concentration effect. For example, whereas the sub-regions of Midi-Pyrénées where organic farming was concentrated attracted the most organic conversions in the 2000s, the sub-regions of PACA where the least organic farms were found are now those where organic farming is the most widespread. In addition, where municipalities have a history of organic farming, this has a positive impact on neighbouring municipalities' likelihood of hosting organic producers.

Physical constraints in high mountain areas have a negative impact. Yet the other areas with handicaps (plain, mountainous and foothills LFAs) are more conducive to organic farming. Distance from the centre of the population catchment area also has a significant influence: municipalities that are centres of population catchment areas have a greater probability of hosting organic farmers. However, although urban proximity is conducive to organic farming, highly urbanised areas are actually more discouraging, with municipalities in less urbanized areas (defined by travel-to-work areas) being more conducive to the presence of organic farmers.

The share of 55-64 year olds in the population catchment area has a significant positive effect, suggesting that areas with consumers aged over 40 are more conducive to organic farming. The significance of the green vote variable also shows that municipalities where political ecology picks up the most votes are fertile ground for the development of organic farming.

We find that the presence of certified organic downstream operators in the municipality plays a positive role. However, the presence of a downstream operator in the municipality has no effect in regions Pays de la Loire or PACA, which might be due to the weight of a 'new' type of organic sector using conventional collection and distribution channels (milk for Pays de la Loire with the dairy cooperatives, and fruit and vegetables for both regions with the wholesale markets and central purchasing bodies).

The municipalities where agricultural production is more diversified are more conducive to hosting organic farming. This might have to do with the saturation of local markets in one type of production, but it also relates to a diversified local demand in the case of short circuits. Municipalities in a Controlled Designation of Origin wine-growing area are more likely to attract organic farmers. Conversely, location in a Controlled Designation of Origin cheese-making area has no significant effect, the different productions are not complementary in this case.

Nitrate vulnerable zones (as defined by the Nitrate Directive) apparently have an off-putting effect. These zones are often found in intensive livestock farming and field crop areas, with production systems less likely to convert to organic farming. Lastly, the fact that a municipality belongs (partly or wholly) to a geographic area applying a local agri-environmental project (targeted agri-environment scheme area) has a very slightly positive effect, which is significant only for the Natura 2000 areas. This ties in with the assumption of a disconnection between organic farming location and environmental issues.

3.3. Analysis of the sector downstream of organic farming

The full set of analyses and findings can be consulted in the following deliverable: Garapin and Lemarié (2013).

The surveys conducted for this part found that the organic sector has higher costs than the conventional sector for the following reasons: (i) the supply of certified organic goods is more expensive: the purchase price for the certified organic raw material is higher than the price for the raw material produced by conventional farming due to stricter regulation for organic farming; producer prices are often lower outside of France, which explains the use of imports; (ii) costs for certification and the controls required by the organic specifications; (iii) higher logistic and processing costs for organic goods due to a lower density of organic farms and collection points; (iv) additional distribution costs since there is less trade in organic produce (in volume) than in non-organic farm produce.

We also found that it is hard to balance organic supply and demand for three main reasons: (i) supply is less elastic than in conventional farming due to the constraints to convert land to organic farming; (ii) demand has grown a great deal in the last ten years, but this growth has been uneven across the years and sectors, making it hard to forecast demand; and (iii) market sizes are so small that (relative) gaps between supply and demand quickly widen.

However, the interviewed stakeholders consider that prices are more stable on the whole in the organic sector than in the conventional sector.

A major point that emerged from the interviews is the entry of mixed players downstream of production (players already operating in the conventional sector who have converted or developed part of their business to feature organic goods). This situation worries the specialised organic stakeholders on the market today. They feel there is a risk that competition between these mixed players and the traditional specialised organic players could eat into the latter's profitability, since the mixed players have logistical and distribution cost

advantages (because they deal in greater volumes). The specialised players also fear that the entry of mixed players on the market could cause buyers to downgrade their assessment of the quality of organic produce.

Lastly, the respondent players disagree when it comes to labelling strategy. The vegetable producers and distributors that we met are suspicious of the new European regulations introduced in 2009, which they consider to be too lax in general. These players, who are often "historical" organic players, feel they have to either fall back on existing private labels (reputable for their stricter requirements than the organic farming label) such as "Demeter", "Nature & Progrès" and "Bio Cohérence" or create other labels based on speciality or local produce strategies (such as the "Bio Breizh" label in Brittany). The purpose in both cases is to give produce an additional label that certifies stricter specifications than the European label, seen as more lenient. However, the cereals sector stakeholders we met (storage organisations and animal feed manufacturers) are not attracted by the idea of a proliferation of organic labels, which they fear will drive up costs and put a brake on the sector's development.

4. Conclusion

The findings of the research conducted in this project are original from a number of points of view. First of all, virtually no detailed statistical study has been conducted on French farm microdata before. The data collected in this project cover the characteristics of conventional farms and the characteristics of organic farms prior to conversion, farmers' opinions and detailed bookkeeping data for a number of years. Our study is innovative in its identification of the importance of a number of determinants measured prior to conversion for the organic farms, particularly the farms' economic performance. The findings on the time-space dynamics of the diffusion of organic farming in France are also original and based on a unique nationwide database containing historical series for some variables. Our work provides new information on how "conventionalisation" is expressed in organic producers' locations and how they relate to market access, an angle rarely taken and even less so at national level. Lastly, the study on the downstream organic sector sheds new light on the organic sector in France, especially on the expectations, fears and strategies of downstream players.

Our study identifies a number of factors favouring and hindering the development of organic farming in France, which could guide policy recommendations.

- Conversion to organic farming is considered to be a risky financial decision.

The analyses conducted using the Part 1 information collected by the large-scale survey suggest that the farm's earnings are one of the elements farmers look at when they consider whether or not to convert to organic farming. These analyses find that high earnings on dairy farms in Brittany and Pays de la Loire encourage farmers to switch to organic farming. High earnings before conversion can actually cover part of the risk inherent to converting to a new technology.

This finding indirectly highlights the important role played by subsidies to convert to organic farming and keep the farm organic. The guarantee of a certain amount of income (in the form of subsidies) partially absorbs the financial risk associated with conversion. An increase in the level of conversion subsidies and subsidies to keep the farm organic should therefore encourage more farmers to convert.

- Farmers' concern about environmental issues is a factor favouring conversion.

The findings of the Part 1 analyses find that a large part of the conversion decision is connected with how concerned farmers are about environmental and health issues. At the same time, we observe a growing demand from consumers for environmentally friendly practices and quality products. Growing awareness among farmers and a growing demand from consumers for more environmentally friendly farming should encourage more farmers to convert. Training and information actions on environmental issues should encourage conversions to organic farming.

- Farms with environmentally friendly practices are more likely to convert.

The Part 1 findings show that pre-conversion practices similar to organic farming practices, such as a lower nitrate pressure and contracting AESs, positively influence the decision to convert to organic farming. The associated opportunity cost of changing practices is lower for conventional farms that already apply sustainable farming or more environmentally friendly practices.

Therefore, any policy that encourages the use of more environmentally friendly practices (such as the ones coming under the Water Framework Directive), along with the implementation of incentive AESs and environmental zoning, should indirectly further the development of organic farming.

- The downstream part of the sectors needs to be more structured

Part 2 analyses the influence of the downstream part of the organic sectors on the diffusion of organic farming. Access to short circuits is easier and more commonplace for certain goods (wine, fruit and vegetables, goat's cheese, etc.) and therefore gives the farmer more flexibility in the choice as to whether or not to convert to organic farming. Conversely, produce such as cow's milk is more dependent on the downstream part of the sector, which needs to develop specific industrial capacities (with organic production lines, collection channels, economies and diseconomies of scale, etc.) and marketing capabilities. Farmers are hence more dependent on the organic choices of the downstream operator(s) with which they are connected (whether private firms, cooperatives or other). Their will to convert may consequently be restricted by a lack of outlets or constrained by the downstream operator's choice to convert to organic farming. There is hence a public imperative to support sector structuring.

- The organisation of the French organic sector needs to meet the needs of both short and long circuits. Advancing one circuit over the other could put a brake on the sector.

As identified in Part 3, when products sold on a short-circuit basis are differentiated from products sold on a long-circuit basis, the economic analysis recommends in general that a wide range of products be marketed even if certain circuits generate higher costs. It therefore appears important to allow both types of circuit to co-exist for organic produce. Short-circuit agricultural produce is inevitably virtually exclusively French. However, long circuits can more easily draw on goods from abroad. Nevertheless, it is important for French production to be able to provide a large share of long-circuit needs. The use of imports can be a source of contamination and risks in some cases when these imports come from countries with less strict specifications than in France.

- The proliferation of labels is a source of confusion and could discredit the standard organic farming label.

The Part 3 analysis shows that some players have introduced additional labels to differentiate their products from goods that are considered to meet only the organic farming label specifications. For example, an additional label might guarantee the local origin of a product. These voluntary labels are introduced independently by some sector stakeholders. They have to provide credible information, but there is no limit on their number. In some sectors, such as fresh vegetables, there is a risk of an overabundance of these labels, which could have a counter-productive effect. Too many labels can confuse consumers, especially consumers who have just started buying organic goods. There is a risk that consumers may perceive the quality of a product bearing solely the organic farming label as inferior if other goods have a number of labels (including the organic farming label). It is important here that existing labels in the sector are closely monitored and that marketing studies are conducted to measure their effects on the perception of quality by consumers.

- The development of the organic sector could lead to the emergence of new forms of market relationships in the sector, which would make it harder to balance supply and demand.

The importance of the supply-demand balance is a key finding of the Part 3 analyses. The sector's small size and greater production uncertainties make it hard to strike this balance. Coordination between stakeholders and producers takes the form of formal and informal contracts to facilitate this balance. Growth in production might imply that the reduction in the sector's "niche" effect should have gone some way to solving this problem. Yet sector growth could well prompt the development of market trade forms, in particular with the emergence of more competitive spot markets. It would be important in this case to anticipate the effect of this development on the balance between supply and demand. Experience with conventional production shows that this type of market can be a considerable source of price instability, itself inducing fluctuations in volumes farmed.

- The downstream organic sector needs efficient coordination.

Following the Part 3 analyses, our main public policy recommendation for the organic sector is to promote measures that effectively coordinate this sector. These measures could be information systems on the situation in terms of production and outlets in these sectors. It is important here for simple and freely accessible systems to be set up. These systems need to

provide the information quickly if they are to be effective. For example, players need to be informed of the sowing situation in the different regions early enough in the season.

The sector is currently coordinated by a plethora of local and national structures. These structures provide support and generate different studies on the organic farming sector. The regional structures should remain given the local nature of part of this sector's markets. Yet the network made up of these structures could be simplified, by grouping structures together if necessary. Lastly, moves should be made, where this has not been done, to link up these local structures with national structures like Agence Bio (French Agency for the Development and Promotion of Organic Farming).

- Multilevel policies are called for.

Part 2's spatial analysis identifies differentials associated with a number of factors (types of production, marketing methods, proximity to urban areas, and synergies or antagonism with other quality labels) that have a more or less marked spatial aspect. This points up a need for multilevel policies that account for the particularities of each geographic area. The introduction of differentiated policies calls for cooperation between the different players concerned, historical organic farmers and new entrants (especially mixed players), agricultural operators and downstream operators, and government bodies.

Lastly, in addition to the policy recommendations to improve the development of organic farming in France, a number of conclusions can be drawn from this project for economic research on organic farming.

First of all, the project's analyses and main findings show that it is important to analyse the organic farming issue at different levels (farm level and municipal level) and from complementary angles (farm level and sector level). For example, the study of the conversion decision at farm level analyses the conversion decision determinants in depth, especially the farmer's characteristics (concern about environmental issues, for example) and the farm's characteristics (including its performance). Such determinants are hard to identify with more aggregate data (such as municipal data). The use of municipal data, however, has the advantage of nationwide coverage, unlike the farm data (sample). These municipal data also provide an understanding of the time-space dynamics of the diffusion of organic farming, which could not have been done using microdata on a sample of farms. The analysis of the sector as a whole turns up findings from yet another angle, complementary to the other two, and pinpoints issues that neither the microdata analysis nor the analysis of municipal data could identify.

Secondly, note again the importance of the availability of relevant data. Most of the studies on the development of organic farming concentrate on a small sample, which makes it hard (if not impossible) to conduct statistical analyses that will provide reliable findings. In addition, the existing databases on a large number of farms and economic characteristics (such as the Farm Accountancy Data Network, FADN, for the farms) are generally limited in terms of

their coverage of organic farms. In this project, we had to use analyses of existing data aggregated at municipal level (Part 2) and collect original data for a large sample (Part 1). This proved to be an expensive process (in time and money). It is also important to have data available over a relatively long time period.

Another point of note is how hard it is to study the downstream sector, since operators are wary or would rather not disclose important information. Here again, a regular and relatively full survey of organic operators' strategies and problems compared with conventional operations could prove useful.

Last but not least, this project focuses mainly on studying conversions to organic farming. However, it is important that further research be conducted into the question of initial establishment as an organic farm. Setting up an organic farm from the outset is probably easier than converting midstream, which implies changing the farmer's identity and networks. This may, in certain cases, cause the farmer to put the brakes on conversion. Young people seeking to set up farms and newcomer farmers could therefore form a good target for support to the development of organic farming.

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