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### Small farms in Italy between decline and innovative formula: an entrepreneurial model analysis

Fabian Capitanio ([capitani@unina.it](mailto:capitani@unina.it)), Felice Adinolfi ([felice.adinolfi@unibo.it](mailto:felice.adinolfi@unibo.it)),  
Giulio Malorgio ([giulio.malorgio@unibo.it](mailto:giulio.malorgio@unibo.it))

University of Naples Federico II – Centro di Portici

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#### Abstract

During the three-year period of our investigation, we found that the weight of family-run farms declined and there was an increase in the role of farms integrated in the market and in integrated low-impact farm. This is a partial change which may be an indicator of a greater capacity of the entrepreneurial fabric to come to the market and the ability to capitalise on the relationship between farm and territory.

Comparison between the two periods observing the behaviour of common farmers confirmed the substantial stability of the reference framework and offered further scope for interpretation. First, only about 22% changed their strategic profile. Shifts between strategic profiles especially affected family-run farms and light weighted specialised farms (17%). In particular, there was a major shift from the family-run type to the small, specialised farm. By contrast, the shift from the area of specialisation to the family-run type was less marked, and mostly concerned farms situated in marginal areas with less labour employed on the farm. Another element to be taken into consideration is that the second strategic profile, which has a positive balance of some importance, is that of integrated low-impact farms.

**Keywords:** Farmers strategic profile, entrepreneurial analysis, rural development

[JEL codes](#) Q18, Q58.

## 1. INTRODUCTION

The profound changes in agri-food systems in recent years have led to both debate and reflection on the issue of farm competitiveness. The new conditions regulating the functioning of agri-food policies and markets as well as new consumption dynamics have paved the way for new intense competition (Adinolfi, De Castro 2006). This is a new condition for those in the farming sector, traditionally *price takers* and historically supported by public aid programmes.

Especially in recent years, many have sought to explore the relationship between farm performance and factors of competitiveness. The general reference framework remains the strategic classification used by Porter (1987). Porter defines competitive advantage as the capacity to occupy and maintain a favourable position on the market and identifies several basic strategic pathways, which may be summarised as cost leadership, differentiation, diversification, access to market niches and income maximisation. In this sense, competitiveness may also be viewed as the capacity to maximize utility by combining resources both within and outside a firm (Lanza 1998, Jauffrit 2004).

The new scenario is driving the farm towards new opportunities to combine internal and external resources, by virtue of complex consumption dynamics which have both turned food into a globalising phenomenon and have generated market spaces and consumption formulas which often enhance the role of small entrepreneurial structures, land use systems and diversified marketing strategies (Bellia 1995, Carrà 2005, Casati 2005). Critical factors for success change according to the contexts and markets concerned, and growth objectives may be supported by extremely varied entrepreneurial formulas in terms of size, organisation and relationships (Van der Ploeg 2005).

Finally, the collective value of the farm system, on which public decision-makers have focused in recent years, does not only affect the production of environmental and social benefits or concern only the sphere of market failure in recognising the value of farming-related externalities. It also constitutes *per se* an element able to further weld

production aspects and land-use aspects. This value enhances the pool of attributes required for the process of differentiation and diversification of supply.

Following this route, a broad range of diversified and often original farm models and entrepreneurial strategies has developed. The new dynamics of the agri-food context have fuelled the need for active behaviour in building entrepreneurial pathways to support the farm's competitive position. Indeed, the new paradigm envisaging state support for the farm sector and market expansion make it more difficult than in the past to ensure a farm's survival only through a strategy of cost containment (Sabbatini 2006).

Various contributions in this direction (Langemeier and Featherstone, 1997; Mishra, El-Osta and Steele, 1999; Mariani, 2003; Murdoch et al., 2000) show that the subject of farm competitiveness cannot be treated merely in terms of allocative efficiency and that many other factors gain importance in generating farm skills and abilities to exploit opportunities that arise. By combining different properties (structural, economic and financial, relational, trade, organisational and territorial) the farm's strategic approach is defined in this new framework. There may be several critical success factors and the analytical and interpretative effort becomes more complex than in the past, involving various dimensions beyond that of mere structure and requiring a systemic approach to the study of competitiveness and relative firm strategies.

## **2. SURVEY AIMS AND METHODS**

The remarkable speed of the change in the scenario of worldwide agri-food systems contributes to making the question of competitiveness crucial, not only due to related effects on the solidity and performance of the entrepreneurial fabric, but also as regards the size of collective output of farms in an area.

Thus it seemed particularly interesting to analyse the structure of farms and the main strategies characterising their behaviour, especially in light of the far-reaching changes affecting the farm environment in recent years (Adinolfi, De Castro 2006). The changes that have affected public policies for the sector and the organisation of markets have increased the farmers' exposure to risk and have, at the same time, reconfigured the

social role of farming. The new scenario has seen a progressive trend in public policy orientation in the sector: in the context of an overall reduction in resources earmarked for agriculture, increasing emphasis is laid on second-pillar interventions to support not only the production of public benefits but also the competitiveness of the European farming model.

Thus new variables have been added to the entrepreneur's decisional process, which takes place in a context of ever greater uncertainty and complexity. Greater importance is assumed by relations with downstream phases, cost optimisation, the opportunity cost of access to public benefits, and the tools available for managing entrepreneurial risk. What emerges is a complex analytical scenario (De Rosa, Russo, Sabbatini 2006) in which there may be several development paths for farms, given the extension of the farmer's range of action, following the introduction of innovating regulations.

In this part of our study we attempt to schematise the strategic profiles mainly found in Italian farming, drawing on information from the Agricultural Accounts Information Network (RICA)<sup>1</sup>, managed in Italy by the National Agricultural Economics Institute (INEA). Starting from four main groups into which we classified the factors of competitiveness (structural characteristics, role of the public sector, labour and capital, relation with the market) we selected a group of variables<sup>2</sup> (tab 1) among those available, considered representative of the dimensions involved. The available information was processed with a cluster analysis<sup>3</sup> procedure, which led to the identification of homogeneous groups of farms within the sample, whose size, on a national scale, was determined by applying coefficients for the overall sample. It was thus possible to reduce to a small array of homogeneous groups the structural and

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<sup>1</sup> The information gathered concerns about 2000 variables, referring both to physical and structural data and to economic data of the sample farms. The RICA also contains extensive information on the "consumption" of policies on the part of the firm. The survey was conducted annually and is considered representative up to the regional level.

<sup>2</sup> The survey used as a reference RICA data for 2005, with a total of 39 discrete and continuous variables. The sample for 2005 includes 14,031 firms.

<sup>3</sup> Cluster analysis is a multivariate analysis technique with which the statistical units used may be grouped so as to minimise the "logical distance" within each group and maximise that between the groups. The logical distance is quantified using measurements of similarity/dissimilarity defined between statistical units. This process allows homogeneous groups among the statistical units to be constructed between the statistical units in question so as to identify a lower number of groups such that the elements belonging to a group are more similar to each other than to the elements belonging to other groups.

strategic profiles mainly found in Italian agriculture, defined by size and by the analysis of relations between the variables used in the survey.

*Tab.1 Variables used in the survey*

STRUCTURAL CHARACTERISTICS	PUBLIC SECTOR	WORK AND CAPITAL	MARKET AND TERRITORY
<ul style="list-style-type: none"> <li>▪ Form of management</li> <li>▪ Age of manager</li> <li>▪ ETO</li> <li>▪ Sau</li> <li>▪ Livestock</li> <li>▪ Mechanization</li> <li>▪ net revenue</li> <li>▪ sales value</li> <li>▪ productivity elasticity (variable costs /fixed costs)</li> <li>▪ long time debt</li> <li>▪ short time debt</li> <li>▪ gross production value</li> <li>▪ variable cost</li> <li>▪ fixed cost</li> <li>▪ short time debt/total debt</li> </ul>	<ul style="list-style-type: none"> <li>▪ I pillar premium or compensative payments</li> <li>▪ I pillar premium/net revenue</li> <li>▪ investments premium</li> <li>▪ invest premium/total investments</li> </ul>	<ul style="list-style-type: none"> <li>▪ Labour hours</li> <li>▪ labour productivity</li> <li>▪ land productivity</li> <li>▪ land capital</li> <li>▪ mechanization capital</li> <li>▪ livestock capital</li> <li>▪ current investments</li> </ul>	<ul style="list-style-type: none"> <li>▪ organic</li> <li>▪ how sale production</li> <li>▪ market orientation</li> <li>▪ cooperation sales</li> <li>▪ export</li> <li>▪ branded production</li> <li>▪ localization</li> </ul>

### 3. MAIN FARM PROFILES

Our analysis highlighted the general trend in agriculture in Italy towards polarisation between very small farms and large, well-equipped farms. The large number and widespread distribution of very small farms is a hallmark of Italian agriculture, which ranges between fairly lame entrepreneurial concerns to organisational models of the factors of production which are capable of both survival and growth. Between the two poles are various entrepreneurial models which are chiefly distinguished in terms of technical and economic orientation and the use intensity of production factors.

Overall we identified five homogeneous groups. The first group of farms, identified as the *family firm profile*, contains the largest number of farms in the sample (71%). The cluster is characterized by farms of medium-small size and by performance which is, in many cases, close to the boundary of economic marginality. Although the group is distinguished by low factor endowment, it includes different styles and endowments, yet all belonging to an area of small economic size, within which is the dividing line between what may be considered a firm and productive structures in which production cycle outputs serve for self-consumption or as mere accessories. In such structures, interaction with the external environment is minimal and at times absent. The production cycle and the family dimension coincide, due to the low use intensity of factors and minimisation of inputs acquired outside the family, from which most of the firm's labour is drawn. Family income is often supplemented by public transfers and activities undertaken outside the firm.

This profile groups firms with a high risk of extinction with low-income yet non-marginal firms which often pursue objective functions tied more to the cycle of the family than to that of the entrepreneurial structure<sup>4</sup>. For these firms, as for most of the group, the strategic orientation may be summarised in the choice of adding other economic functions (conservation of estate assets, use of the farm as the main residence, opportunity to supplement family income), using paths to minimise investments, costs

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<sup>4</sup> In these cases the marginal benefit associated to the production process is not given by the price received for the product, but by the increase in the family's objective function.

and management functions. The cluster has a prevalence of small dimensions due to poor production specialisation and very low factor productivity. The main channels of access to the market are direct selling, and through cooperatives for livestock-based farms.

The second group, termed *small, specialised firm profile*, comprises 18% of the sample. The hallmark of the farms in this group is not only their small size but also their high degree of production specialisation. This means they can generate a better performance in terms of technical and economic efficiency. In this group the main trend is arboriculture (vines, olives, fruit trees) and market garden production, the latter concentrated in low-lying areas. Factor productivity is high, especially that of labour, which is substantially based on the contribution of family members. The moderate level of fixed costs that goes with the small farm means that the group has a high production elasticity, which reduces the farm's exposure to market risks. Moreover, in the group's farms there is extensive use of production options that enhance the distinctiveness of supply both in relation to the impacts of production techniques (organic) and the regional characterisation of products (designation of origin).

The farms in the cluster show a good operating margin, due both to the capacity to market the product and to the minimum profile assumed by costs. Management chiefly involves activating and managing external relations, a sphere in which the group's farms show marked capabilities in activating relations both with distribution channels and with other phases downstream. Relational ability, specialisation and supply differentiation are the main strengths of the group, whose strategy may be summed up in the search for quality and production flexibility, so as to maximise income starting from low factor and organisational endowments.

The third profile emerging is that of homologue *e market-integrated firms*, which includes medium-large firms. The high factor endowment characterising the group's firms allows economies of scale. The firms have a high labour input and chiefly deal with livestock, whether for meat or milk, often accompanied by specialised crops which, when grown in vast acreages, can generate significant income levels. Income

further comprises public transfers relative to the first pillar of the CAP and the compensatory payments envisaged by the second. The high variable and fixed costs of the production cycle determine the production elasticity of the farm whose vulnerability is increased by the progressive reduction in support and guarantees granted under the first pillar of the CAP. Faced with such vulnerability, the firms in the group have developed stable relations with the markets and significant levels of integration with the downstream phases. In this sense the functions concerning the organisation of factors of the firm and external relations are more complex, presupposing good credit access abilities and growth strategies which require sizeable investments. In this field, the firms show they are able to benefit from policies geared to structural investments for competitiveness. The high mechanization of firms in the cluster allows higher land and labour productivity, even if the group's income performance may be attributed to the volumes produced and sold rather than unit margins. Low-impact practices and connections between product and regional identity were found to be uncommon in this group, chiefly geared towards undifferentiated production.

The fourth of the five profiles was termed *integrated low-impact organisations* and is distinguished by the large physical and economic size of the firms in question. Capital endowment is often supplemented by use of rent. The main activity is milk production, often accompanied by forage production, and specialised crops. The remainder is made up by arboriculture. The group is significantly geared to organic and low-impact production, often associated with young farm management. Although factor endowment, including machinery, is on the whole significant, their use intensity, especially for the labour factor, is low compared with other firms belonging to the same size classes. Technical and economic efficiency is pursued through a commercial approach based on quality and through a high level of horizontal and vertical integration, which is ensured by belonging to associative channels and by widespread use of contractual and associative instruments. The choice of extensification characterising the group allows production to be enhanced and at the same time represents a formula for containing costs.



Compliance with organic production regulations and availability of land and livestock assets represent strategic factors for firms in the cluster, which appear extremely dynamic in their “consumption” of public policies, as shown both by the level of so-called compensatory premiums, and by the widespread capacity to sustain company investment processes through state contributions activated especially on Axis 1 measures (competitiveness) of regional rural development plans.

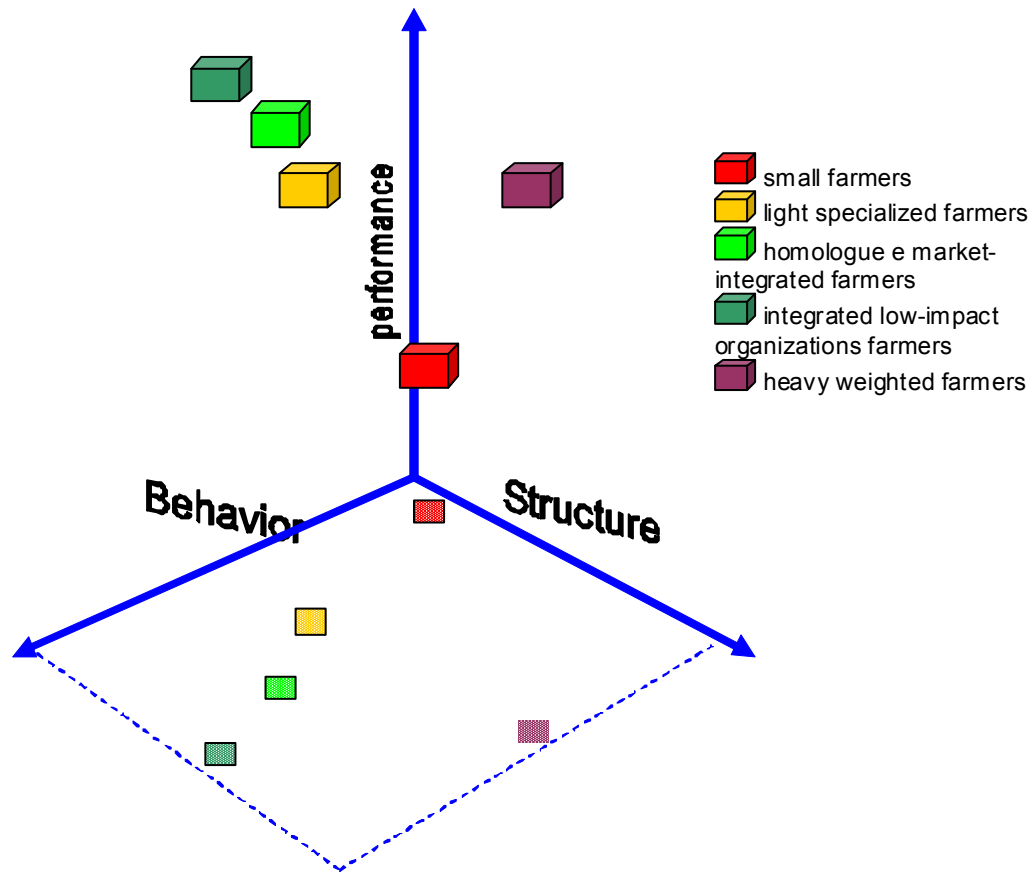
Finally, the last profile, termed *heavy weighted firms*, have large surface areas and large production volumes. The firms make up a residual part of the RICA sample in numerical terms and are chiefly characterised by livestock farming and cereal crops. The group comprises larger physical and economic firms with a high factor endowment but also often low unit margins. State support still appears to be a decisive factor in choices concerning organisation of factors of production. High factor endowment, orientation towards undifferentiated production and cost structuring make the firms in this group more exposed to price fluctuations and so-called institutional risk, associated to changes accompanying the development of European support for agriculture. The commercial channels used chiefly consist of wholesale trading and cooperatives.

### **3.1 Synopsis**

The overall picture that emerges from our analysis is representative of the polarisation of the entrepreneurial fabric, a phenomenon which in Italy’s farming context does not appear to diminish, but also of the structural and strategic plurality developing between the two poles, the very small firm and the large firm. There are varied entrepreneurial pathways, some indicating a marked structural weakness, others that highlight the ability to seize new opportunities offered by the markets and by agricultural policy, yet others more markedly responding to the logic of efficiencies of scale and the paradigm of industrial growth. The scheme proposed seeks to encompass this variety of cases in a limited number of homogeneous entrepreneurial profiles, with which to aid interpretation of the situation in the Italian farm sector.

So as to further simplify the issue, the entrepreneurial types identified were placed within a classic scheme of approach to analysing firm strategies which is the structure, behaviour and performance (SCP) model, in which it is assumed that the three dimensions interact with one another and that, in particular, company performance is the result of interaction between structure and management. Using as a reference the averages and the modality of many of the variables used in the analysis we placed the entrepreneurial profiles within the three dimensions (Fig.1).

Figure1. Structure, behaviour and performance model (SCP)



The axis of the structure has its origin in the minimum factor dimensions and assumes growing values with the increase in structural endowment, the use of labour and gross production value. The behaviour/management axis takes into consideration the variables that contribute to defining the entrepreneurial trajectories and explaining the choices behind the organisation of factors of production and relations with the external

environment. Integration with markets, production diversification, environmental impact, the presence of designation of origin brands, and the ability to exploit policies for competitiveness all represent the contexts through which we sought to assess behaviour/management. Finally, performance was assessed through coefficients of technical and economic efficiency used in the analysis, which concern factor profitability and company margins (income produced per unit of labour, per unit of surface area, value of production/value of sales, production elasticity). Assignment of positions along the axes is purely indicative, merely to create an intuitive scheme within which to position the typological classification resulting from the analysis.

The procedure of identifying the main company profiles allowed us to ascertain the combination between structural endowment and firm behaviour. First, it should be pointed out that Italian agriculture has a broad area of entrepreneurial marginality which occupies over 60% of the agricultural surface, in which the difficulties of generational turnover, location factors and often the articulation of objective functions assigned to the productive structure, are barriers to company survival and growth. However, in this area we also find cases that denote a certain vitality in terms of relations with the region and with the supply of policies for competitiveness, which often go with the larger company size found in the group and the higher degree of specialisation, that overlaps with the second profile, that of small/light/light-weight specialised firms. This is the farm context which may to all intents be termed professional, in which the organisation of factors and relations with the markets is more complex. The strategic options that distinguish this second profile combine production factor cost minimisation choices with significant relational endowments (use of associative channels, integration with markets, quality production), which ensure competitive advantage.

The last three profiles are much more significant with regard to factor endowments and are representative of three distinct strategic approaches based on the combination of three main elements: cost policies, market policies and CAP transfers. Homologue firms exploit economies of scale to reduce costs and use integration with markets and forms of vertical and horizontal coordination to mitigate market risk. By contrast, low-impact integrated organisations choose the route of differentiation and low use intensity of

production factors to create greater value and reduce production costs. In this company profile, as in that of light firms, the combination of lever produces models which somehow escape the paradigm of modernisation<sup>5</sup>, to spawn company styles which, thanks to the combination of techniques, regional practices and relational baggage, are competitive though with minimum or underused factor endowments. Finally, the heavy weighted pursue a cost minimisation strategy which is partly based on the production scale and partly on low specialisation; a key role is played by public transfers, which are nonetheless sizeable for each of the last three profiles analysed.

*Tab.2 Overall population. Agricultural surface and gross production value consistency of strategic profiles*

	%	%
	<i>Surface</i>	<i>Production</i>
SMALL FIRMS	63,95	43,08
LIGHT FIRMS	13,75	23,60
HOMOLOGUE E MARKET-INTEGRATED FIRMS	2,00	7,08
INTEGRATED LOW-IMPACT ORGANISATIONS FIRMS	18,92	21,54
HEAVY WEIGHTED FIRMS	1,38	4,70
totals	100,00	100,00

#### **4. ECONOMETRIC MODEL**

Discrete-choice model are used to analyse farmers' behaviour within a utility maximization framework, where the observed choice is considered an expression of a continuous latent variable reflecting the propensity to choose a specific option among different alternatives.

<sup>5</sup>

In our paper, to determine the effect of some firm characteristics on the of structure, behavior and performance, an ordered logit regression model has been carried out.

The ordered logit model depends upon the idea of the cumulative logit. This in turn relies on the idea of the cumulative probability. We could think of the cumulative probability  $C_{ij}$  as the probability that the  $i$ th individual is in the  $j$ th or higher category:

$$C_{ij} = \Pr(y_i \leq j) = \sum_{k=1}^j \Pr(y_i = k)$$

We can then turn this cumulative probability into the cumulative logit:

$$\text{logit}(C_{ij}) = \log\left(\frac{C_{ij}}{(1 - C_{ij})}\right)$$

Our ordered logit model simply models the cumulative logit as a linear function of independent variables:

$$\text{logit}(C_{ij}) = \alpha_j - \beta x_i$$

Note that there is a different intercept for each level of the cumulative logit, but that  $\beta$  does not vary by the level of the cumulative logit. Also note that  $\beta$  is subtracted rather than added. This means that each  $\alpha_j$  indicates the logit of the odds of being equal to or less than category  $j$  for the baseline group (when all independent variables are zero). Thus, these intercepts will increase over  $j$ . These intercepts are sometimes referred to as cutpoints.

The  $\beta$  tells us how a one-unit increase in the independent variable increases the log-odds of being higher than category  $j$  (due to the negative sign). Because this  $\beta$  is not indexed by  $j$  we are assuming that the one unit increase affects the log-odds the same regardless of which cut-point we are considering.

Due to the high size of our sample, the estimation has been made by using the maximum likelihood method, which generates asymptotic disturbance terms (Gujarati, 2003).

The main results obtained, confirmed that Italian agriculture has a broad area of entrepreneurial marginality which occupies over 60% of the agricultural surface, which is characterized mainly of the difficulties of generational turnover, location factors and often the articulation of objective functions assigned to the productive structure, are barriers to company survival and growth. The strategic options that distinguish the second profile, so that small/light/light-weight specialised firms, combine production factor cost minimisation choices with significant relational endowments (use of associative channels, integration with markets, quality production), which ensure competitive advantage.

The last three profiles are much more significant with regard to factor endowments and are representative of three distinct strategic approaches based on the combination of three main elements: cost policies, market policies and CAP transfers. Homologue firms exploit economies of scale to reduce costs and use integration with markets and forms of vertical and horizontal coordination to mitigate market risk. By contrast, low-impact integrated organisations choose the route of differentiation and low use intensity of production factors to create greater value and reduce production costs. In this company profile, as in that of light firms, the combination of lever produces models which somehow escape the paradigm of modernisation, to spawn company styles which, thanks to the combination of techniques, regional practices and relational baggage, are competitive though with minimum or underused factor endowments. Finally, the heavy weighted pursue a cost minimisation strategy which is partly based on the production scale and partly on low specialisation; a key role is played by public transfers, which are nonetheless sizeable for each of the last three profiles analysed.

## **5. CONCLUSIONS**

The use of annually collected RICA data allows the performance of Italy's farm sector to be interpreted dynamically. In our analysis, besides the 2006 survey, we also considered the set of information for 2003. On comparing the two years, conducted on the basis of strategic types identified for 2006, there emerges a substantial stability in the sector concerned. However, what may be discerned is the further, albeit slow, advancement of the structural rationalisation process which has affected Italian

agriculture for many years. During the three-year period in question, the weight of family-run farms declined and there was an increase in the role of farms integrated in the market and in integrated low-impact farm. This is a partial change which may be an indicator of a greater capacity of the entrepreneurial fabric to come to the market and the ability to capitalise on the relationship between farm and territory.

Comparison between the two periods also allowed us to observe the behaviour of 998 farms common to the two surveys. Our observations confirmed the substantial stability of the reference framework and offered further scope for interpretation. First, of the 998 farms, only 219 (about 22%) changed their strategic profile. Shifts between strategic profiles especially affected family-run farms and light weighted specialised farms (171 farms; 17%). In particular, there was a major shift from the family-run type to the small, specialised farm. This occurred in concordance with an increase in structural endowment and a higher degree of integration found in the farms concerned, chiefly under young management. By contrast, the shift from the area of specialisation to the family-run type was less marked, and mostly concerned farms situated in marginal areas with less labour employed on the farm. Another element to be taken into consideration is that the second strategic profile, which has a positive balance of some importance, is that of integrated low-impact farms. Albeit not statistically representative, such elements help to provide some guidance for interpreting evolution of farm types.

There would appear to be two main ways forward: the search for active behaviour with which to capitalise on relations with the local area and markets on the one hand, and an orientation towards development models which, though envisaging increases in structural endowments, are particularly attentive to the objective of production flexibility. Hence there should be greater attention to markets and the local area, but also greater concern with the increase in exposure to risk generated by the new round of public policies for the sector and the broadening of commercial relations.

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